

MSU International Development Working Papers

Food Security II Cooperative Agreement: Project Fact Sheets (1995/96 Version)

compiled by

MSU Food Security II Research Team

**MSU International
Development
Working Paper No. 54
1996**



**Department of Agricultural Economics
Department of Economics
MICHIGAN STATE UNIVERSITY
East Lansing, Michigan 48824**

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**FOOD SECURITY II
COOPERATIVE AGREEMENT:
PROJECT FACT SHEETS (1995 VERSION)**

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MSU Food Security II Research Team

January 1996

This paper is published by the Department of Agricultural Economics and the Department of Economics, Michigan State University (MSU). Funding for this paper was provided by the Food Security II Cooperative Agreement (AEP-5459-A-00-2041-00) between Michigan State University and the United States Agency for International Development, through the Office of Agriculture and Food Security in the Economic Growth Center of the Global Bureau (G/EG/AFS).

Copies of all final written outputs listed on each Fact Sheet are being submitted to A.I.D.'s Development Information System (CDIE). For information on obtaining documents from CDIE, see order instructions in the back of this publication.

ISSN 0731-3438

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Published by the Department of Agricultural Economics and the Department of Economics,
Michigan State University, East Lansing, Michigan 48824-1039, U.S.A.

CONTENTS

<u>Section</u>	<u>Page</u>
FOOD SECURITY II COOPERATIVE AGREEMENT – OVERVIEW	1
MALI MAIZE SUBSECTOR STUDY	3
MALI MARKET INFORMATION STUDY (SIM)	12
MOZAMBIQUE STUDY	22
RWANDA STUDY	38
SAHEL REGIONAL PROGRAM	51
ETHIOPIA FOOD SECURITY PROJECT	79
AGRICULTURAL PRODUCTIVITY STUDIES	89
FOOD ACCESS SYNTHESIS STUDIES	106
STRATEGIC PLANNING STUDIES	125
TECHNOLOGY ASSESSMENT STUDIES	138
AGRICULTURAL TRANSFORMATION	148

Fact Sheet • FOOD SECURITY II COOPERATIVE AGREEMENT – OVERVIEW

• FOOD SECURITY II COOPERATIVE AGREEMENT •
between
• U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT and MICHIGAN STATE UNIVERSITY •
• TIME PERIOD: OCTOBER 1992 - SEPTEMBER 1997 •

1. Cooperating Institutions and Funding Sources

AID/Global Bureau, Economic Growth Center, Office of Agriculture and Food Security
AID/Africa Bureau, Office of Sustainable Development
AID/Africa Bureau, Office for West Africa, Sahel Regional Program
USAID Field Missions and Host Country Institutions
Department of Agricultural Economics, Michigan State University

2. MSU Faculty and Staff Involved

Richard Bernsten, Duncan Boughton, Daniel Clay, Eric Crawford, Josué Dioné, Carl Eicher, Laura Farrelly, Julie Howard, Thomas Jayne, Valerie Kelly, Mywish Maredia, Don Mead, James Oehmke, Thomas Reardon, Lawrence Rubey, A. Allan Schmid, James Shaffer, John Staatz, David Tardif-Douglin, James Tefft, David Tschirley, Raul Varela, Michael T. Weber, Reid Whitlock, Sherrie Loader, Josie Keel, Janet Munn, Elizabeth Bartilson, and Chris Wolf

3. MSU Graduate Assistants Involved

Kim Aldrige, Youssouf Camara, Bocar Diagana, David Dibley, Georges Dimithe, Cynthia Donovan, Kei Kajisa, Mattias Lundberg, Pam Miklavcic, Anwar Nasseem, Julie Stepanek, Paul Strasberg, Maria Wanzala, David Yanggen

4. Overview of the Cooperative Agreement

Goal: To increase food security in developing countries as part of broad-based, market-orientated, sustainable economic growth. **Sub-Goal:** To ensure adoption by public and private sector decision makers (including A.I.D. and other donor agencies) of effective policies, programs and management processes that promote food security, based on project-generated research and analyses. **Purpose:** To strengthen the capacity of participating countries and USAIDs to analyze food security issues and to formulate policies, institutional reforms, investment plans and management processes that promote food security. To achieve these objectives, FS-II will engage in the following activities:

Applied research on policy-relevant food security issues, including household-level data collection and analysis, country-specific studies and cross-country syntheses of research findings.

Policy dialogue, networking, and dissemination via meetings, interim reports, workshops and publications to assist USAIDs and participating host governments to identify food security issues, design food security research activities and/or demonstrate policy and program applications of the project's research findings.

Capacity-building through on-the-job training of researchers and analysts within host countries and selective funding of host country graduate degree research.

5. Applied Research-Overall Focus: Ensuring Household Access to Increased Food Supplies

Priority Research Themes: 1) Improving Access to Food by Vulnerable Groups; 2) Macro and Sectoral Policies and Complementary Actions to Promote Food Security Through Broad-Based Income Growth; and 3) Designing More Cost-Effective Food Systems and Related Institutions

Cross-Cutting Themes: 1) Farm and Non-Farm Sources of Income to Promote Food Security and 2) Food Security and Natural Resource Management

6. Operationalizing the Applied Research: Countries/Topics Covered

Mali Maize Subsector Study
Mali Market Information Study
Mozambique Study
Rwanda Study
Sahel Regional Program
 – INSAH/PRISAS
 – CFA Franc Devaluation
Ethiopia Study

Africa Bureau/SD/PSGE Topics on:

Agricultural Productivity Synthesis Studies
Food Access Synthesis Studies
Strategic Planning Study
Technology Assessment Study
Agricultural Transformation

Fact Sheet • MALI MAIZE SUBSECTOR STUDY

▶ FOOD SECURITY II COOPERATIVE AGREEMENT ◀
between
▶ U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT and MICHIGAN STATE UNIVERSITY ◀
▶ IN-COUNTRY TIME PERIOD: JUNE 1992-JANUARY 1994 ◀

1. Cooperating Institutions

Institut d'Economie Rurale (IER), Bamako, Mali
Agency for International Development, Mali Mission (USAID/Bamako)
Institut du Sahel/PRISAS Program
Agency for International Development, Global Bureau, Economic Growth Center, Office of
Agriculture and Food Security (AID/G/EG/AFS)
Department of Agricultural Economics, Michigan State University (MSU)

2. Researchers Involved

IER: Bino Témé, Bakary Sékou Coulibaly, Ousmane Sanogo, and Abdou Diarra
MSU In-Country Researcher: Duncan Boughton
INSAH/PRISAS: Josué Dioné and Younoussu Maiga
MSU Campus Backstop: John Staatz, Eric Crawford, James Shaffer, Michael Weber, and Tom Reardon

3. Objectives of the Research

The maize subsector study was designed as a follow-on study to an AFR/ARTS/FARA-funded study, carried out over the period January-November 1992, of the returns to investment in maize research and extension in Mali. The subsector study examined the forces influencing the organization and performance of the maize production and marketing system and the constraints to increasing the productivity of the system. The study also served as a pilot project that allowed IER and MSU to develop the use of the subsector approach as a tool for organizing agricultural research in Mali.

4. Research Approach

The study combined a rapid reconnaissance of the entire subsector with more in-depth studies at three levels: (a) farm-level production constraints, with emphasis on varietal adoption; (b) maize processing; and (c) urban consumption, particularly of processed maize. The Bamako urban

consumption study investigated consumption of other grain products (particularly processed millet and sorghum) as well as maize.

Maize was chosen as the first or "pilot" study because: 1) changes in the organization of cereal marketing over the last decade have had an important impact on the incentives to adopt farm-level maize production technology; 2) lessons from the maize study could be expected to have important implications for other cereals both in regard to utilization as well as farm-level production; and 3) the limited geographical scope of maize production reduces the logistical complexity of implementing a study.

5. Outputs to Date

5.1 Oral Presentations for African Researchers and Policy Makers

Oral presentations of research findings have been presented to the following meetings:

- **Within Mali:**

Several presentations to researchers at IER headquarters in Bamako.

Informal briefing to USAID, Mali, January 1994.

PRMC Technical Committee, January 1994.

IER Commodity Subsector Economics Program Design Workshop, December 1993.

Informal briefing to USAID, Mali, December 1993.

INSAH/PRISAS Regional Seminar on Agricultural Research in a Rapidly Changing Environment, Bamako, September 1-3, 1993.

Informal briefing to USAID, Mali, May 1993.

PRMC Technical Committee, January 1993.

INSAH/PRISAS Regional Seminar on Informal-Sector Non-Agricultural Activities and Food Security, Bamako, November 25-27, 1992.

IER Farming Systems Seminar, Sikasso, November 17-21, 1992.

PRMC Technical Committee, June 1992.

Informal briefing to USAID, Mali, January 1992.

- **Outside of Mali:**

November 1994. African Studies Association meetings, Toronto, Canada. Paper on the use of the commodity subsector approach to analyze the effects of devaluation on the demand of technology at different stages of the subsector, using maize in Mali as a case study, presented as part of a panel (organized jointly by CIRAD and MSU) to examine alternative methodological approaches and applications of a commodity subsector perspective.

August 1994. IAAE meetings, Harare, Zimbabwe. Presentation on "Using the Commodity Subsector Approach to Design Agricultural Research: The Case of Maize in Mali" as part of a mini-symposium on agricultural research impact assessment.

June 1994. USAID/Africa Bureau and ARTS/FARA/TDT. Presentation on "From Pilot Study to Commodity Subsector Economics Program: Institutionalizing a Market-Oriented Approach to Agricultural Research in Mali" at Seminar on Strengthening Linkages between Demand and Supply of Agricultural Technology in Africa.

February 1994. USAID/Africa Bureau, Sahel/West Africa Office and ARTS/FARA. Presentation on "Designing Food Security Strategies in a Rapidly Changing Social, Political, and Economic Environment: Challenges for the Sahel (with special emphasis on CFA devaluation)." Presentation by Staatz, Kelly, and Reardon.

August 1993. Natural Resources Institute, U.K. Seminar presentation on incorporating a marketing perspective in the design of agricultural research.

October 1992. AID/AFR/ARTS/FARA Symposium on the Impact of Technology on Agricultural Transformation, Washington, D.C.

September 1992. 12th Annual Farming Systems Symposium, The Association for Farming Systems Research/Extension, East Lansing, Michigan.

July 1992. AID/AFR Conference of African ADOs on Agricultural Marketing and Agribusiness in Africa, Baltimore, MD.

June 1992. AID Workshop on the Role of Social Sciences in the CRSPs, University of Kentucky, Lexington, Kentucky, June 9-11.

5.2 Written Outputs

- **Working Papers for Malian Agencies and Policy Makers**

Boughton, Duncan and Bruno Henry de Frahan. 1994. "Agricultural Research Impact Assessment: The Case of Maize Technology Adoption in Southern Mali." MSU

International Development Working Paper No. 41. East Lansing: Michigan State University. PN-ABS-729.

Boughton, Duncan and Ousmane Sanogo. 1994. "Etude filière maïs: analyse de la consommation céréalière à Bamako: effets éventuels de la dévaluation du FCFA." Note d'Information No. 5. Bamako: Ministère du Développement Rural, Institut d'Economie Rurale, Département Planification Agricole et Economie Rurale, January. PN-ABS-892. **English version:** "Maize Subsector Study: Analysis of Household Cereal Procurement in Bamako: Implications of the Devaluation of the FCFA for Urban Food Security." PN-ABS-891.

Boughton, Duncan. 1993. "The Relevance of a Commodity Subsector Approach to the Design of Agricultural Research: The Case of Maize in Mali." Paper presented to USAID/Mali, May 26. PN-ABS-924.

Boughton, Duncan and Bruno Henry de Frahan. 1993. "Evaluation de l'impact de la recherche agricole: le cas du maïs au Mali-Sud." Presentation to the Institut d'Economie Rurale, February 19. PN-ABS-922.

Boughton, Duncan, Ousmane Sanogo, Bino Témé, and Ibrahim Goïta. 1993. "Etude filière maïs: stratégie pour la composante technologie alimentaire." Note d'Information No. 2. Bamako: Ministère du Développement Rural et de l'Environnement, Institut d'Economie Rurale, Département Planification Agricole et Economie Rurale, March. PN-ABS-887.

Mestres, Christian. 1993. "Rapport de mission 04 au 18 juillet 1993 au Mali." [Consulting report on milling technology in the maize subsector]. Montpellier, France: CIRAD/CA-Techno, August. PN-ABS-918.

Sanogo, Ousmane, Ibrahim Goïta, and Duncan Boughton. 1993. "Etude filière maïs: évaluation de la composante technologie alimentaire et l'extension des enquêtes de consommation des céréales sèches à Bamako." Note d'Information No. 4. Bamako: Ministère du Développement Rural, Institut d'Economie Rurale, Département Planification Agricole et Economie Rurale, October. PN-ABS-890.

Sanogo, Ousmane, Ibrahim Goïta, Niama Nango Dembélé, and Duncan Boughton. 1993. "Etude filière maïs: composante technologie alimentaire et perspectives sur la transformation des céréales sèches." Note d'Information No. 3. Bamako: Ministère du Développement Rural, Institut d'Economie Rurale, Département Planification Agricole et Economie Rurale, June.

Témé, Bino and Duncan Boughton. 1993. "Etude sur la filière maïs: caractéristiques des unités alimentaires du district de Bamako et place du maïs dans les habitudes de consommation." Bamako: Ministère du Développement Rural et de l'Environnement,

Institut d'Economie Rurale, Departement Planification Agricole et Economie Rurale, January.

Boughton, Duncan. 1992. "Etude sur la filière-maïs: requête de financement au PRMC pour couvrir le volet consommation/transformation." East Lansing: Michigan State University, June.

Boughton, Duncan and Bino Témé. 1992. "Farming Systems and Markets-Combining Analytical Frameworks for the Development of Commodity Subsectors: The Case of Maize in Southern Mali." Selected Paper, *12th Annual Farming Systems Symposium, The Association for Farming Systems Research/Extension and Agricultural Economics Staff Paper No. 92-67*. East Lansing: Michigan State University, September. PN-ABS-923.

IER/DPAER and INSAH/PRISAS. 1992. "Etude sur la filière-maïs: reconnaissance rapide et matrice de planification des recherches approfondies." Serie Recherches Collaborative, Document de Travail No. 1. Bamako, September. PN-ABS-917.

Témé, Bino and Duncan Boughton. 1992a. "Analyse préliminaire sur la filière-maïs et principales interrogations." Comité Technique du Programme Système de Production et Economie Rurale. Bamako: Ministère de l'Agriculture, de l'Elevage, et de l'Environnement, Institut d'Economie Rurale, Departement Planification Agricole et Economie Rurale, April. PN-ABS-929. **English Version:** "Preliminary Analysis of the Maize Subsector and Principal Questions." PN-ABS-277.

Témé, Bino and Duncan Boughton. 1992b. "Approche système et approche filière: quelle complémentarité pour dynamiser la recherche agronomique?: une analyse à travers l'exemple du maïs au Mali-Sud." Paper presented at the Farming Systems Seminar, Sikasso, Mali, November 17-21.

Témé, Bino and Duncan Boughton. 1992c. "Etude filière maïs: déroulement de l'enquête sur les caractéristiques et les habitudes de consommation des unités alimentaires du district de Bamako et organisation du suivi et des tests de produits à base de maïs." Note d'Information No. 1. Bamako: Ministère du Développement Rural et de l'Environnement, Institut d'Economie Rurale, Departement Planification Agricole et Economie Rurale, December. PN-ABS-887.

- **Other Publications for Food Security Research and Policy Community**

Boughton, Duncan, Ousmane Sanogo, Bino Témé, John Staatz, Thomas Reardon, and Eric Crawford. (forthcoming). "Perspective de la transformation et de la consommation des céréales sèches au milieu urbains." MSU International Development Working Paper.

Boughton, Duncan, Bino Témé, Ousmane Sanogo, John Staatz, Thomas Reardon, and Eric Crawford. (forthcoming). "Development Strategies for Maize in Mali: Using a

Commodity Subsector Perspective to Increase the Impact of Agricultural Research and Development." MSU International Development Working Paper.

Boughton, Duncan and John M. Staatz. 1994. "Using the Commodity Subsector Approach to Design Agricultural Research: The Case of Maize in Mali." Poster paper for the 1994 meetings of the International Association of Agricultural Economists in Harare, Zimbabwe. PN-ABS-947.

Boughton, Duncan, John M. Staatz, and James D. Shaffer. 1994a. "Analyzing the Impact of Structural Adjustment on Commodity Subsectors: Currency Devaluation and the Maize Subsector in Mali." Agricultural Economics Staff Paper No. 94-71. East Lansing: Michigan State University, October.

Boughton, Duncan, John M. Staatz, and James D. Shaffer. 1994b. "From Pilot Study to Commodity Subsector Economics Program: Institutionalizing a Market-Oriented Approach to Agricultural Research in Mali." Agricultural Economics Staff Paper No. 94-74. East Lansing: Michigan State University, November.

Dibley, David, Duncan Boughton, and Thomas Reardon. 1994. "Processing and Preparation Costs for Rice and Coarse Grains in Urban Mali: Subjecting an *Ipsa Dixit* to Empirical Scrutiny." Agricultural Economics Staff Paper No. 94-34. East Lansing: Michigan State University, June. PN-ABS-879. Also published in Food Policy, Vol. 20, No. 1, (February 1995): pp. 41-50.

Boughton, Duncan. 1993. "Applying Subsector Analysis: Maize in Mali." In *USAID Conference on Agricultural Marketing and Agribusiness in Africa: The Proceedings*. Washington, D.C.: USAID, Bureau for Africa, Office of Analysis, Research and Technical Support, Technical Paper No. 7, May, pp. 96-99.

Staatz, John. 1993. "Subsector Development and the Role of Technology." In *USAID Conference on Agricultural Marketing and Agribusiness in Africa: The Proceedings*. Washington, D.C.: USAID, Bureau for Africa, Office of Analysis, Research and Technical Support, Technical Paper No. 7, May, pp. 91-96.

Bernsten, Richard H. and John M. Staatz. 1992. "The Role of Subsector Analysis in Setting Research Priorities." Agricultural Economics Staff Paper No. 92-104 and Bean/Cowpea CRSP Socioeconomics Working Paper No. 92-4. East Lansing: Michigan State University, December. Paper presented at the USAID sponsored *Symposium on the Impact of Technology on Agricultural Transformation in Africa*, Washington D.C., October 14-16. PN-ABS-772.

Staatz, John M. and Richard H. Bernsten. 1992. "Technology Development and Household Food Security." Agricultural Economics Staff Paper No. 92-39 and Bean/Cowpea CRSP Socioeconomics Working Paper No. 92-2. East Lansing: Michigan

State University, June. Paper presented at the *Workshop on Social Science Research and the CRSPs*, University of Kentucky, Lexington, Kentucky, June 9-11. PN-ABQ-172.

- **Thesis by Research Team Member**

Boughton, Duncan Harvey. 1994. "A Commodity Subsector Approach to the Design of Agricultural Research: The Case of Maize in Mali." Ph.D. Dissertation, Department of Agricultural Economics, Michigan State University. (Statz was dissertation supervisor.)

5.3 Short Term Training and Collaborative Research Activities in Mali

All the research undertaken in this project was carried out collaboratively with researchers from IER. This collaboration is reflected in the large number of publications listed above that were jointly authored by IER and MSU researchers.

During the course of the research, the MSU in-country researcher provided in-service training to IER colleagues on data analysis techniques using SPSS/PC+. In addition, two IER researchers, Bino Témé and Ousmane Sanogo, each spent two weeks at MSU studying microcomputer analysis techniques and discussing their research with MSU campus-based staff. Their stays at MSU were financed independently of, but coordinated with, the activities of the add-on.

The initial rapid reconnaissance of the maize subsector was conducted collaboratively by researchers from IER, Cereals Market Information System (SIM), the National Institute for Research on Public Health (INRSP), the National School of Higher Education (ENSUP), and CMDT. Funding for this collaborative effort was provided through INSAH/PRISAS.

5.4 Long Term Training

In addition to its use in project reports and seminars, the data collected during the study served as the base for Duncan Boughton's Ph.D. dissertation in Agricultural Economics at MSU.

5.5 MSU Backstop Trips in Support of Mali Team

(Most trips were jointly financed with other MSU Mali add-ons to the Food Security II Cooperative Agreement, and staff time was split between supporting those activities and the Maize Subsector Study activities.)

January 1994, trip by Boughton to work with colleagues at IER on further analysis and brief USAID/Mali and PRMC on preliminary research results.

July 1993, Boughton leaves Bamako for return to East Lansing.

May-June 1993, trip by Staatz. Work on wrap-up of Boughton's field surveys, preparation of briefing for USAID/Mali, plans for continued field surveys by IER staff through the end of 1993 and coordination of analytical work in Bamako and East Lansing.

February-March 1993, trip by Reardon. Work on detailed design of consumption questionnaires and analysis of preliminary results from consumption surveys.

November 1992, trip by Staatz and Reardon. Help in design of ongoing Bamako consumption study; review and discussion of rapid-reconnaissance study results.

September 1992, trip by Staatz. Review and write-up of initial results of impact study. Development of research planning matrix for in-depth subsector study.

March-April 1992, trip by Staatz and Reardon to help with design of detailed research plan for subsector study. Review and comment on draft chapters of research impact report.

January 1992, Boughton arrives in Mali for long-term assignment with IER.

November 1991, trip by Staatz. Finalized administrative and logistical arrangements (including vehicle purchase) for longer-term maize subsector study. Worked with Boughton and IER colleagues to develop initial research plan and timetable for surveys.

October 1991, trip by Boughton and Staatz. Finalized MOU for longer-term maize subsector study. Made contact with other collaborating institutions (CMDT, SIM, INSAH) and enlisted their support. Drafted initial chapters of research impact report. Boughton stayed on through November, 1991.

July 1991, trip by Boughton and Henry de Frahan. Collected secondary data on maize research and made initial contacts with IER field researchers.

May 1991, trip by Staatz and Weber. Initial contacts with IER officials concerning carrying out a collaborative study of impact of maize research in Mali. Drafting of provisional Memorandum of Understanding (MOU) with IER to cover the research.

5.6 Examples of Impact of Project Findings/Information

As part of its Long-Term Strategic Plan for Agricultural Research in Mali, in 1991 IER had proposed using the subsector approach as a tool for organizing its agricultural research program. However, prior to the maize study, IER had never carried out a subsector study. The project therefore provided a "hands-on" practical experience that served as the basis for the detailed design of the subsector economics subprogram developed by IER in 1993.

Under this subprogram, IER will launch studies on the rice, groundnut, and livestock subsectors in 1994.

The study's findings served as input to conceptualization of the processing component of the PRMC Phase IV multi-donor assistance program to the government of Mali.

The project represented the first IER study co-financed by PRMC in response to an IER initiative. It thus represented the first time the multi-donor group had relied upon IER's analytic capacity to help influence the design of the cereals market reform program.

The project was the first IER study involving collaborative effort by social scientists, technical scientists, and the private sector other than farmers.

5.7 Surveys Undertaken in Mali

Surveys undertaken during the study include:

A rapid reconnaissance of the entire subsector (jointly supported by INSAH/PRISAS), involving researchers from IER, CMDT, INRSP, ENSUP, and OPAM/SIM.

A rapid reconnaissance of the fresh maize subsector.

A rapid reconnaissance of the animal feed-mixing industry in Bamako.

An in-depth study of cereals consumption in Bamako. General information on cereals consumption patterns was collected during a one-shot survey of 640 households in Bamako. More in-depth studies were carried out with a subset of 140 of these households. These studies involved collecting additional periodic information on cereals consumption patterns and conducting consumer tests of new processed cereals products.

Surveys were also conducted of small neighborhood cereals mill operators in the same neighborhoods where the urban consumption studies took place.

In addition, the study team analyzed field data collected by others (IER farming systems teams and CMDT) on farm-level production constraints and conducted laboratory and cooking tests of various cereals flours.

Fact Sheet • MALI MARKET INFORMATION STUDY (SIM)

• FOOD SECURITY II COOPERATIVE AGREEMENT •
between
• U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT and MICHIGAN STATE UNIVERSITY •
• IN-COUNTRY TIME PERIOD: JULY 1987-DECEMBER 1994 ••

1. Cooperating Institutions

Office des Produits Agricoles du Mali (OPAM), Bamako, Mali
Agency for International Development, Mali Mission (USAID/Bamako)
Agency for International Development, Global Bureau, Economic Growth Center, Office of
Agriculture and Food Security (AID/G/EG/AFS)
Mali Multi-Donor Funded Cereals Market Restructuring Program (PRMC)
Department of Agricultural Economics, Michigan State University (MSU)

2. Researchers Involved

OPAM: Salifou Diarra, Ely Diarra, Mamadou Fané, Aguisa Maiga, Francis Keita, Kader
Sanankoua, Pierre Traoré, and Mamadou Niane
PRMC: Abdramane Traoré
MSU In-Country Researchers: Niama Nango Dembele, Eleni Gabre-Madhin, and James Tefft
MSU Campus Backstop: John Staatz and Michael Weber

3. Objective of the Research

Provide applied research assistance to the Malian government and USAID/Mali to strengthen the empirical foundations of ongoing cereal market reforms and help establish a cereals market information system based at OPAM. Monitor the impact of government policies, such as devaluation, on the performance of cereals markets.

4. Research Approach

Research assistance to the Malian government to help it establish a cereals market information system (SIM) based at the cereal marketing board, OPAM. Niama Nango Dembélé had major responsibility for providing the initial assistance. Eleni Gabre-Madhin, an MSU graduate student, also worked with the SIM in 1990 on a study of Malian grain exports. Her research was jointly funded by MSU and IFPRI. Since July 1991, Jim Tefft has worked in-country with SIM staff to improve the quality, coverage and timely reporting of market data collected, and to expand SIM's

ability to conduct policy-level studies to inform selected market reform and market development issues.

Overall assistance provided through this FS II add-on has allowed the Malian SIM to begin regular weekly market reporting on over 50 cereals markets throughout Mali beginning in late 1988. Weekly reports are broadcast on national radio and television, fortnightly reports are published in the Malian daily newspaper, *L'Essor*, and the SIM also issues weekly and monthly reports to various government and donor agencies and to PVOs. In addition, the SIM publishes a semi-annual (previously a quarterly) bulletin containing more detailed analysis of cereal market conditions throughout Mali, as well as occasional papers providing more in-depth analysis of market structure and performance. The Malian SIM is now considered by most observers to be most highly developed cereal market information system in the Sahel.

5. Outputs to Date

5.1 Oral Presentations for African Researchers and Policy Makers

Oral presentations of research findings have been presented at the following meetings:

- **Within Mali:**

Presentations have been made to a number of national conferences in Mali, including:

National Cereals Policy Conference, Bamako, June 1993.

National Rice Subsector Conference, Ségou, February 1990.

National SIM Seminar, Bamako, 1989.

National Market Information System Workshop, Bamako, December 1988.

National Cereals Policy Conference, Bamako, June 1988.

The SIM presents informal research presentations regularly to the PRMC technical committee. It also prepares, on demand, special reports for various government ministries.

- **Outside of Mali**

February 1994. USAID/Africa Bureau, Sahel/West Africa Office and ARTS/FARA. Presentation on "Designing Food Security Strategies in a Rapidly Changing Social, Political, and Economic Environment: Challenges for the Sahel (with special emphasis on CFA devaluation)." Presentation by Staatz, Kelly, and Reardon.

February 1990. Nango Dembélé made a presentation to the National Seminar on Price Collection and Usage in Mauritania. Both Dembélé and John Staatz have also advised the SIM in Chad based on experiences learned from the Malian SIM. Analysts from a number of SIMs from neighboring countries have also visited the Malian SIM to learn from the Malian experience with market information systems.

5.2 Written Outputs for Malian Agencies and Policy Makers

- **Statistical Reports**

Applied research assistance provided by the project to the Malian Cereals Market Information System (SIM) has helped the SIM publish regular weekly, monthly, and semi-annual market reports. The semi-annual (formerly quarterly) Bulletin d'Information sur le Marché Céréalière en République du Mali is widely read in donor, government, and PVO offices in Mali.

- **Working Papers**

Tefft, James. 1994. "A Review of the MSU Support Project to the *Système d'Information du Marché* and Suggestions for Future Activities." Report submitted to the USAID at the conclusion of the project. Bamako: Ministère des Finances et du Commerce, Office des Produits Agricoles du Mali, Système d'Information du Marché, December.

Tefft, James. 1994. "Bilan des activités liées à la nouvelle méthodologie et le système informatique et quelques suggestions pour l'évolution future du SIM." Report submitted to the SIM at the conclusion of the project. Bamako: Ministère des Finances et du Commerce, Office des Produits Agricoles du Mali, Système d'Information du Marché, December.

Traoré, Abdramane and Salif B. Diarra. 1994. "Analyse des quantités collectées et de la représentativité de l'échantillon des marchés SIM." Bamako: Ministère des Finances et du Commerce, Office des Produits Agricoles du Mali, Système d'Information du Marché, December.

Aldridge, Kimberly M. and John M. Staatz. 1993a. "A Framework for Analyzing the Design and Evolution of the Cereals Market Information System in Mali." Agricultural Economics Staff Paper No. 93-55. East Lansing: Michigan State University, October. PN-ABS-775.

Aldridge, Kimberly M. and John M. Staatz. 1993b. "Lignes directrices pour l'analyse de la structure et de l'évolution du système d'information du marché des céréales au Mali." Agricultural Economics Staff Paper No. 93-55F. East Lansing: Michigan State University, November. PN-ABS-776.

Aldridge, Kimberly M. and John M. Staatz. 1993c. "A Framework for Analyzing the Design and Evolution of Public Market Information Systems: Insights from Mali." Paper submitted to the selected paper competition for the 1994 meetings of the International Association of Agricultural Economists in Harare, Zimbabwe. PN-ABS-959.

Gabre-Madhin, Eleni Z., Salifou B. Diarra, and John M. Staatz. 1992. "La problematique des coûts de transfert dans le cadre de la commercialisation des céréales au Mali." Etude de Cas No. 2. Bamako: Ministère de l'Economie, des Finances, et du Plan, Office des Produits Agricoles du Mali, Système d'Information du Marché, September. PN-ABT-280.

Staatz, John, N. Nango Dembélé, and Kimberly Aldridge. 1992. "The Role of Market Information Systems in Strengthening Food Security: Lessons from Mali." Agricultural Economics Staff Paper No. 92-60E. East Lansing: Michigan State University, July. PN-ABS 769. **French version:** "Le rôle des SIMs dans le renforcement de la sécurité alimentaire: les leçons tirées de l'expérience du Mali." Agricultural Economics Staff Paper No. 92-60F. East Lansing: Michigan State University, July. PN-ABS-770. Also published in COMAC, Dabats Techniques. Dossier No. 2. Paris: Réseau Stratégies Alimentaires, 1992.

Staatz, John M. and N. Nango Dembélé. 1992. "Has AID's Investment in Market-Facilitating Services Had an Impact?" Agricultural Economics Staff Paper No. 92-93. East Lansing: Michigan State University, December. PN-ABS-771.

Traoré, Abdramane, James F. Tefft, and Francis Keita. 1992. "Pourquoi les prix des céréales sont-ils tellement élevés dans la région de Kayes?" Etude de Cas No. 1. Bamako: Ministère de l'Economie, des Finances et du Plan, Office des Produits Agricoles du Mali, Système d'Information du Marché, March. PN-ABT-276.

Dembélé, Niama Nango, John M. Staatz, and Johny Egg. 1990. "L'expérience du Mali." Paper presented at CILSS/Club du Sahel Conference on Cereals Market Information Systems in the Sahel, Bamako, Mali, 23-25 April, 1990. Paris: Club du Sahel. PN-ABS-942. **English version:** "The Experience of Mali." PN-ABS-941.

Gabre-Madhin, Eleni Z. and Salifou B. Diarra. 1990. "La commercialisation des céréales exportées du Mali: situation-structure-performance." Document de Travail No. 1-90. Bamako: Ministère des Finances et du Commerce, Office des Produits Agricoles du Mali, Division Système d'Information du Marché (S.I.M.), Institut International de Recherche sur les Politiques Alimentaires (IFPRI), and Michigan State University, August.

Gabre-Madhin, Eleni Z. and Aguisa B. Maiga. 1990. "Analyse des marges de commercialisation des marchés céréaliers du Mali: implications pour les échanges régionaux." Document de Travail No. 2-90. Bamako: Ministère des Finances et du Commerce, Office des Produits Agricoles du Mali, Division Système d'Information du

Marché (S.I.M.), Institut International de Recherche sur les Politiques Alimentaires (IFPRI), and Michigan State University, August. PN-ABS-878.

Dembélé, N. Nango. 1989. "Les opinions des commerçants de Bamako sur le système d'information du marché céréalier." Note d'Information 89-01. Bamako: Projet Sécurité Alimentaire MSU-CESA-USAID, May. PN-ABT-260.

Dembélé, Niama Nango and John M. Staatz. 1989. "Transparence des marchés céréaliers et rôle de l'état: la mise en place d'un système d'information des marchés au Mali." Paper presented at European Agricultural Economics Association Seminar in Montpellier, France, May 29-June 2. Agricultural Economics Staff Paper No. 89-83. East Lansing: Michigan State University, May. PN-ABS-759. **English Version:** "Market Transparency and the Role of the State: The Establishment of a Market Information System in Mali." Agricultural Economics Staff Paper No. 89-83-E. East Lansing: Michigan State University, November. PN-ABS-760.

Dembélé, Niama Nango and Philip Steffen. 1988. "Approche méthodologique pour la mise en place d'un système d'information au Mali." Document de Travail No. 88-01. Bamako: Projet Sécurité Alimentaire MSU-CESA-USAID, March.

- **Theses Written by Project Researchers and Collaborators**

Dembélé, Niama Nango. 1994. "Economic Analysis of Traders' Response to Cereals Market Reforms in Mali." Ph.D. Dissertation, Department of Agricultural Economics, Michigan State University. (Staatz was dissertation supervisor.)

Diarra, Salifou Bakary. 1994. "The Role of Small Rice Mills in the Rice Subsector of the Office du Niger, Mali." Plan B Paper, Department of Agricultural Economics, Michigan State University. (Staatz was thesis supervisor.)

Aldridge, Kimberly M. 1992. "A Framework for Analyzing Alternative Institutional Arrangements for the Cereals Market Information System in Mali." Master's Thesis, Department of Agricultural Economics, Michigan State University. (Staatz was thesis supervisor.) PN-ABS-915.

Gabre-Madhin, Eleni Zaude. 1991. "Transfer Costs of Cereals Marketing in Mali: Implications for Mali's Regional Trade in West Africa." Master's Thesis, Department of Agricultural Economics, Michigan State University. (Staatz was thesis supervisor.) PN-ABS-945.

- **Journal Articles about the Malian SIM**

Afrique - Etats Unis, December 1991. ("Libéralisation du marché des céréales.")

Front Lines, February 1991. ("Malian Grain Traders Learn to Harness Market Forces.")

5.3 Short Term Training and Collaborative Research Activities in Mali

MSU in-country researchers have provided ongoing in-service training to SIM analysts in economic and statistical analysis and the use of various software packages (e.g., WordPerfect, SPSS/PC +, Lotus, Harvard graphics). MSU on-campus staff have developed French translations of training documents for many of these packages. MSU in-country staff have also helped train SIM enumerators in the research methods developed under the project for collecting improved price and quantity information.

The project supported the participation of one of the SIM analysts, Pierre Traoré, at the University of Michigan's summer seminar in development economics. This is a 6-week program, taught in French in Ann Arbor, on economics and policy analysis in developing countries. Mr. Traoré then spent an additional week in East Lansing studying SPSS/PC + and discussing research on market information with MSU campus-based staff.

Almost all the research carried out under this add-on is done collaboratively by MSU and SIM staff. This is reflected in the large number of publications listed above that were jointly authored by MSU and SIM staff.

5.4 Long Term Training for Malian Researchers

USAID/Mali has supported the long-term training of four SIM analysts at MSU. This training has been financed independently of, but in coordination with, the activities carried out under the add-on. The training has included:

Name	Dates	Topics Studies	Training Institutions
Moulaye Ely Diarra	June 1991-Aug. 1993	Computer hardware and software; agricultural marketing	MSU, Institute of Agricultural Technology; Lansing Community College
Salifou Diarra	June 1991-Feb. 1994	Agricultural Economics (M.S.)	MSU, Dept. of Agricultural Economics
Francis Keita	Sept. 1993-Sept. 1995	Applied statistics, agricultural economics, computer software	MSU, Institute of Agricultural Technology; Lansing Community College
Abdel Kader Sanankoua	Sept. 1993-Sept. 1995	Agricultural Economics (non-degree program)	MSU, Dept. of Agricultural Economics

Three other MSU graduate students have based their theses in agricultural economics on research carried out with the SIM: Kim Aldridge (M.S., 1993), N. Nango Dembélé (Ph.D., 1994), and Eleni Gabre-Madhin (M.S., 1991). These studies have helped train American (Aldridge), Malian (Dembélé) and Ethiopian (Gabre-Madhin) analysts about cereals marketing issues in the Sahel.

5.5 MSU Backstop Trips in Support of Mali Team

Most trips were jointly financed by other MSU Mali add-ons, and staff time was split between supporting those activities and SIM activities.

July 1994, trip by Staatz. Worked with SIM colleagues, including Tefft, on the SIM's program of work through December 1994, when MSU's joint work with SIM under FSII ends. Discussed longer-term MSU-SIM links via PRISAS as well as methodological and staff-development issues for the SIM over the longer run.

September 1993, trip by Staatz. Helped SIM develop plans for an internal strategic planning exercise. Set priorities with Tefft on tasks for him to accomplish before his departure from the SIM in early-mid 1994. Discussed possible creation of SIM users' advisory panel. Reviewed draft SIM documents.

May-June 1993, trip by Dembélé (largely funded by Rockefeller Foundation). Collected additional information on how traders have responded, in terms of investments and employment, to liberalization. Participated in National Cereals Policy Seminar, reporting results of ongoing research to this body.

May-June 1993, trip by Staatz. Discussed plans for future restructuring of the SIM in light of the National Cereals Policy Seminar, which was to take place at the end of June. Finalized training plans for Keita and Sanankoua. Discussed alternative publication formats for SIM reports.

September 1992, trip by Staatz. Planning of SIM training needs for Francis Keita and Kader Sanankoua, the next two SIM analysts designated for overseas training. Review new methodology for collection of quantity data. Review of draft publications on the rice trade. Work with SIM staff on longer-term plan for work on the rice subsector. Finished revisions on SIM report by Gabre-Madhin, Diarra, and Staatz on Mali grain exports.

July-August 1992, short-term trip by Moulaye Ely Diarra and Salifou Diarra. Moulaye Diarra assessed SIM computer programming, data management, and hardware maintenance needs. Salifou Diarra conducted rapid reconnaissance study of small rice mills in Office du Niger zone.

March-April 1992, trip by Staatz. Worked with SIM staff on methodological issues, reviewed draft publications, and helped in revision of long-term staff-development plan.

November 1991, trip by Staatz. Delivery and set-up of new computer equipment. Follow-up work on ways of measuring market quantities and conversion of price data collected using non-standard measures.

October 1991, trip by Staatz. Work with SIM staff on developing improved methods for collecting quantity data. Identification of topics for future market structure studies. Review of draft report on causes of high grain prices in the Kayes region. Discussion of SIM annual work plan.

July 1991, short-term trip by Dembélé. Work with Tefft in implementing more efficient data entry and analysis procedures for the SIM; conduct surveys on continuing evolution of the cereals wholesale trade.

July 1991, Tefft arrives to begin long-term assignment with the SIM.

June 1991, departure of Salifou Diarra and Moulaye Ely Diarra from SIM for long-term training in the U.S.

May 1991, trip by Staatz and Weber. Negotiation with OPAM and USAID/Mali of an Memorandum of Understanding to cover activities of Jim Tefft as MSU researcher/assistant based at the SIM. Development of terms of reference for Tefft's activities. Finalize add-on proposal to fund this activity.

December 1990, Dembélé returns to MSU for Ph.D. study (funded by Rockefeller Foundation).

December 1990, trip by Staatz. Negotiate add-on with mission for continued backstopping of SIM after departure of Dembélé (in December, 1990). Work with PRMC to help renew contract of Abdramane Traoré. Also stopped in Paris on way to Bamako to participate in meeting of COMAC, a network linking SIMs throughout Africa.

April-May 1990, trip by Staatz. Participation in CILSS/Club du Sahel Regional Seminar on Market Information Systems in the Sahel. (See publication list for paper presented.) Work with SIM on refining long-term staff development plan. Discuss training plans for SIM staff with USAID/Mali. Help launch collaborative research of Gabre-Madhin and SIM.

April 1990, Eleni Gabre-Madhin arrives for 5-month collaborative study with SIM on Malian grain exports.

February 1990, trip by Whitney Alexander. Development of improved techniques for file management and automated analysis of data. Documentation of SIM's data entry and management procedures and development of systematic back-up procedures.

October 1989, trip by Staatz. Help in wrap-up of current phase of MSU support to SIM. Review of SIM's draft quarterly report and discussion of future research support needs.

August 1989, trip by Scott Loveridge. Training of SIM staff in SPSS/PC+. Help in organizing computer files.

May-June 1989, trip by Staatz. Review of SIM's draft quarterly bulletin; co-authored paper with Dembélé on Malian experience in establishing the SIM (later given in Montpellier, France--see publication list). Review of draft paper by Steffen and Dembélé on the regulatory environment facing Malian cereals traders. Discussion with USAID/Mali of continued support for SIM after 1989.

January-February 1989, trip by Staatz. Work on design of ongoing market analyses and development of diffusion strategy for SIM reports. Work with SIM staff on a long-term staff development plan. Help in analyzing SIM budget, medium and long-term logistical needs, and technical support needs.

September 1988, trip by Staatz. Work with SIT staff on research methods, design of first official market bulletin, and preparation for upcoming national conference on design of a permanent SIM. Installation of new computer equipment.

June 1988, trip by Staatz. Work with transitional SIM (SIT) staff on market survey design and analysis. Help with design of prototype market bulletin.

December 1987, trip by Staatz and Weber. Review of survey results on potential host institutions. Negotiation of draft MOU with OPAM for work on establishing a market information system.

September 1987, trip by Staatz. Work with MSU team and USAID/Mali to identify potential Malian government organizations to house market information system. Design of surveys on information collected by various organizations and on potential clients' information needs.

5.6 Examples of Impact of Project Findings/Information

Capacity Building-- The project has institutionalized within the Malian government a capacity to carry out timely analyses of marketing policy issues, such as the impact of devaluation on cereals markets.

Import Policies-- SIM findings that prices were higher in the region of Kayes stimulated widespread discussion of this phenomenon in the press. Subsequent investigation by both the SIM and the Malian daily newspaper (L'Essor) focused on how import policies raised cereals prices, especially for rice. Policies were subsequently changed to allow freer imports.

Marketing Margins-- Econometric analysis indicates that gross cereals marketing margins between the main coarse-grain surplus-producing region of the south CMDT zone and Bamako fell by 21% over the period 1986-92, which covers the first years of the SIM's existence. This statistical evidence is consistent with anecdotal reports from both farmers and traders that the SIM radio broadcasts have fundamentally changed bargaining relationships between traders and farmers, forcing traders to offer more competitive prices in isolated rural markets.

Interviews with traders also indicate that SIM broadcasts of wholesale prices has strengthened the bargaining position of the newly-entered itinerant assemblers who buy in rural markets and sell in capital cities vis-a-vis the large, more established wholesalers.

Statistical evidence also shows that in the year following the start of SIM price reports on the radio, the average margin between retail markets in Bamako fell and subsequently became more stable.

Food Aid Releases-- Following the March 1991 coup d'état, there was widespread looting of grain warehouses in Bamako. The transition government, fearing food shortages, requested the PRMC to release emergency stocks into the market. The PRMC agreed, but only if SIM reports showed continuing food shortages and high prices in the markets. The SIM reports indicated, however, that prices actually fell in the weeks following the coup, as looters sold the pillaged goods. SIM reports, by helping avoid the release of additional stocks onto the market, helped to limit further losses by cereals traders as a result of the civil unrest.

Monitoring the Impact of Devaluation-- On January 12, 1994, the CFA franc was devalued for the first time since 1948. At the request of the Minister of Economics and Finance, the SIM has begun monitoring key markets more frequently and is issuing "flash" reports that monitor the impact of the devaluation on cereals markets.

Fact Sheet • MOZAMBIQUE STUDY

• FOOD SECURITY II COOPERATIVE AGREEMENT •
between
▶ U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT and MICHIGAN STATE UNIVERSITY ◀
▶ TIME PERIOD: OCTOBER 1990 - AUGUST 1997◀◀

1. Cooperating Institutions

Directorate for Rural Economics, Ministry of Agriculture, Mozambique
Agency for International Development, Mozambique Mission (USAID/Maputo)
Agency for International Development, Global Bureau, Economic Growth Center, Office of
Agriculture and Food Security (AID/G/EG/AFS)
Department of Agricultural Economics, Michigan State University (MSU)

2. Researchers Involved

Ministry of Agriculture: Eduardo Oliveira

MSU In-Country Researchers: Raul Jorge Varela-Director, David Tschirley-Research
Coordinator, Rui Manuel dos Santos Benfica, Higinio Francisco De Murrule, Ana Paula
Manuel Santos, Anabela Christina da Conceição Mabota, Pedro Arlindo and Jose Jaime Jeje

MSU Campus Backstop: Michael Weber, Cynthia Donovan, and Paul Strasberg

3. Objective of the Research

Analyze the effect of recent market adjustments on incentives facing traders and producers. Also to assist the Government of Mozambique in establishing a pilot market information system within the Directorate for Rural Economics, Ministry of Agriculture.

4. Research Approach

Conduct rapid market appraisals in selected markets to understand effects of recent market adjustments. Later to survey traders and farmers in these market areas on effects of changes in rules and government policies. Establish a pilot agricultural market information system.

5. Outputs to Date

5.1 Written Outputs

- **Statistical Reports**

The project produces monthly market bulletins for general distribution, weekly radio reports, and weekly market briefings for USAID and the U.S. Embassy.

Boletim Mensal de Informacao do Mercado

	1991	1992	1993	1994	1995	1996
Jan		X	X	X	X	X
Feb		X	X	X	X	
Mar		X	X	X	X	
Apr		X	X	X	X	
May		X	X	X	X	
Jun	X	X	X	X	X	
Jul	X	X	X	X	X	
Aug	X	X	X	X	X	
Sep	X	X	X	X	X	
Oct	X	X	X	X	X	
Nov	X	X	X	X	X	
Dec	X	X	X	X	X	

Boletim Anual de Informacao do Mercado, Maio 1992.

- **Working Papers**

PSA MA/MSU Research Team. "Small Holder Cash Cropping, Food Cropping and Food Security in Northern Mozambique: Research Methodology." Working Paper No. 22, February 1996.

PSA MA/MSU Research Team. "O Sector da Castanha de Caju - Lucros Potenciais Perdidos por Africa?" (**Reimpresão**) Working Paper No. 21, November 1995.

PSA MA/MSU Research Team and Department of Statistics, Ministry of Agriculture. "Diagnóstico da Estrutura, Comportamento e Desempenho dos Mercados Alimentares Rurais de Moçambique." Working Paper No. 19, 4 de Julho de 1995. PN pending.

PSA MA/MSU Research Team. "Inquerito ao Sector Moageiro de Pequena Escala em Mocambique: Observacoes Metodologicas." Working Paper No. 20, January 1995.

PSA MA/MSU Equipa de Pesquisa. "Quem Come Milho Amarelo? Alguns Resultados Preliminares de um Inquérito sobre as Preferências do Consumidor de Farinha de Milho na Cidade de Maputo." Working Paper No. 18P, Novembro 1994.

Ministry of Agriculture/Mozambique. "Who Eats Yellow Maize? Some Preliminary Results of a Survey of Consumer Maize Preferences in Maputo." Working Paper No. 18, October 1994.

PSA MA/MSU Equipa de Pesquisa. "Padroes de Distribuicao de Terras no Sector Familiar em Mocambique: A Similaridade entre duas Pesquisas Distintas e as Implicacoes para a Definição de Politicas." Working Paper No. 17, May 1994. PN ABS 749.

Ministry of Agriculture/Mozambique. "The Evolution of the Rural Economy in Post-War Mozambique: Insights from a Rapid Appraisal in Monapo District of Nampula Province." Working Paper No. 16, January 1994. PN ABS 371.

"Politica de Precos d distribuicao da ajuda alimentar de milho amarelo em Mocambique: Uma analise de alternativas." 25 November 1993. PN ABS 410.

Ministry of Agriculture/Mozambique. "The Pricing and Distribution of Yellow Maize Food Aid in Mozambique: An Analysis of Alternatives." Working Paper No. 12, October 1993. PN ABS 745.

Ministry of Agriculture/Mozambique. "Determinantes do Rendimento e Consumo Familiar nas Zonas Rurais da Provincia de Nampula: Implicações para a Segurança Alimentar e as Reformas de Política Agrária." (Translated from English.) Working Paper No. 6P, August 1993. PN ABS 743.

Ministry of Agriculture/Mozambique. "The Determinants of Household Income and Consumption in Rural Nampula Province: Implications for Food Security and Agricultural Policy Reform." Working Paper No. 6, August 1993. PN ABS 742.

Ministry of Agriculture/Mozambique. "Mini-SIMA e Análises Específicas: Um Ensaio Aplicado aos Mercados de Maputo." Working Paper No. 15, July 1993. PN ABS 748.

Ministry of Agriculture/Mozambique. "O Estudo do Mercado de Maputo: Observações Metodológicas." (Translated from English.) Working Paper No. 9P, June 1993. PN ABS 744.

Ministry of Agriculture/Mozambique. "The Organization, Behavior, and Performance of the Informal Food Marketing System." Working Paper No. 10, May 1993. PN ABS 411.

Ministry of Agriculture/Mozambique. "The Maputo Market Study: Research Methods." Working Paper No. 9, March 1993. PN ABS 638.

Dengo, Maria Nita, "Household Expenditure Behavior and Consumption Growth Linkages in Rural Nampula Province, Mozambique," M.Sc. Thesis, Dept. of Agricultural Economics, Michigan State University (**Reprint**). December 1992. PN ABS 943.

Ministry of Agriculture/Mozambique. "Inquérito ao Sector Familiar da Província de Nampula: Comercialização Agrícola." Working Paper No. 4, January 1992. PN ABS 738.

Ministry of Agriculture/Mozambique. "A Socio-Economic Survey in the Province de Nampula: Agricultural Marketing in the Smallholder Sector." (Translated from Portuguese.) Working Paper No. 4E, January 1992. PN ABS 739.

Ministry of Agriculture/Mozambique. "A Socio-Economic Survey in the Province of Nampula: Cotton in the Smallholder Economy." (Translated from Portuguese.) Working Paper No. 5E, January 1992. PN ABS 740.

Ministry of Agriculture/Mozambique. "A Socio-Economic Survey of the Smallholder Sector in the Province of Nampula: Research Methods." (Translated from Portuguese.) Working Paper No. 3E, January 1992. PN ABS 737.

Ministry of Agriculture/Mozambique. "Inquérito ao Sector Familiar da Província de Nampula: Observações Metodológicas." Working Paper No. 3, November 1991. PN ABS 736.

Ministry of Agriculture/Mozambique. "Inquérito ao Sector Familiar da Província de Nampula: O Algodão na Economia Camponesa." Working Paper No. 5, November 1991. PN ABS 741.

Ministry of Agriculture/Mozambique. "Informing the Process of Agricultural Market Reform in Mozambique: A Progress Report." Working Paper No. 1, October 1990. PN ABS 734.

Ministerio Do Comercio, Departamento De Seguranca Alimentar Republica Popular De Mocambique "Situacao Actual Dr. Producao, Consumo E Avaliacao Nutricional Na Cidade

De Nampula - Pesquisa" Maputo, Agosto De 1990. (The UZ/MAU project contributed computer software and training to facilitate the production of this report.)

Ministry of Agriculture/Mozambique. "A Pilot Agricultural Market Information and Analysis System in Mozambique: Concepts and Methods." PN ABS 735.

Liedholm, Carl and Donald Mead, "Role of Microenterprises, Small-scale Enterprises: a Profile," in Economic Impact: A Quarterly Review of World Economics, No. 63 (**Reprint**). Working Paper No.14. PN ABS 746.

Liedholm, Carl and Donald Mead, "Pequenas Empresas: Um Perfil," em Economic Impact: A Quarterly Review of World Economics, No. 63 (**Reprint, translated from English**). Working Paper No.14P. PN ABS 747.

- **Thesis**

Mole, Paulo, "An Analysis of Cashew Subsector Development Opportunities and Linkages to Food Security," Ph.D. Dissertation forthcoming, August 1997.

Benfica, Rui, "An Analysis of Small Enterprise Development Issues and Food Security," M.Sc. Thesis forthcoming, August 1997.

Marrule, Higino, "An Analysis of Relationships between Access to Land and Food Security Among Smallholders in Mozambique," M.Sc. Thesis forthcoming, May 1997.

Donovan, Cynthia, "The Effects of Monetized Yellow Maize Food Aid on Local Maize Prices in Mozambique," Ph.D. Dissertation forthcoming, February 1996.

Strasberg, Paul, "An Analysis of Cash Cropping, Food Cropping and Food Security in Northern Mozambique," Ph.D. Dissertation forthcoming, December 1996.

Dengo, Maria Nita, "Household Expenditure Behavior and Consumption Growth Linkages in Rural Nampula Province, Mozambique," M.Sc. Thesis. December 1992. PN ABS 943.

- **Journal Articles**

Tschirley, David, Cynthia Donovan and Michael T. Weber. 1996. "Food Aid and Food Markets: Lessons from Mozambique." *Food Policy*, Forthcoming April 1996.

Tschirley, David and Michael T. Weber. 1994. "Food Security Strategies Under Extremely Adverse Conditions: The Determinants of Household Income and Consumption in Rural Mozambique." *World Development*, Vol. 22, No.2 (February). PN ABT 298.

5.2 Oral Presentations

- **Progress/Planning Meetings**

Raul Varela, along with Drs. Tschirley and Weber, held a series of meetings with USAID/Maputo and Ministry of Agriculture staff during the period January-April 1995 to develop an extension of the project through the period January 1996 until August 1997.

Dr. Tschirley held a meeting in East Lansing on September 22, 1994 with Jean Paul Chausse and Hilmar Hilmarsson of the World Bank on food markets and cotton production and marketing. Agreed to collaboration between MSU/AID/WB.

Dr. Weber, along with Raul Varela, held meetings during April 1994 with Ministry of Agriculture and USAID/Maputo about proposed project research and policy dialogue activities to be included in an extension for the period July 1994 through December 1995.

Drs. Tschirley and Weber, along with Raul Varela, held meetings during September 1993 to plan renewed rural and urban research activities and negotiate an extension of the project past December 31, 1993.

Drs. Tschirley and Weber, along with Raul Varela, held a series of meetings with USAID/Maputo personnel during summer 1992, to negotiate a one year extension of the project through December 31, 1993.

- **Research Presentations**

Various seminars to USAID/Maputo officials by Dr. Weber, Dr. Tschirley, and in-country team. Ongoing.

Raul Varela and David Tschirley assisted the Ministry of Commerce in preparing materials on marketing and pricing of food products to be presented to a Committee of the Parliament of Mozambique on Domestic Marketing Policy Issues. November and December 1995.

The entire in-country team, David Tschirley and Michael Weber assisted the World Bank in organizing and conducting national policy seminars on maize and cotton subsectors. The team assisted in the up-country workshops on maize in Nampula and Manica, and on cotton in Nampula. The team also participated actively in the workshops in Maputo. November 1995.

Paul Strasberg and Jose Jeje conducted various mini-seminars in Nampula about emerging results from the ongoing surveys among cash crop/food crop smallholders in Nampula and Cabo Delgado. June-November 1995.

Raul Varela, David Tschirley, and Ana Paula Santos conducted three mini-seminars with representatives of government organizations, donors, NGO's and private sector participants on food marketing issues, especially on those in the maize subsector. This is in collaboration with the World Bank office in Maputo, and in preparation for the WB sponsored workshop in maize to be held in November 1995. Conducted in September 1995.

Raul Varela, Michael Weber and Ana Paula Santos meet with Ministry of Commerce and USAID officials to present an updated assessment of maize market behavior and discuss alternative yellow maize pricing strategies. July 1995.

Raul Varela and other in-country team members presented research on food aid, market prices effects, and pricing of yellow maize to meeting organized by the Ministry of Commerce. This brought together food aid consignees, donors, and key government of Mozambique officials interested in Title III maize pricing issues. May 8, 1995.

Michael Weber, Cynthia Donovan and Ana Paula Santos presented research results on the effects of monetized food aid and local purchases of food aid on market prices in Mozambique to a meeting of donors and government officials organized by FAO/WFP. A major objective of this presentation was to call attention to the potential danger of purchasing too much local maize to be used for emergency food aid, and thus placing major upward pressure on maize market prices in the forthcoming 95/96 hungry season. April 1995.

Paul Strasberg and in-country team members presented seminars in each of the three rural household level research areas of Nampula and Cabo Delgado provinces. Seminars included provincial and local government officials, cotton company officials, and smallholders. January-April 1995.

In-country research team presented three seminars on results from the maize preferences study. Seminars were presented in the Ministry of Agriculture (DEA), USAID, and in selected neighborhoods where the survey was conducted. October and November 1994.

SIMA Research Team presented observations on food aid and food markets in Mozambique to USAID on September 8, 1994. Stress on role of informal sector and its risk-bearing role.

Raul Varela, Paul Strasberg and other in-country team members presented research results on land access in Nampula and comparisons to empirical research results from other Provinces at a national-level conference on land in Mozambique organized by the Ministry of Agriculture and the University of Wisconsin, held on May 25, 26 and 27, 1994.

Raul Varela and other in-country team members presented a series of three seminars to students of Eduardo Mondlane University, Faculty of Agronomy on various dimensions of food security and rural income growth. May 24 and 26, and June 5, 1994.

Raul Varela, Ana Paula Santos, Paul Strasberg and Michael Weber presented a one half day seminar to officials of the Ministry of Agriculture and private sector firms in Nampula on April 27, 1994. This covered results market analysis and the proposed new research on alternative investments and organizational arrangements to spark rural income growth in Northern Mozambique.

The in-country research team presented a seminar on the food aid pricing and distribution policy in Mozambique, December 9 and 10, 1993. Tema: "Politica de Precos e Distribuicao da ajuda alimentar de milho amarelo em Mocambique: Uma analise de Aternativas."

Drs. Tschirley and Weber made a presentation to USAID Africa Bureau ARTS/FARA research collaborators workshop on research results and future research priorities in Mozambique, December 1993.

Drs. Tschirley and Weber presented a seminar in Washington, D.C. to the USAID Africa Bureau staff on food aid pricing and distribution policy in Mozambique, December 1993.

Drs. Tschirley and Weber along with the in-country research team presented separate seminars on food aid pricing and distribution policy to the following four groups in Maputo: Donors, traders, researchers at Eduardo Mondlane University, and officials of the Ministry of Commerce, September 1993.

Dr. Tschirley and the in-country research team presented seminars in Nampula province and Maputo city on rural food security strategies and land access issues, during March 1993.

Dr. Tschirley presented a seminar to donors and GOM officials on reform of the food aid distribution system in April 1992.

Dr. Weber and Dr. Tschirley presented a seminar to USAID officials in Washington, D.C. on food aid reform, April 1992.

Dr. Weber presented a seminar on rural and urban research findings of the project at USAID/Maputo Cooperator's Workshop, January 1992.

The in-country research team presented a seminar on results of the Nampula Smallholder Survey in Nampula City in December 1991.

Dr. Michael T. Weber presented a seminar on food security in Southern Africa to a group of 30 Mozambican analysts and policy makers on October 28, 1989 at Hotel Rovuma, Maputo.

5.3 Short Term Training and Collaborative Research Activities

10 Mozambicans from the Ministry of Agriculture and Fishing and from the Cotton subsector participated during October 1995 in a Mali Study Tour. This activity arranged an organized study visit to Mali to learn about Malian experiences of market information/reform and commodity subsector (and research) reorganization, especially in a key cash crop (cotton) subsector and related food crop subsectors. These are areas of significant positive development in Mali and insights about how they were accomplished are of timely importance to current challenges and opportunities for change in the food system in Mozambique. Five of the participants were funded by the World Bank and five by the PSA-MA/MSU Food Security Project.

1 Mozambican staff member of the Statistics Department of the Ministry of Agriculture spent 1 month at MSU during November 1995. She learned word processing and SPSS software and participated in writing a report on the rapid appraisal of food markets in Mozambique.

2 Mozambican staff members participated in English Training in South Africa during November 1994.

1 Mozambican staff member spent 4 weeks at MSU during September and October 1994, learning data processing and analysis techniques while analyzing data and writing a report from the project's survey of consumer maize preferences in Maputo.

1 Mozambican staff member spent 4 weeks at MSU during July and August 1994, learning data processing and analysis techniques while analyzing data from the project's survey of small scale millers.

2 Mozambican staff members participated in an English Training workshop held in South Africa, November-December 1993.

1 Mozambican analyst received computer training in SPSS at MSU and collaborated with MSU researchers on the analysis of food aid pricing and distribution policy, May 1993.

4 Mozambican analysts participated with Dr. Weber and Dr. David Tschirley in the 1991 and 1992 Annual Conferences of Food Security Research in Southern Africa, sponsored by MSU/University of Zimbabwe.

5 Mozambican analysts participated in the Workshop on Socioeconomic Surveys: Concepts, Applications and Analyses, in Tucson, Arizona, September 16-October 11, 1991.

3 analysts from Mozambique participated in the Food Security Research Design and Data Analysis Short Course conducted at MSU during the month of January 1990.

5.4 Long Term Training

Rui Benfica started his M.S. degree training in Agricultural Economics at MSU in the Fall of 1995. (Atlas Program Funding)

Higino de Marrule completed studying English, Math and Statistics at Boulder, Colorado. He began his M.S. degree at MSU during Spring term 1995 (January). (Atlas Program Funding)

Paulo Mole began his Ph.D. degree at MSU during Fall term 1994. (Atlas Program Funding)

Maria Nita Dengo completed her MSc. in Agricultural Economics in December 1992, and returned to Mozambique. She is currently working within the Ministry of Agriculture.

5.5 MSU Backstop Trips to In-Country Team

November 1995: Weber trip to participate in projects collaborative efforts with the World Bank and the Ministry of Agriculture to conduct seminars on results of the studies of maize and cotton subsectors.

August 1995: Tschirley trip to assist team (and collaborate with the World Bank) in conducting mini-seminars on maize subsector research results and to assist the Nampula team in research implementation and data analysis.

June-July 1995: Weber trip to review progress on the market information system changes, to conduct food aid and maize market analysis updates and to assist the team in Northern Mozambique on implementation of the producer surveys.

June-August 1995: Paulo Mole (Mozambican Ph.D. student at MSU) trip to assist the in-country team to begin developing background information and undertake preliminary rapid appraisals on the cashew subsector.

May 1995: Tschirley trip to follow up on design and implementation of new producer price collection and to assist in-country team during training of market enumerators.

April 1995: Weber and Donovan trip to start pilot design of producer price collection for food market study.

January 1995: Tschirley trip to Nampula to help implement 2nd round of household data collection.

August-September 1994: Weber and Tschirley trip to help plan three seminars on Nampula work and plan with Ministry and USAID future collaborative research.

June 1994: Tschirley trip to assist in training of enumerators for first round of Nampula household data collection.

April 1994: Weber trip to assist local team in start-up research design and implementation activities in Nampula, and to dialogue with Ministry of Agriculture and USAID on future food security research needs.

March 1994: Strasberg trip to begin assisting local team in start-up of new farm level research activities in Nampula Province.

January 1994: Tschirley and Strasberg trip to present Rapid Appraisal report, consult with Ministry of Commerce and USAID on food aid policy reforms, and plan future research with Ministry of Agriculture and USAID.

September 1993: Tschirley and Weber trip to a) present results of food aid pricing and distribution study and b) finalize discussions with Mission regarding continued research and policy dialogue activities of the project.

August 1993: Strasberg trip to conduct rural household and rural market rapid appraisal, in preparation for launching renewed research program in late 1993.

July 1993: Weber trip to backstop Donovan in food aid study.

June-July 1993: Donovan trip to begin study of food aid pricing and distribution.

March/April 1993: Tschirley trip to present a) preliminary results from Maputo Market Study, b) further food security and land access results from Nampula Family Sector Household Survey, and c) begin discussions with mission regarding future research and policy dialogue activities.

September 1992: Tschirley trip to finalize Maputo Market Study.

July 1992: Weber trip to backstop Donovan and Strasberg in Maputo Market Study.

June-August 1992: Trip by graduate students Cynthia Donovan and Paul Strasberg to continue Maputo Market Study.

June 1992: Tschirley trip to launch Maputo Market Study.

April 1992: Tschirley trip to plan Maputo Market Study.

November 1991: Tschirley, Weber, and Fox (UA) trip to a) participate with project personnel in Seventh Annual Food Security Research in Southern Africa Conference, in Victoria Falls, Zimbabwe, and b) present preliminary findings from the Nampula Family Sector Household Survey in Maputo.

June-August 1991: Tschirley, Weber, Finan (UA), and Langworthy (UA) trips to a) finalize the launching of the SIMA, b) finalize questionnaires and logistics for Nampula Family Sector Household Survey, and c) conduct Nampula Family Sector Household Survey.

March/April 1991: Tschirley, Finan (UA) trip to a) continue development of SIMA and b) further plan the rural data collection efforts.

January/February 1991: Langworthy (UA) trip to continue development of SIMA.

January 1991: Weber trip to continue development of SIMA.

October/November 1990: Tschirley, Weber, Finan (UA) trip to begin planning field research activities and pilot market information system (SIMA).

5.6 Examples of Impact of Project Findings/Information

The project has been recognized as the number one source of information on food markets, marketing and food security in the country, and its information and analyses are widely solicited. Project team members' time is in constant demand for consultation with government officials, donors, and researchers.

The project is seen as a leader in Mozambique in demonstrating innovation in organizing and implementing applied research and policy dialogue activities. The cooperative effort with the World Bank during 1994 and 1995 to conduct studies and policy dialogue on maize and cotton subsector organization and policy is a good example of this. The joint product-in services training approach was adopted. It resulted in having PSA-MA/MSU staff cooperate closely with World Bank consultants. This assisted in getting more Mozambican involvement in the studies, in using considerable first hand empirical data on Mozambique in the analysis, in publishing more output in Portuguese and in holding mini-workshops in Maputo and up-country workshops prior to having the major policy seminars in Maputo. The end result was that the studies and the participatory policy dialogue process were well received by the Mozambican technical and policy maker community.

In the seminars and the reports on yellow maize food aid pricing and distribution policy, the team made recommendations that have been incorporated by USAID/Maputo, the

Government of Mozambique, and other donors into recent policy changes. This includes major price increases on yellow maize for the 1995-96 marketing period.

The project's work on rural food security has also earned it a reputation for careful, in-depth analysis of key issues such as smallholder land access, the effects of cotton growing on smallholder incomes and consumption, and the food security status of smallholders. The project's input was solicited by the government in September 1992, during a series of meetings meant to better define its agricultural strategy.

The project was officially commended by the USAID/Maputo Program Officer in Spring 1992, for outstanding research and timely and effective use of research results in support of policy and programming decisions by the Mission and the Government of Mozambique.

The new and innovative private sector newspaper in Mozambique "Mediafax" now publishes a weekly price information page with market price data from the project. Mediafax also makes periodic request to project analysts to write short articles on food security related matters, and to write short comments for publication on important economic policy changes in Mozambique.

5.7 Surveys Undertaken

Ongoing weekly SIMA surveys (price and qualitative assessments of supply) in 25 locations of eight provinces.

Collaboration with the University of Wisconsin land tenure project working in Northern Mozambique on household surveys in Nampula and Cabo Delgado. This collaboration occurred during January and February 1996, and will result in both LTC and MSU having access to a broader range of data for improved food security analysis.

Collaboration with CARE International on a household survey in selected districts of Nampula Province where the CARE Oilseeds Project is operating. CARE resources were used primarily for the field work in March 1995 and PSA-MSU resources were added to conduct a second round of the survey in July and August 1995.

Rapid appraisal surveys of rural food markets in several locations of the south, center, and north of the country, August-September 1994.

Village and Household Surveys in Nampula and Cabo Delgado Provinces. Fieldwork began in May 1994.

Survey of Maize Milling Establishments in SIMA market collection locations throughout Mozambique, May 1994.

Maize Preferences Survey, a random sample of 400 consumers in the City of Maputo, March and April 1994.

Rapid Appraisal in Monapo District of Nampula Province, focussing on changes in household mobility and access to land since the ending of the war in October 1992. September 1993.

Maputo Market Study, July/August 1992. A series of data collection activities involving the informal food marketing sector in Maputo.

Nampula Family Sector Household Survey, July/August 1991. 343 rural households in 15 villages of three districts of Nampula province.

6. General Research Activities

6.1 Prior to Peace Accords

Research activities prior to the ending of the civil war included a) rural food security research (the Nampula Family Sector Household Survey, b) research on the organization, behavior, and performance of urban food markets, and c) analysis of the effects of food aid on urban markets. The rural research addressed issues such as the determinants of income and consumption of smallholders, the role of cash cropping (primarily cotton) in smallholder food security strategies, and the performance of rural markets at the household level. Key findings highlighted the extensive failure of rural food and labor markets, the surprisingly unequal access to land among surveyed smallholders, and the extremely vulnerable position of most of those households with small amounts of land.

The urban food market research focused primarily on the informal food marketing sector in Maputo City, and its extension into the southern three provinces of the country (Maputo, Gaza, and Inhambane). Trader behavior and system performance were analyzed. Key findings were that the informal food marketing system is efficient in the sense that margins were generally in line with costs and profits were low. It was found that the sector was growing rapidly and increasingly integrating the southern portion of the country into a single food market. However, results also showed that the system was extremely small scale, that rapid entry and exit of traders inhibited the accumulation of knowledge for improving the system, and that prices were highly volatile.

The food aid research analyzed how the programming, pricing and distribution of commercial food aid, and the programming and distribution of emergency food aid affected consumers and the informal food marketing system in Maputo, and producers in southern areas of the country. Alternatives for the programming, pricing, and distribution of commercial food aid were proposed and adopted by USAID/Mozambique.

6.2 Since Peace Accords

Research since the ending of the hostilities has integrated the rural and urban work through a subsector research approach emphasizing maize and cash crops. The rapid appraisal of rural food markets in 1994 represented the first systematic examination of rural food markets in the country. The small-scale miller survey and consumer maize preferences survey added processing and consumer level dimensions to the research. Together, this research has shown that the rural food marketing system is expanding rapidly, reaching even remote areas of the north during years of regional deficit to supply central and southern cities; that the small-scale milling sector is likewise expanding vigorously; and that poor urban consumers are quite price sensitive, switching readily to yellow maize or whole meals as these are discounted relative to white maize and refined meals.

The on-going rural household research in Nampula and Cabo Delgado provinces has suggested significant differences in smallholder welfare depending on how cash cropping schemes are organized; it has also shown that mean land areas in the smallholder sector have increased, but that great inequality in land access continues to exist. Intensive analysis of this data, which is just now (February 1996) beginning, will examine more systematically the determinants of smallholder incomes and consumption in the context of different approaches to intensified cash cropping and food cropping. It will also examine key policy issues such as the extent of “distress sales” in the smallholder sector; the factors which leave some households land-poor and food-insecure; the relationship between degree of commercialization and food security; and the level of rural demand for maize milling services. Finally, all of this analysis will benefit from gender disaggregation, including specific analyses of the allocation of women’s time in the rural household.

The project will also conduct intensified analysis of SIMA price data. These analyses will focus on trends in real prices and price margins, seasonal price patterns, and market integration. This analysis will be complemented by sample survey and interview-based research on the evolution of the food marketing system.

The project will also conduct the first sample survey of Micro and Small Enterprises in Mozambique, quantifying the number of firms, principal activities, employment, and incomes by sector, in addition to providing information on constraints and opportunities for growth.

7. Outputs Anticipated

- **Working Papers**

“Cash Cropping, Food Cropping, and Food Security in Northern Mozambique: Research Methods”, early 1996

A series of working papers evaluating the relationship between cash cropping, food cropping, and food security, during the course of 1996

"A Study of Small Scale Maize Milling in Mozambique: Findings and Policy Implications," Late 1996.

"The Contribution of Micro and Small Enterprises to Income Growth in Mozambique", Late 1996

"Land Access in the Smallholder Sector in Northern Mozambique: How Equitable?", Early 1997

"The Evolution of the Food Marketing System in Mozambique: Research Findings and Policy Implications," Early 1997.

A series of working papers on the role and status of women in the Mozambican food marketing system.

- **Journal Articles**

"Food Aid and Food Markets: Lessons from Mozambique," Forthcoming in *Food Policy*, April 1996.

Other articles drawing from the above working papers.

Fact Sheet • RWANDA STUDY

• FOOD SECURITY II COOPERATIVE AGREEMENT •
between
• U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT and MICHIGAN STATE UNIVERSITY •
• IN-COUNTRY TIME PERIOD: OCTOBER 1992-APRIL 1995 ****

1. Cooperating Institutions

Ministry of Agriculture of Rwanda, Division of Agricultural Statistics (DSA/MINAGRI)
Agency for International Development, Rwanda Mission (USAID/ Kigali)
Agency for International Development, Global Bureau, Economic Growth Center, Office of
Agriculture and Food Security (G/EG/AFS)
Department of Agricultural Economics, Michigan State University (MSU)

2. Researchers Involved

DSA: Director Anastase Murekezi and other DSA senior and junior researchers
MSU In-Country Researchers: Dan Clay, David Tardif-Douglin, and Jaakko Kangasniemi
MSU Campus Backstop: Tom Reardon with Don Mead, Jim Shaffer, Mike Weber, and Pamela Riley Miklavčič

3. Objectives of the Research

To contribute to an improved understanding of strategies, policies and actions which can move Rwanda from an economy with large numbers of people trapped in poverty subsistence farming to an economy with opportunities for higher real incomes and food security while protecting resources for future generations.

4. Research Approach

The approach of the project is to assist DSA in providing reliable data about the Rwandan economy and at the same time to use the data to diagnose food security related problems, identify alternative strategies, policies and actions, and provide analysis of the probable consequences of alternative policies. The approach is to likewise make data, diagnosis, and results of analysis as available as possible to all types of policy decision makers, in written and oral form designed to be useful to them. Whenever possible the research staff systematically engage in discussion with policy decision makers and influencers as a part of the research, as well as part of the diffusion process of the project. In addition, research results will contribute to the general literature and thought dealing with economic development, food security, and African economic policy.

The approved FS II proposal for collaborative DSA/MSU/DAI research focuses on four integrated **research and policy questions**:

- 1) What are effective development strategies and policies, based on the "systems perspective" for the agricultural (food and cash crops) and the non-agricultural sectors, to improve household food security, via increases in access to food occasioned by an expanded food supply, and by more income and employment?
- 2) What are the effects on growth and household welfare of existing policies? What policies are missing?
- 3) What complementary strategies and policies will help realize domestic and regional trade potential to provide growing outlets for the products of food and cash crop agriculture, and for the products of off-farm activities?
- 4) How can natural resource constraints be more adequately taken into account?

5. Outputs to Date:

5.1. Written Outputs

- **Statistical Reports**

Muducumura, G., and DSA Staff. 1993 (November). "Enquête Nationale Agricole 1991: Production, Superficie, Rendement, Elevage et Leur Evolution 1984-1991." Publication DSA No. 27.

Clay, D., and Ngirumwami, J. L. 1993 (September). "Bulletin d'Information sur les Prix des Produits Agricoles au Rwanda."

Tardif-Douglin, D., and Uwamariya, L. 1993 (September). "Bulletin d'Information sur la Pluviometrie au Rwanda."

Muducumura, G., and DSA Staff. 1992 (December). "Enquête Nationale Agricole 1990: Production, Superficie, Rendement, Elevage et Leur Evolution 1984-1990." Publication DSA No. 26.

- **Research Reports**

Clay, Daniel C. and T. Reardon. 1996. "Linking Population, Development, and the Environment: How Households Confront Poverty and Demographic Pressure in Rwanda." Population Research Group Research Paper 96-04, Institute for Public Policy and Social Research, Michigan State University, East Lansing.

Tardif-Douglin, D. et P. Rwalinda. 1993 (September). "Situation de la Patate Douce et du Manioc au Rwanda: Réflexions sur leur Production et Productivité ainsi que leur Impact Potentiel sur la Sécurité Alimentaire dans l'Avenir." DSA/MINAGRI, DSA Publication No. 26.

Ngirumwami, J. L. 1993 (May). "Analyse des Tendances de la Production et de la Commercialisation des Produits Agricoles au Rwanda, les Haricots Secs en Particulier." DSA/MINAGRI, Publication DSA No. 24.

Rwalinda, P., et D. Tardif-Douglin, avec L. Uwamariya. 1992 (November). "Aspects de la Caféiculture au Rwanda: Résultats de l'Enquête sur la Sensibilité-Motivation des Caféiculteurs Rwandais." DSA/MINAGRI, DSA Publication No. 25.

- **Working Papers**

Byiringiro, Fidele, and T. Reardon. 1995. "Determinants of Productivity." MSU Department of Agricultural Economics, Staff Paper.

Clay, Daniel. 1995. "Population Pressure, the Structure of Land Holding and Land Degradation." MSU Department of Agricultural Economics, Working Paper (draft for review).

Clay, Daniel, F. Byiringiro, J. Kangasniemi, T. Reardon, J.B. Sibomana, and L. Uwamariya. 1995. "Promoting Food Security in Rwanda through Sustainable Agricultural Productivity." MSU Department of Agricultural Economics, International Development Paper (draft for review).

Clay, Daniel, T. Reardon, and J. Kangasniemi. 1995. "The Determinants of Conservation Investments." MSU Department of Agricultural Economics, Staff Paper No. 95-21.

Clay, Daniel, D. Tardif-Douglin, F. Byiringiro, J.B. Sibomana, and P.R. Miklavčič. 1995. "Agricultural War Losses in Rwanda." DSA/MINAGRI draft Document de Travail.

Grosse, Scott, and D. Clay, 1995. "Determinants of and Responses to Household-level Food Insecurity in Rwanda." MSU Department of Agricultural Economics, Working Paper (draft for review).

Harris, Craig, and D. Clay. 1995. "Patterns of Fuelwood Use in Rwanda." MSU Department of Agricultural Economics, Working Paper (draft for review).

Kangasniemi, Jaakko, F. Byiringiro, and J.B. Sibomana. 1995. "Patterns of Agricultural Productivity in Rwanda." MSU Department of Agricultural Economics, Staff Paper.

- Miklavčič, Pamela R., T. Reardon and V. Habimfura. 1995. "Rwanda's Banana Wine Subsector: Determinants of Farm Household Participation." MSU Department of Agricultural Economics, International Development Paper. (Draft for review)
- Minot, Nicholas. 1995. "The Impact of Devaluation on Rural and Urban Poverty." MSU Department of Agricultural Economics, International Development Paper (draft for review).
- Tardif-Douglin, David. 1995. "The Effect of Heavy Reliance on Cassava and Sweet Potatoes on the Nutritional Status of Rwandan Farm Households." MSU Department of Agricultural Economics, Working Paper (draft for review).
- Tardif-Douglin, David and J. Shaffer. 1995. "Analysis of the Effect Coffee Growing has on the Nutritional Status of Rwandan Farm Households." MSU Department of Agricultural Economics, Working Paper (draft for review).
- Grosse, Scott. 1995 (June). "Maternal Education and Child Heights in Rural Rwanda." MSU Department of Agricultural Economics, Working Paper (draft for review).
- Clay, Daniel, F. Byiringiro, J. Kangasniemi, T. Reardon, B. Sibomana, and L. Uwamariya. 1995 (March). "Promoting Food Security in Rwanda through Sustainable Agricultural Productivity: Meeting the Challenges of Population Pressure, Land Degradation, and Poverty." MSU Department of Agricultural Economics, Staff Paper No. 95-08.
- Clay, Daniel, T. Reardon, and J. Kangasniemi. 1995 (March). "Sustainable Intensification in the Highland Tropics: Rwandan Farmers' Investments in Soil Conservation and Fertility." MSU Department of Agricultural Economics, Staff Paper No. 95-21.
- Grosse, Scott, K. Krasovec, S. Rwamasirabo, and J. B. Sibomana. 1995 (March). "Evaluating Trends in Children's Nutritional Status in Rwanda." MSU Department of Agricultural Economics, Working Paper (draft for review).
- Habimfura, V. et P. Riley. 1993 (November). "Le Vin de Banane dans l'Economie Rurale au Rwanda: Contraintes et Stratégies de Développement." DSA/MINAGRI draft document de Travail.
- Byiringiro, F. 1993 (September). "Estimation of a Production Function of Rwandan Agriculture." Draft working paper. MSU.
- Uwamariya, L., J. Kangasniemi, et T. Reardon. 1993 (August). "La productivité agricole au Rwanda, 1989-1990: La productivité moyenne de la terre, du travail, et la rentabilité de la terre, et les fonctions de production." Draft working paper.

Habimfura, V., et H. B. Fabiola. 1993 (June). "Statut nutritionnel et sécurité alimentaire au Rwanda: Résultats de l'enquête nationale sur la nutrition et la sécurité alimentaire des enfants de 0 à 5 ans et leurs mères (aout-septembre 1992, serie II)." DSA/MINAGRI, DT 40.

Ngirumwami, J. L. 1993 (May). "Tendance des prix de marché pour six cultures vivrières de base et implications sur la disponibilité alimentaire dans les préfectures du Rwanda." Report to USAID. Publication DSA.

Tardif-Douglin, D., and V. Habimfura. 1993 (May). "Evolution des taux de change entre le franc rwandais, le dollar américain et les monnaies des pays voisins, 1992." DT 39.

Clay, D. C. (1993) April. "Structure de la propriété foncière et la dégradation des sols au Rwanda." Draft DSA Working Paper.

Clay, D.C., G. Mudacumura, D. Tardif-Douglin, et L. Uwamariya. 1993 (Avril). "Estimation des pertes sur la production agricole dues à la guerre dans le nord du Rwanda, Année Agricole 1993." Draft DSA Working Paper.

Tardif-Douglin, C.M., S. Rwamasirabo (UNICEF consultant), et K. Krasovec (UNICEF). 1992 (December). "Statut nutritionnel et sécurité alimentaire au Rwanda: Résultats de l'enquête nationale sur la nutrition et la sécurité alimentaire des enfants de zero à cinq ans et leurs mères (novembre 1991-janvier 1992)." DSA/MINAGRI-UNICEF, Document de Travail, No. DT 38.

- **Briefing Papers**

Tardif-Douglin, D., J. Shaffer, A. Murekezi, J. L. Ngirumwami, and T. Kampayana. 1993 (October). "Policy Options Facing Rwanda's Coffee Sub-Sector: Discussion of Potential Budgetary and Foreign Exchange Ramifications."

Habimfura, V. and P. Riley. 1993 (July). "Household Income Diversification Strategy and Linkages to the Banana Beer Subsector in Rwanda." Presented at USAID/Kigali.

Shaffer, J. and D. Tardif-Douglin. 1993 (June). "Update on Coffee Policy in Rwanda."

- **Theses**

Kangasniemi, J. "Product Mix and Intensification in Rwandan Agriculture: Productivity and Sustainability Effects" (tentative title), in progress for Ph.D. at MSU.

Byiringiro, Fidele. 1995. "Determinants of Farm Productivity and the Size-Productivity Relationship Under Land Constraints: The Case of Rwanda." M.S. thesis (Reardon, thesis supervisor), Michigan State University, Department of Agricultural Economics.

Grosse, Scott. 1995. "Determinants of Children's Nutritional Status in Rwanda." In progress for Ph.D. at University of Michigan, Department of Population Planning and International Health.

Miklavčič, Pamela Riley. 1995. "Determinants of Farm Household Participation in Rwanda's Banana Wine Subsector," M.S. thesis (Reardon, thesis supervisor), Michigan State University, Department of Agricultural Economics.

- **Journal Articles/International Professional Outreach**

Clay, Daniel C. 1995. "Fighting an Uphill Battle: Population Pressure and Declining Land Productivity in Rwanda." *Rural Sociology and Development*, Vol. 6, pp. 95-122.

Clay, Daniel C., T. Reardon, and J. Kangasniemi. 1995. "Sustainable Intensification in the Highland Tropics: Rwandan Farmers' Investments in Soil Conservation and Fertility." (Submitted for review.)

Clay, D.C., D. Tardif-Douglin, G. Mudacumura, and L. Uwamariya. "Agricultural Losses from War in Rwanda." Submission (November 1993) to *Disasters*.

Clay, C. and T. Reardon. "Determinants of Farm-Level Conservation Investments in Rwanda." Contributed paper submission (candidate) to IAAE (International Association of Agricultural Economists) meeting August 1994; mimeo November 1993. PN-ABS-956.

Kangasniemi, J. and T. Reardon. "Demographic Pressure and the Sustainability of Land Use in Rwanda." Contributed Paper submission (candidate) to IAAE (International Association of Agricultural Economists) meeting August 1994; mimeo November 1993. PN-ABS-955.

5.2. Oral Presentations

- **Progress/Intentions/Methods/Research Design Meetings**

June 1993. "Méthodologies et Objectifs du Travail de la DSA sur la Productivité Agricole." MINAGRI (with participants from other ministries, the presidency, and sections of MINAGRI) (by L. Uwamariya and T. Reardon).

June 1993. "Méthodologies et Objectifs du Travail de la DSA sur la Productivité Agricole." Université Nationale de Rwanda, Faculté d'agronomie, Butare (by L. Uwamariya and T. Reardon).

April 1993. "Rwanda FS-II Project: Genesis, Objectives, and Progress." (by T. Reardon). Presentation at workshop at MSU (by MSU and AID, Africa Bureau, ARTS/FARA/FSP).

- **Focused Research Presentations/Workshops/Seminars/Research Briefings**

June 1995. Presentation on "Agriculture' Environment Linkages, Colloquium on Promoting Sustainable Agriculture in Sub-Saharan Africa" (Clay). Africa Bureau, USAID. Rosslyn, Virginia.

May 1995. Presentation on "Agriculture, Environment, and Population Linkages" (Reardon and Clay). USAID/Madagascar.

May 1995. Presentation on "Food Security Strategies in the Greater Horn of Africa" (Reardon, Clay). Sponsored jointly by USAID Global Bureau and the Office of Agriculture and Food Security. Washington, D.C.

April 1995. Presentation on "Income Diversification and Nutrition in Rwanda" (Grosse). Food Security Research Seminar Series. Michigan State University, East Lansing.

April 1995. Presentation on "Population Pressure, Land Management, and Agricultural Intensification in Rwanda" (Clay). Conference on Global Population and Social Change. East Lansing.

January 1995. Presentation on "The Tragedy in Rwanda" (Clay). Sponsored by Amnesty International, Michigan State University.

November 1994. Presentation on "Investment in Long-Term Productivity in Tropical Highlands: Recent Research in Rwanda" (Reardon, Clay, Kangasniemi, Byiringiro). Delivered to the Society for International Development, Michigan State University campus.

April 1994. CBS Morning News (National), Paula Zahn host. Live interview from Nairobi on crisis in Rwanda (Clay).

April 1994. Evening News (Local), Jane Aldridge host. Live interview on Rwanda crisis (Clay).

April 1994. Press interviews and reports on Rwanda crisis with: Detroit Free Press, Rochester Democrat and Chronicle, and Lansing State Journal (Clay). All news articles based on interviews appeared in April 1994.

December 1993. Briefing on selected Rwanda productivity results, part of briefing on multi-country productivity research (by Reardon). At USAID/AFR/ARTS/FARA/FSP.

November 1993. Briefing on selected Rwanda productivity results (by Reardon, Clay, D. Tardif-Douglin). At USAID/Kigali.

October 1993. Research briefing. Credit and small enterprises in Rwanda. For visiting Ohio State University research team (Clay).

October 1993. Research briefing. Food security strategies in Gikongoro and Butare. At CARE/Kigali (Clay)

October 1993. Focused seminar on "Policy Options Facing Rwanda's Coffee Sub-Sector: Discussion of Potential Budgetary and Foreign Exchange Ramifications." At DSA/MINAGRI for representatives of ministries of finance, planning, commerce, agriculture, the central bank, and the coffee board (D. Tardif-Douglin, J. Shaffer, A. Murekezi, and T. Kampayana).

October 1993. Research briefing. Poverty and nutrition indicators from DSA data. For visiting Tufts/AIRD research team (Clay and D. Tardif-Douglin).

October 1993. Research briefing. Structure of and policy options for Rwanda's coffee sub-sector. At USAID/Kigali (A. Murekezi, T. Kampayana, D. Tardif-Douglin).

September 1993. Research briefing. Data and interpretation of results used in D.G.F. analysis of wood consumption in Rwanda. At D.G. Forets (MINAGRI) (Clay).

June 1993. Research briefing. Coffee policy issues and research findings with USAID staff (Shaffer and Tardif-Douglin).

May-June 1993. Outreach meetings with CARE Program staff on ag. war losses and relief/reconstruction needs among the displaced population (Mudacumura and Clay).

May-June 1993. Participation/organization of working group of MINAGRI/DEP on post-war agricultural reconstruction in Rwanda (Kampayana, Uwamariya, Mudacumura, D. Tardif-Douglin, and Clay).

May 1993. Seminar presentation. "Présentation des Travaux de la DSA/MINAGRI sur les Tevenus de Ménages Ruraux et Leur Importance pour Mieux Cerner les Réalités Socio-Economiques Régionales" (by J. L. Ngirumwami). Seminar "Stratégies et Politiques d'Amenagement et de Developpement Regional et Local au Rwanda" at Centre IWACU (by MINIPLAN and UNDP), Kigali.

May 1993. "Sweet Potatoes" (by Rwalinda) and "Cassava" (by D. Tardif-Douglin). Focused-seminar at INADES (Institut africain pour le developpement economique et social), Kigali.

May 1993. Focused seminar. "Sweet Potatoes" (by Rwalinda) and "Cassava" (by Tardif-Douglin). At IPV/CTA (Intensification de la Production Vivrière/Coopération Technique Allemande), Ngororero.

April 1993. Research briefing. Estimates of war losses. To USAID (Clay, D. Tardif-Douglin).

March 1993. Focused seminar. "Analyse de la Situation de la Production et de la Commercialisation des Haricots au Rwanda et les Politiques Connexes" (by Ngirumwami, Kampayana, Rwalinda, Fabiola, Habimfura). At ISAR (Institut de sciences agronomiques du Rwanda), Rubona/Butare.

October 1992. Focused seminar. "Coffee Production and Constraints to Production: Special Emphasis on Productivity effects on Policy Disallowing Abandonment of Coffee Trees" (by P. Rwalinda and D. Tardif-Douglin). At World Bank/Kigali.

- **Short Term Training and Collaborative Research Activities**

DSA programmer Bosco visit to MSU seven weeks in December 1993, January 1994 to work on SPSS and income/expenditure data programming and organization.

DSA analyst Vincent Habimfura visit to MSU. Six weeks in October-November 1993 to study constraints to and strategies for the banana wine subsector and to learn more SPSS.

DSA analyst Laurence Uwamariya visit to MSU. Six weeks in July-August 1993 to study land and labor productivity and to learn more SPSS.

5.4. Long Term Training

Special training in survey methods, Jean-Bosco Sibomana, at International Statistical Program Center (ISPC), Washington, D.C. July 1993-June 1994.

Non-degree training in agricultural economics, Pierre Rwalinda, July 1993-June 1994.

Independent study (summer semester, May 15-August 15, 1993), Fidèle Byiringiro, MS student at MSU. Reardon as supervisor, subject: agricultural productivity in Rwanda.

5.5. MSU Backstop Trips to In-country Team

November 1993, 3 weeks. Reardon trip to work on agricultural productivity, soil conservation, and income diversification research, as well as general backstopping.

October 1993, 2 weeks. Shaffer trip to work on coffee policy research.

August 1993 (arrival; for at least one year). Ph.D. student Jaakko Kangasniemi outposted to begin study of land use in Rwandan agriculture.

June-August 1993, 7 weeks. Trip by M.S. student Pam Riley to conduct rapid appraisal of banana wine subsector.

June 1993, 2 weeks. Shaffer trip to work on coffee policy research.

May-June 1993, 2 weeks. Reardon trip to work on agricultural productivity and income/linkages studies, as well as general backstopping.

December 1992, 2 weeks. Clay visit to work with D. Tardif-Douglin on setting up field office. (Clay was then outposted long-term starting January 15, 1993.)

October 1992, 2 weeks. Reardon, Weber, Mead, Shaffer and Clay trip to finalize research plan and elaborate final version of MOU with DSA and USAID/Kigali.

5.6. Examples of Impact of Project Findings/Information

Impact is demonstrated when missions from abroad, policy institutions in Rwanda, and other researchers use DSA/FS-II research results, citing and discussing them. The results then enter the body of information and debate which informs policy making. This process can be observed in several categories:

Coffee: A widely-disseminated report on coffee was followed by seminars with the World Bank, USAID, GOR ministries and OCIRCAFE. Given the context of the deteriorating world price of coffee, and of Structural Adjustment, coffee policy is a burning policy debate. DSA/FS-II seminar at the World Bank came at a time when they and the GOR (MINAGRI) were negotiating entry/exit laws and coffee subsidies. The information of the DSA/FS-II subsector study was of great interest to both sides. Another seminar was given to representatives of numerous GOR institutions directly involved in coffee policy making. The points stressed were: (1) subsidizing coffee might not be the most efficient way to raise foreign exchange, given the costs in foreign exchange of imported inputs; (2) removing the law allowing deficiency payments to farmers would have small impact on production, and would be consistent with the SAP and market liberalization. The results influenced MINAGRI policy on adjustment in the coffee sector by showing that possible negative effects of policy change would be small and thus encouraging reform.

Sweet potatoes and cassava: The impact of the root crops study on policy has not been clear because of an absence of root crops policy other than attempting to raise output. But the results have reached all levels of research at ISAR (the director attended the seminar).

Parallel Exchange Rates: The results of the working document on this issue were of great interest to the Direction of Economic Policy, Ministry of Planning.

Nutrition: UNICEF was the partner in this work, and has used the results in its planning and its evaluation of its own and GOR's work in health and nutrition. With USAID and World Bank's help, the Ministry of Planning will rely heavily on the results in monitoring the effects of the SAP on poor rural households. The results have already been cited in Shaw's (AIRD) report on the subject.

War losses and refugees: DSA/FS-II analyses were used by the GOR, CARE, CRS, USAID, and other agencies involved in the relief effort associated with the war. CARE is using DSA data to form strategies for Gikongoro and Butare regions (affected by mass entrance of refugees).

Price and rainfall information: DSA/FS-II bulletins on these are being used by GOR and donors to monitor effects of potential drought this season.

Agricultural productivity: MINAGRI will use these results to inform policy on regionalization.

Linkages between DSA and Socioeconomics Program at ISAR.

5.7. Surveys Undertaken

Ongoing annual surveys by DSA: Demographic Characteristics/Production/ Density (Field Characteristics and Land Allocation)/ Animal Production (Flow)/ Livestock (Stock)/ Transactions/incomes

DSA/UNICEF Nutrition Survey

DSA/ISAR/CIAT Climbing Bean Survey

6. General Research Activities

The principal research activities approved in the DSA/MSU/DAI proposal and that form the general substance of the FS II Cooperative Agreement project in Rwanda include:

Collaborative research assistance to DSA in maintaining and enhancing its ongoing rural household survey operations and procedures, and related analytical and management/accounting capacities, with a view toward further developing the research and administrative capacity of DSA to perform these tasks independently in the future, and to strategically service requests for food security research assistance from other parts of the GOR.

A major program of analyses in Rwanda and at MSU of the DSA accumulated data base, especially in the first 12-18 months, will be completed for purposes of better understanding rural household behavior and the effects on rural welfare and incomes of past and present policy

adjustments. This analysis will also focus on identifying potential growth strategies and a greater understanding of constraints and opportunities vis-a-vis agricultural productivity, natural resources and infrastructure.

Selected non-farm special studies. Emphasis will be placed on small enterprises and increasing rural non-farm employment and income that is linked with both the supply and demand side of the rural economy in Rwanda. Initial surveys of rural enterprises and non-farm employment will be conducted, with more focused sub-sector studies planned as possible follow-on activities.

Selected new household-level studies. Food security and related economic growth research topics emerging from initial research findings and policy dialogue will provide the basis for add-on analyses and special studies of DSA's ongoing sample of rural households. As DSA began collecting data on a new three-year sample of rural households in September of 1992, we anticipate that all new household level data collected under the FS-II project will derive from this sample frame.

7. Outputs Anticipated (from outset): Working Papers/Journal Articles

The following are areas of more specific research proposed for planning and research implementation purposes that will guide research over the life of the project. There is no suggestion that these are independent research activities. The success of the project depends upon integration across these areas of research emphasis and the multiple use of data and analysis in a wide variety of reports:

Subsector Studies. Many policies are related to specific commodities. The subsector study looks not only at the commodity in the context of the household but also focuses attention on the up- and down-stream connections with the economy. The intent is to examine the current and potential performance of selected individual subsectors.

Coffee. Coffee is one of the most important cash income earners and the largest foreign exchange earner. But to what extent is coffee production a net benefit to farmers and the economy?

Bananas and banana wine, and sorghum and sorghum beer. Growing/buying these agricultural commodities and then converting them to traditional beverages appears to be the largest cash earner in many rural households. What is the feasibility and the desirability of targeting this subsector as an engine of growth?

Tubers. Tubers are the principal subsistence food security crops. How does the competition between tubers and cash crops affect household and national food security?

Beans. What is the current situation and potential for this subsector, and what impact does it have on food security?

Others. What are other crops with potential for economic development and contributions to food security and what subsector development would contribute to their viability? Horticultural? White potatoes?

Rural household and enterprise productivity. Indicators of productivity relationships. Indicators of relationships of cropping patterns to real incomes and food security. Indicators of returns to labor and land under different conditions. How can rural productivity be increased so as to improve food security?

Income levels and sources, expenditures and linkages between farm and non-farm economies. Extent and nature of non-farm incomes. Indicators of current and potential demand for purchased inputs and consumer goods. Especially the demand for labor saving inputs. How can income-earning activities downstream and upstream from agricultural be promoted so as to increase overall incomes and to provide impetus to local agriculture?

Non-farm enterprises related to farm incomes and food security. Indicators of the numbers and types of enterprises related to farm household welfare. Industry and subsector studies of selected enterprises especially related to rural households economic opportunities. For example lime, fertilizer mixing and delivery, improved fuel and labor-saving equipment. Local transportation services. Health and education services. Relate to non-farm enterprise industry studies.

Purchased farm inputs. Extent of current use and potential and consequence of additional purchase and use of selected inputs. Relate to productivity, incomes, food security and subsector performance.

Land degradation. Factors and practices related to land degradation. Relationships to cropping patterns, the structure of landholding, income diversification and food security.

Food availability and nutrition. Relating all factors from the other studies with food availability and nutrition. To the extent possible, assessing the nutritional effect of the food/cash crop mix, and of income diversification.

Regional and international commerce. The potential and the consequences of an increase in trade, particularly within the region. Current patterns of trade. Practical problems.

Domestic markets and marketing. The state of domestic marketing and the extent of commercialization of the rural economy. Practical problems and policy issues.

The agricultural transformation process and strategies to promote it. Integrative collective look at the problems and alternatives in developing strategies for an economic transition.

Fact Sheet • SAHEL REGIONAL PROGRAM

SAHEL REGIONAL PROGRAM FOR STRENGTHENING INSTITUTIONAL RESEARCH CAPACITY ON FOOD SECURITY IN THE SAHEL (PRISAS)

►FOOD SECURITY II COOPERATIVE AGREEMENT◄

between

►U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT and MICHIGAN STATE UNIVERSITY◄

►IN-COUNTRY TIME PERIOD: JANUARY 1990 - JULY 1997◄◄◄◄

1. Cooperating Institutions

Institut du Sahel (INSAH), Bamako, Mali

Agency for International Development, Mali Mission (USAID/Bamako)

Agency for International Development, Africa Bureau, Office for West Africa, Sahel Regional Program (AFR/WA)

Agency for International Development, Global Bureau, Economic Growth Center, Office of Agriculture and Food Security (G/EG/AFS)

Department of Agricultural Economics, Michigan State University (MSU)

2. Researchers Involved

INSAH: Dr. M.S. Sompo-Ceesay, Director General, INSAH (Overall Coordinator)

INSAH/MSU In-country Researchers: Dr. Josué Dioné (In-Country Program Director), Bakary Kanté, Daouda Diarra, Younoussa Maïga, and James Tefft

MSU Campus Backstop: John Staatz, Eric Crawford, A. Allan Schmid, Thomas Reardon, Michael Weber, Valerie Kelly, Duncan Boughton, Aliou Diagne, Bocar Diagana, David Dibley, David Yanggen, and Yacoub Abdelwahid

AID Washington: Ralph Cummings (G/EG/AFS), Joan Atherton (AFR/WA), and Rod Kite (AFR/WA)

3. Objectives of the Research and Policy Outreach Activities

The add-on enables collaborative research and outreach by MSU and INSAH's PRISAS program. Their activities aim to strengthen the empirical basis for food-policy decisions in the Sahel by:

Strengthening Sahelian institutional capacity to carry out food security policy analysis and extension activities;

Stimulating new studies on regional food security issues in the Sahel, such as regional trade;

Diffusing more widely to Sahelian researchers and policy makers the results of recent food security research and policy reforms;

Training Sahelian food security researchers in improved research methods.

Beginning in 1995, PRISAS has focused especially on the impacts of the devaluation of the CFA franc on food security and real incomes in West Africa. The exchange rate between the CFA franc and the French franc was halved on January 12, 1994, from 1 FF = 50 CFA F to 1 FF = 100 CFA F. The devaluation was a dramatic event in the economies of the region, as it represented the first change in the parity rate between the two currencies since 1948. If fully passed on to consumers, the devaluation would double the price of internationally traded goods relative to non-traded goods in the countries of the CFA zone.

The impact of such a major devaluation cannot be predicted a priori. The capacity of the economies to respond to this change in the macroeconomic environment depends critically on conditions in each country. If the devaluation is to stimulate sustainable economic growth rather than just inflation and unrest, the constraints to and possibilities for responding to new opportunities created by the new macroeconomic environment need to be identified and analyzed. This add-on provides a mechanism for creating a coordinated regional monitoring and analysis effort based on the work of individual national West African teams using a common research approach. The national teams are linked together into a regional network coordinated by the Institut du Sahel's regional food security program (INSAH/PRISAS). The activity involves both applied research and outreach activities on the impact of the devaluation on real incomes and food security in West Africa.

A key objective of the effort is to identify areas where strategic actions by governments, the private sector, and donors can augment the positive effects and limit the negative impacts of the devaluation on food security and income growth. As part of this monitoring and analysis effort, PRISAS and MSU staff will make frequent trips to work with the national teams in the various countries involved. Research results will be diffused rapidly through national and regional bulletins, press releases, national and regional workshops with policy makers, and other forms of publication.

4. Research Approach

In order to carry out its research mandate effectively, PRISAS aims at strengthening: (a) the capacity of local research institutions in the Sahel to carry out applied research on food security and (b) the capacity of INSAH to help coordinate research on region-wide food security issues. The PRISAS support project has helped INSAH carry out this mandate through:

- (1) Developing a Sahel-wide network of researchers and policy makers that exchange research results and meet to discuss ways of incorporating research results into improved food policies.

- (2) Holding regional workshops to facilitate such exchanges between researchers and policy makers.
- (3) Developing a series of background documents/reviews of the literature on food policy issues that serve as reference documents for researchers throughout the subregion and as bases for discussion during the regional workshops and seminars.
- (4) Funding and backstopping small collaborative research projects by researchers participating in the PRISAS network. The research projects supported are selected either because they help develop research methods or approaches that are broadly applicable across the Sahel or because they address issues of a regional nature (e.g., regional trade).
- (5) Helping INSAH develop its long-range program for food-security research. Under the recently agreed-to restructuring of CILSS organizations, INSAH has primary responsibility for all research related to food security within the CILSS system. PRISAS has played a key role in helping develop a plan for INSAH to fulfill its new mandate.

To analyze the effects of the CFA franc devaluation, PRISAS has organized a series of comparative studies in CFA and neighboring non-CFA countries on the impact of the devaluation, working with its network of West African researchers and policy analysts. The approach to this research includes working with national teams to develop country studies and with those teams and the INSAH group to develop regional syntheses. At the national level, the approach builds on existing national research and policy structures to carry out the analysis in West Africa. Such locally-based, ongoing analysis is central to strengthening local capacity and designing effective policies.

The program of research and outreach, which will run through mid-1997, covers the following countries: Senegal, The Gambia, Mali, Burkina Faso, Niger, Chad, Côte d'Ivoire, Guinea (Conakry), Ghana, and Benin. The program will focus on the impact of devaluation on:

Prices of key agricultural and non-agricultural commodities affecting food security and real incomes.

Costs of production and investment.

Markets for key commodities (with emphasis on identifying bottlenecks that prevent the benefits of devaluation from being fully transmitted to producers and consumers).

Real incomes (though impacts on both revenues and costs of living).

5. Outputs to Date

5.1. PRISAS-Sponsored Regional Food Security Seminars and Workshops

Impact of the Devaluation of the CFA Franc on Incomes and Food Security in West Africa. Bamako, June 1995.

Impact of the Devaluation of the CFA Franc on Incomes and Food Security in the Sahel. Bamako, July 1994.

Technology Development and Transfer in a Rapidly Changing Environment: Implications for Agricultural Research in the Sahel. Bamako, September 1993.

Income Diversification, Informal Non-Agricultural Activities and Food Security. Bamako, November 1992.

Institutional and Legal Environment of Agricultural Input and Commodity Markets in the Sahel. Bamako, March 1992.

Workshop on Designing Food-Security Policy-Relevant Research in the Sahel. Bamako, November 1991.

Food Security in the Sahel: Review of Studies and Priorities for Future Policy Research and Dialogue. Bamako, May 1991.

5.2. Oral Presentations by INSAH/PRISAS Affiliated Researchers

— To African Researchers and Policy Makers

December 1995. Mali. Presentation by Dioné to the CILSS meeting on Agricultural Transformation in the Sahel. Presentation entitled “Cadre conceptuel pour une réflexion sur la transformation de l’agriculture au Sahel.”

December 1995. Mali. Presentation by Staatz to the CILSS meeting on Agricultural Transformation in the Sahel. Presentation entitled “Rôle stratégique des systèmes agricoles et alimentaires dans la lutte contre la faim par la promotion d’une croissance économique durable.”

November 1995. Mali. Presentation by Reardon at the Colloque International sur Intensification Agricole au Sahel: Mythe ou Réalité? (organized by INSAH, IER, AB-DLO, Wageningen, ICRISAT, CIRAD, ICRAF, and ILRI). “Capital-led intensification in Sahel Agriculture: addressing structural constraints after policy reform.”

September 1995. Côte d'Ivoire. Presentation by Dioné to African Development Bank (ADB) workshop on Agricultural Transformation in Africa, Abidjan. Invited paper on agricultural transformation in the Sahel.

June 1995. Mali. Presentation by Dioné to the Economic, Social, and Cultural Council of Mali on the implications of fiscal and trade policies for the competitiveness of the Malian economy.

May 1995. Mali. Presentation by Dioné to the National Education Federation (FEN) of Mali on the effects of structural adjustment on education.

March 1995. Mali. Presentation by Reardon at INSAH workshop on Natural Resource Management; "Links between food security and natural resource management in the Sahel."

September 1994. Burkina Faso. Dioné participation in CILSS review of WALTPS study of the relationship between urban and rural areas in the Sahel, in light of devaluation, Ouagadougou.

March 1994. The Gambia. Dioné participation in CORAF/USAID meeting in Banjul on regional coordination of agricultural research.

January 1994. Senegal. Dioné participation in FAO-CIRAD workshop in Dakar on the promotion of sustainable agricultural production in West Africa.

January 1994. Belgium. Meeting of the Scientific Committee of the ADB/OECD/CILSS "Long-term Perspective Study of West Africa" organized by CINERGIE/ADB: Brussels, Belgium, 17-19 January 1994. (Dioné as Member of the Scientific Committee and discussant of the economic component of the study.)

January 1994. Senegal. FAO/CIRAD. Regional Seminar on "Promoting Sustainable Agricultural Systems in the Sudano-Sahelian Countries of Africa" organized by FAO and CIRAD: Dakar, Senegal, 10-14 January 1994. Invited presentation by Dioné: "Décalage entre la Production et la Consommation de Céréales dans les Pays du CILSS." Presentation by Dioné for Reardon: "Liens entre la diversification des revenus et la gestion de ressources naturelles au Sahel."

December 1993. Burkina Faso. Presentation by Reardon (with Kimsey Savadogo) at the University of Ouagadougou on "Farm-level productivity in Burkina Faso."

June 1993. Mali. National Seminar on "Cereals Policy in Mali"; organized by the Government of Mali and supporting-donors of the Cereals Market Restructuring Program (PRMC), Bamako (Dioné as invited expert).

June 1993. Zimbabwe. International Symposium on "Agricultural Transformation in Africa"; organized by Harvard International Institute of Development and USAID, Harare, Zimbabwe; 01-03 June, 1993 (Dioné and Staatz as invited experts).

December 1992. Senegal. International Seminar on "Regional Integration and Food Security in West Africa"; organized by IFPRI, Sunugal, Senegal; 02-04 December 1992 (Dioné as invited expert).

November 1992. Mali. Institut du Sahel/CILSS. Regional workshop on "Diversification des Revenus, Activités Informelles Non Agricoles et Sécurité Alimentaire au Sahel." Presentations: "Role and determinants of income diversification in the Sahel: Illustration from Burkina Faso" (Reardon); "Activités informelles non agricoles et sécurité alimentaire au Sahel" (Kanté); "Quelques notes sur les méthodes d'analyse des activités informelles non agricoles en rapport avec la sécurité alimentaire au Sahel" (Staatz).

October 1992. Côte d'Ivoire: WAEA/ESAEA. Seminar presentation: "Is income diversification 'agriculture-led' in the WASAT? Survey evidence and development strategy implications" (Reardon).

June 1992. Côte d'Ivoire. Centre Ivoirien de Recherches Economiques et Sociales (CIRES). Informational Seminar on "Regional Economic Integration in West Africa," organized by CIRES, Abidjan, Côte d'Ivoire; 15-18 June 1992. Dioné: Discussant of potential trade creation and diversion effects of regional integration, and presentation of PRISAS/INSAH's approach to regional cooperation and collaboration in research on food security and income growth.

March 1992. Bamako, Mali, Institut du Sahel/CILSS, Regional Workshop: "Institutional and Legal Environment of Agricultural Input and Commodity Markets in the Sahel." Presentations: "Effects on rural economies of high transaction costs" (Staatz and Reardon); "Legal Foundations of the Market: Implications for Africa" (Schmid).

August 1991. France. Joint Programming Meeting of CILSS and Club du Sahel 1992 Activities; Paris, France; 20-24 August 1991.

June 1991. Mali. Regional Seminar on "Managing Food-Security Information in the Sahel"; organized by CILSS/DIAPER, Bamako, Mali; 03-05 June 1991 (Dioné as representative of the Institute of the Sahel, CILSS.).

May 1991. Mali. Regional Workshop: "Food Security in the Sahel: Review of Studies and Priorities for Future Policy Research and Dialogue." (Presentations by Dioné, Staatz, and Weber.)

May 1991. Mali. Regional Seminar on "Cereals Policy Interactions in the Western Sub-Space of West Africa"; organized by CILSS and Club du Sahel, Bamako, Mali; 27-31 May 1991.

January 1991. Mali. Regional Workshop on "Revitalizing Agricultural Research in the Sahel"; sponsored by the Special Program for African Agricultural Research (SPAAR) of the World Bank, and organized by SPAAR and the Institute of the Sahel (CILSS), Bamako, Mali; 6-11 January, 1991 (Dioné).

November-December 1990. Mali. National Colloquium on "Scientific and Technology Research Policy in Mali"; organized by the National Scientific and Technological Research Center, Bamako, Mali; 26 November-01 December 1990 (Dioné as representative of the Institute of the Sahel, CILSS).

September 1990. Dakar, Senegal. Institut Sénégalais de Recherches Agricoles. Economists' Group. Presentation on Food Security Research in the Sahel (Dioné and Staatz).

April-May 1990. Prepared extensive documentation of market information, research and policy diffusion work with OPAM/Mali for the Seminaire du CILSS/Club du Sahel sur les Systèmes d'Information.

November 1989. Togo. Seminar on "Regional Cereals Markets in West Africa: Current Dynamics and Implications for the Future"; sponsored by CILSS/Club du Sahel; Lomé, Togo; 06-11 November 1989 (invited presentations by Dioné and Staatz).

— **To AID/Washington, USAIDs, and Multilateral Donor Agencies**

July 1995. Presentation by Reardon to the USAID/Mali Economics Group on "Results of MSU Research on Agricultural Productivity and Sustainability: Implications for Strategic Planning."

June 1995. Presentations by Dioné, Reardon, and Staatz to AFR/WA Regional Sahel Collaborators workshop on impact analysis of the impact of CFA franc devaluation on real incomes and food security in West Africa.

February 1995. Presentation by Amadou Koita to WHO/UNESCO conference in Geneva on the impact of CFA franc devaluation on health and education in West Africa. Koita presented an invited paper on the impact of devaluation on the education sector in Mali.

October 1994. Presentation by Dioné to Club du Sahel, Paris, on impact of CFA franc devaluation on agriculture, regional trade, and food security.

June 1994. Presentations by Kelly, Reardon, and Staatz to USAID/AFR/SD and AFR/SWA on impact of initial impacts of CFA devaluation on food prices and real incomes in the Sahel.

February 1994. USAID/Africa Bureau, Sahel/West Africa Office and ARTS/FARA. Presentation on "Designing Food Security Strategies in a Rapidly Changing Social,

Political, and Economic Environment: Challenges for the Sahel (with special emphasis on CFA devaluation)." Presentation by Staatz, Kelly, and Reardon.

November 1993. France. Club du Sahel, OECD. International Meeting of the "Network for Food-Crisis Prevention in the Sahel," organized by the Club du Sahel, Paris, France; 17-19 November 1993. Presentation by Dioné as invited expert: "Approches de Sécurité Alimentaire dans les Pays du CILSS."

February 1993. France. OECD/Development Center. Invited presentation on income diversification in West Africa (Reardon).

May 1992. Poverty and Social Policy Division, Africa Technical Department, World Bank. Invited presentation by Reardon: "Income diversification in the West African Semi-Arid Tropics." (Represents collaborative work with IFPRI.)

July 1991. USAID/Africa Bureau. Policy Workshop "Food Security in Africa: Improving Household Access to Food"; organized by USAID, Washington, D.C., USA; 18 July 1991.

September 1990. France. International Seminar on "The Future of Agriculture in Sahelian Countries"; sponsored by the Club du Sahel and CIRAD, Montpellier, France; 12-14 September 1990 (Dioné as invited speaker, Staatz as discussant).

June 1990. France. Technical Review Meeting on Research on Regional Cereals Trade in West Africa"; sponsored by the Club du Sahel, Paris, France; June 20-22, 1990 (Dioné).

— **To Other Food Security Research and Policy Groups**

November 1995. American Anthropological Association Meetings in Washington, D. C., panel on "Post-Structural Adjustment and Food Security in Africa: Policy, Theory, and Cross-Disciplinary Evidence." Presentation on "Capital-led intensification in Sahel Agriculture: addressing structural constraints after macroeconomic policy reform" (Reardon).

August 1994. American Agricultural Economics Association annual meetings in San Diego, symposium on "Policies for fragile lands Development in the Tropics: New Challenges for Economic Analysis." Presentation on "Sustainability Issues in Agricultural Development in the Sahel" (Reardon).

March 1994. Tulane University, School of Public Health and Tropical Medicine, Department of International Health and Development, presentation on "Income Diversification in the Sahel: implications for food security" (Reardon).

November 1993. Denmark. Center for African Studies, University of Copenhagen. Invited talk on income diversification in West Africa (Reardon).

November 1993. Denmark. Roskilde University, Conference on natural resource management in fragile lands of Africa. Talks titled "Alternate sources of income and natural resource management in fragile, drought-prone areas of the African semi-arid tropics," and "Issues in the analysis of macro and sectoral policy impacts on productivity and conservation investments at the household level" (Reardon).

January 1993. Germany. University of Hohenheim. Invited presentation on policy and development strategy implications of income diversification in West Africa (Reardon).

October 1992. Center for Advanced Studies in International Development (CASID), Michigan State University, 1st Special Seminar, Oct. 29: "Income diversification in the West African Semi-Arid Tropics (WASAT): Policy and Development Strategy Implications" (Reardon).

September 1992. Montpellier, France. CIRAD Seminar on Institutional Economics and Agriculture. Presentation "Institutionalist Perspectives on Agricultural Policy Reforms in West Africa" (Staatz).

September 1992. Germany, University of Hohenheim. Seminar presentation on impacts of structural adjustment in the Sahel, 29th Seminar of European Association of Agricultural Economics (Reardon).

July 1992. England: Institute for Development Studies, University of Sussex, England. Invited presentation: "Income diversification in the West African Semi-Arid Tropics" (Reardon).

December 1991. The Netherlands. Seminar on "Poverty Alleviation and Sustainable Development in Semi-Arid Sub-Saharan Africa"; organized by the Ministry of Foreign Affairs and Development Cooperation, The Hague, The Netherlands; 09-10 December 1991 (Dioné as invited expert).

July 1990. Finland. International Conference on "Hunger and Public Action"; sponsored by WIDER, Helsinki, Finland; 11-13 July 1990 (Dioné as invited discussant).

June 1990. France. International Colloquium on "How to Feed the World? Food Policies in a Context of Liberalization of Economies and Trade"; sponsored by SOLAGRAL, Paris, France; 26-28 June 1990 (invited presentation by Dioné).

5.3. Collaborative Research Activities with National Researchers in the Sahel

Through mini-grants and other mechanisms, PRISAS has helped support the following research and outreach activities of Sahelians working in national research systems:

Mali maize subsector study. PRISAS supported participation of non-IER researchers in initial rapid reconnaissance study, provided methodological support, and helped diffuse findings throughout the region.

Research by Senegalese (ISRA) researchers to write up modeling work on a large income-consumption study in Senegal. ISRA researchers Diagana, Fall, and Dakona spent October-November, 1992 at MSU working with campus-based staff on this modeling.

Provided funds for Chadian researcher to consult with Senegalese colleagues at ISRA on the design of a millet and sorghum marketing study in Chad.

PRISAS has also provided methodological support and funds (research grants) for country studies of the impact of the devaluation of the CFA Franc on:

Relative prices of goods and services and costs of production of major agricultural products in Chad, Mali, Niger, and Senegal.

The costs of and access to health and education in Mali.

5.4. Long-Term Training

PRISAS provided research support and thesis supervision to two Malian students, Daouda Diarra and Youssouna Maïga, completing their *Doctorats de 3ème Cycle* in Agricultural Economics at the University of Abidjan. Their thesis research was carried out in Mali, and Dr. Dioné served as their thesis supervisors and member of their guidance committees.

Aliou Diagne, a Senegalese Ph.D. student in Agricultural Economics at MSU, served as a research assistant to the project. This assistantship allowed him to complete his Ph.D. studies at MSU.

Bocar Diagana, a Senegalese Ph.D. student in Agricultural Economics at MSU, serves as a research assistant to the project. This assistantship is allowing him to complete his Ph.D. studies at MSU.

Yacoub Abdelwahid, a Chadian M.S. student in Agricultural Economics at MSU, served as a research specialist to the project. This work allowed him to complete his M.S. studies at MSU.

5.5. Support of Other African Research Initiatives

PRISAS-affiliated staff support other ongoing initiatives to improve food policies in Africa through participation in the following activities:

Technical Advisory Committee of the Carter Center's "Project Africa" (Dioné).

Scientific Committee of the African Development Bank-OECD-CILSS "West Africa Long-Term Prospective Study" (Dioné and Reardon).

Scientific Committee (Dioné) and External Advisory Group (Dioné and Reardon) of the SADAOC/ECDPM Network for Sustainable Food Security in Central and West Africa.

Advisory Committee for the Center for the Study of Social and Economic Development (CEDRES), Université de Ouagadougou (Reardon and Staatz).

In addition, the devaluation work of PRISAS directly reinforces work going on in national research systems throughout the Sahel. Most of these systems have identified as a high priority the need to evaluate of the impact of CFA franc devaluation on food security and the profitability of alternative enterprises in their countries. The PRISAS-supported devaluation studies provides additional support to those efforts and places the national studies within a broader regional context. The PRISAS devaluation project is also working collaboratively with efforts undertaken to monitor the impact of devaluation by:

CEDRES (Université de Ouagadougou)
CIRES (Université Nationale de Côte d'Ivoire)
WARDA
CIRAD (impact on rice systems in West Africa)

5.6. MSU Backstop Trips to In-Country Team

Most trips were jointly financed by other MSU Mali add-ons, and staff time was split between supporting those activities and PRISAS activities. (Unless otherwise noted, trips were to Bamako.)

November-December 1995, trip by Reardon and Staatz. With Dioné, participated in the CILSS/Club du Sahel workshop on agricultural intensification. Reardon presented PRISAS/INSAH paper on intensification of Sahelian agriculture as INSAH invitee at conference sponsored by INSAH, IER, and Wageningen and worked with IPR researcher Singare on consumption survey.

October 1995, trip by Kelly to Senegal and Niger to backstop ongoing work of national teams on the impact of devaluation on costs of production and relative prices. Reviewed draft working papers in Senegal and advised on data needs in Niger.

July 1995, trip by Diagana and Kelly to Senegal. Worked with ISRA team on agricultural productivity and devaluation studies.

June 1995, trip by Reardon. Worked with Sahelian researchers on consumption surveys and methods. Met with Sanogo of IER and Dioné to discuss steps toward investment impacts survey in Mali and with Sangaré of IPR to discuss consumption study. Participated in the INSAH/PRISAS regional workshop on the impact of the devaluation of the CFA Franc on income and food security in West Africa, and worked with the PRISAS in-country team to plan 1995-96 country studies of the impact of the devaluation on income, investment and consumption in West Africa. (Boughton, Diagana, and Kelly also participated in workshop).

May 1995, trip by Tefft to Niger. Helped set up the Niger country study with researchers from INRAN, Ministry of Agriculture, and the Université Abdou Moumouni.

April 1995, trip by Tefft to Chad. Worked with the Division of Agricultural Marketing in the Ministry of Agriculture, along with a private Chadian consultant, to set up the administrative procedures for carrying out the Chad country study. Discussed methodological and logistical issues with the team.

April 1995, trip by Tefft to Senegal. Worked with joint ISRA/BAME-UPA team on setting up and carrying out country study of the impact of CFA devaluation on real prices and costs of production in Senegal.

April 1995, trip by Reardon. Worked with Dioné, Adesina, and Tefft on paper for WARDA workshop on rice in the Sahel.

July 1994, trip by Staatz. Helped prepare and participated in the INSAH/PRISAS regional workshop on the impact of the CFA franc devaluation on incomes and food security in the Sahel. Tom Reardon and Valerie Kelly from MSU and Ousmane Badiane from IFPRI also participated in the workshop. Worked with Dioné on planning the implementation of the longer-term PRISAS program of work on devaluation and other topics.

September 1993, trip by Staatz and Crawford. Helped prepare and participate in PRISAS Regional Seminar on "Technology Development and Transfer in a Rapidly Changing Environment: Implications for Agricultural Research in the Sahel." Planned follow-up activities to the seminar and the work plan for 1994. Developed revised proposal for funding of 1994 activities of PRISAS.

May-June 1993, trip by Staatz. Helped prepare up-coming PRISAS regional seminar on agricultural technology research in the Sahel. Discussed issues of how to handle the

transition of food security research at INSAH with the starting of the PADRES project. Brief new USAID/Mali staff on history of PRISAS work and issues concerning how to assure the continuity of that research and outreach in the future.

February-March 1993, trip by Reardon. Helped prepare up-coming PRISAS regional seminar on agricultural technology research in the Sahel.

November 1992, trip by Reardon and Staatz. Participate in PRISAS Regional Seminar on "Income Diversification, Informal Non-Agricultural Activities and Food Security." Reardon continued on to Abidjan to participate in the meeting of the Scientific Committee of CINERGIE's West Africa Long-Term Perspectives Study.

August-September 1992, trip by Staatz. Work with Kanté in preparation of upcoming workshop. Help plan coordination of PRISAS work plan with European Community initiative. Work with Vicky Wise on paper on gender issues in food security research in the Sahel.

June-July 1992, trip by Reardon. Work with Kanté and Dioné in planning upcoming regional workshop on the informal sector. Collaborated with Kanté in drafting a working paper for the workshop.

March-April 1992, trip by Staatz, Reardon, and Schmid. Helped prepare and participate in PRISAS regional seminar on the "Institutional and Legal Environment of Agricultural Input and Commodity Markets in the Sahel." (Schmid was keynote speaker--see list of publications for papers presented.) Worked with Dioné and Kanté in design of next regional workshop on the role of the informal sector and food security.

November 1991, trip by Staatz. Work with PRISAS staff to plan next two regional workshops. Discuss with PADRES project paper team the coordination of PRISAS/Food Security II Cooperative Agreement activities with planned PADRES project. Begin drafting first policy synthesis bulletin. Work with Kanté on paper dealing with role of informal sector in food security.

October 1991, trip by Staatz. Work with PRISAS staff on follow-up to May conference, including funding of possible mini-grants (e.g., for maize subsector work in Mali).

May 1991, trip by Staatz and Weber. Participation in PRISAS regional seminar on "Food Security in the Sahel: Review of Studies and Priorities for Future Policy Research and Dialogue" and planning of follow-up activities.

December 1990, trip by Staatz and Schmid. Work with Dioné and staff on concept paper on food security in the Sahel. Planning of first PRISAS regional conference on food security issues, scheduled for May, 1991. Work with Dioné on issues concerning legal reforms in the cereals trade.

December 1990, trip by Staatz to Ouagadougou and Paris (continuation of previous trip to Bamako). In Ouagadougou, discussed PRISAS program of work with CILSS headquarters staff and how work could be coordinated with their activities. Introduced PRISAS program to researchers at the University of Ouagadougou and solicited their participation. In Paris, consulted with Club du Sahel and COMAC on regional trade and market information issues.

April-May 1990, trip by Staatz. Participation of both Dioné and Staatz in CILSS/Club du Sahel Regional Seminar on Market Information Systems in the Sahel. Work with Dioné on developing detailed first-year work plan for PRISAS.

December 1989. Dioné arrives in Bamako for long-term assignment with INSAH.

November 1989. Participation of Dioné and Staatz in CILSS/Club du Sahel regional trade seminar in Lomé, Togo (see list of publications for paper titles).

October 1989, trip by Staatz. Finalize administrative arrangements with INSAH for PRISAS, which began in November 1989.

July-August 1989, trip by Dioné. Participation in Sahelian-donor joint committee that developed a 5-year strategic plan for INSAH. This plan included regional research and outreach on food security. That program eventually evolved into PRISAS.

May-June 1989, trip by Staatz. Initial contacts made with INSAH officials about possible collaborative regional food security project.

5.7. Written Reports

The written reports listed below represent work on Sahel food-security issues carried out by PRISAS-affiliated staff. Some of the work was directly funded by PRISAS, while other work was funded, at least in part, by other sources. All the work listed here, however, was carried out in coordination with PRISAS activities and results were diffused through PRISAS.

- **Briefing Papers for Senior-Level African Policy Makers**

Dioné, Josué. 1995. "Cadre conceptuel pour une réflexion sur la transformation de l'agriculture au Sahel." Prepared for CILSS task force on Agricultural Transformation in the Sahel. Bamako: Institut du Sahel, December.

Staatz, John M. 1995. "Role stratégique des systèmes agricoles et alimentaires dans la lutte contre la faim par la promotion d'une croissance économique durable." Prepared for CILSS task force on Agricultural Transformation in the Sahel. Bamako: Institut du Sahel, December.

Dioné, Josué. 1993. "Programme régional de renforcement institutionnel en matière de recherche sur la sécurité alimentaire au Sahel (PRISAS): note synthétique." Synthesis Paper No. 93-01. Bamako: PRISAS, Institut du Sahel, May. PN-ABS-877.

Dioné, Josué. 1991. "Libéralisation des marchés céréaliers: synthèse des résultats des études et implications pour les politiques alimentaires et de développement agricole au Mali." Synthesis Paper No. 91-01. Bamako: PRISAS, Institut du Sahel, June. PN-ABS-874.

- **Analyses of Ways to Increase the Productivity of Agricultural Research in the Sahel**

Institut du Sahel. 1993. "Revue des programmes du CILSS: proposition de l'Institut du Sahel." Proposal of INSAH special task force for restructuring projects and programs of the CILSS system. Bamako: Institut du Sahel, March.

Weijenberg, Jan, Josué Dioné, Michael Fuchs-Carsch, Adolphe Kéré, and Jacques Lefort. 1993. "Revitalizing Agricultural Research in the Sahel: A Proposed Framework for Action." World Bank Discussion Paper No. 211. Washington, D.C.: SPAAR (represents collaborative work between INSAH and SPAAR).

CILSS. 1992. "Coopération régionale et politique agricole." Project Paper.

Dioné, Josué. 1991a. "Contexte macro-économique et perspectives de croissance de l'agriculture au Sahel: implications pour la recherche agricole." Invited paper at the Sahel Regional Agricultural Research Workshop, sponsored by the Special Program for African Agricultural Research (SPAAR) of the World Bank, Bamako, Mali, 6-11 January, 1991. Working Paper No. DT 91-01. Bamako: PRISAS, Institut du Sahel, January. PN-ABS-882.

Dioné, Josué. 1991b. "Socio-Economic Development Challenges in the Sahel: Implications for Agriculture and Agricultural Research." Working Paper No. 91-02. Bamako: PRISAS, Institut du Sahel, April. PN-ABS-884. Draft Contribution for the INSAH/SPAAR Framework of Action for Revitalizing Agricultural Research in the Sahel.

French version: "Défis du développement économique et social au Sahel: implications pour l'agriculture et la recherche agricole." PN-ABS-875.

Institut du Sahel. 1990a. "Stratégie et programmation quinquennale (1990-1994): programmes de recherches sur le transfert de technologies et le secteur informel." Revised version of the "Technology Transfer" and "Informal Sector" sub-components of the Socio-Economic Research Component of INSAH's Five-Year (1990-1994) Program. Bamako: INSAH/DRMA/PRISAS, June.

Institut du Sahel. 1990b. "Cadre conceptuel d'intégration du programme quinquennal (1990-1994) en matière de socio-économie." Concept Paper integrating the "Food Security," "Technology Transfer" and "Informal Sector" sub-components of the Socio-Economic Research Component of INSAH's Five-year (1990-1994) Program.

Institut du Sahel. 1990c. "Cadre conceptuel pour la définition d'un projet d'appui de l'USAID au programme quinquennal de l'Institut du Sahel." Concept Paper for a USAID Support Project to INSAH's Five-Year (1990-1994) Program. Bamako: INSAH/DRMA/PRISAS, November.

- **PRISAS Policy Conference Reports**

Dioné, Josué, Moussa Batchily Ba, and Gaoussou Traoré. 1994. "Politiques de recherche agricole au Sahel: développement et transfert de technologies dans un environnement en mutation rapide." Report of a regional seminar sponsored by the Institut du Sahel. Bamako: PRISAS, Institut du Sahel, February.

PRISAS. 1993. "Regional Seminar: Agricultural Research Policy in the Sahel: Technology Development and Transfer in a Rapidly Changing Environment: Synthesis Report." Bamako: PRISAS, Institut du Sahel, September. **French version:** "Séminaire régional: politiques de recherche agricole au Sahel: développement et transfert de technologies dans un environnement en mutation rapide: rapport de synthèse."

PRISAS. 1992. "Atelier régional du PRISAS: environnement institutionnel et juridique des marchés des intrants et des produits agricoles au Sahel: compte rendu." Conference Paper No. DC 92-01. Bamako: PRISAS, Institut du Sahel, March.

PRISAS. 1991. "Regional Workshop on Food Security in the Sahel: Review of Past Studies and Priorities for Future Policy Research and Dialogue." Conference Paper No. 91-01. Bamako: PRISAS, Institut du Sahel, May. **French version:** "Atelier régional: sécurité alimentaire au Sahel: bilan des études et priorités des recherches sur les politiques: compte rendu."

- **PRISAS Conference Papers**

Dioné, Josué. 1995. "Ajustement structurel, réformes économiques et transformation de l'agriculture au Sahel." Bamako: PRISAS, Institut du Sahel, September. Paper prepared for the BAD/MSU/USAID/INSAH conference on the transformation of African Agriculture, Abidjan, September 26-29.

Dioné, Josué and Touba Bedingar. 1995. "Food Security and Technology in West Africa: Needs, Options and Impediments." Bamako: PRISAS, Institut du Sahel, January. Paper prepared for the Technology Development and Transfer Collaborators Colloquium and Workshop. Harare, January 24-27.

Reardon, Thomas, Valerie Kelly, Bocar Diagana, Josué Dioné, Eric Crawford, Kimseyinga Savadogo, and Duncan Boughton. 1995. "Sustainable Capital-led Intensification in Sahel Agriculture: Addressing Structural Constraints After Macroeconomic Policy Reform." Paper presented at the American Anthropological Association Meetings in Washington, D.C., panel on "Post-Structural Adjustment and Food Security in Africa: Policy, Theory, and Cross-Disciplinary Evidence," November.

Ba, Moussa Batchily. 1993. "Mobilisation de ressources financières pour la recherche agricole au Sahel." Presentation to PRISAS Regional Seminar on Technology Development and Transfer in a Rapidly Changing Environment: Implications for Agricultural Research in the Sahel. Bamako: PRISAS, Institut du Sahel, September. PN-ABS-949.

Crawford, Eric W. 1993. "Assessment of the Economic Impact of Agricultural Research: Summary of Studies Conducted by Michigan State University." Agricultural Economics Staff Paper No. 93-66. East Lansing: Michigan State University, December. PN-ABS-777. **French version:** "L'évaluation de l'impact économique de la recherche agricole: résumé des études menées par Michigan State University." Presentation to PRISAS Regional Seminar on Technology Development and Transfer in a Rapidly Changing Environment: Implications for Agricultural Research in the Sahel. Bamako, September. PN-ABS-778.

Netoyo, Laomaïbao. 1993. "Evolution des systèmes nationaux de recherche agricole au Sahel dans une perspective régionale et globale: cas du cadre d'action INSAH/SPAAR." Presentation to PRISAS Regional Seminar on Technology Development and Transfer in a Rapidly Changing Environment: Implications for Agricultural Research in the Sahel. Bamako: PRISAS, Institut du Sahel, September. PN-ABT-291.

Schmid, A. Allan. 1992. "Fondations juridique du marché: conséquences pour l'Afrique." Agricultural Economics Staff Paper No. 92-28. East Lansing: Michigan State University, April. PN-ABS-764. **English version:** "Legal Foundations of the Market: Implications for Africa." PN-ABS-763. Invited Paper for the Regional Workshop of

PRISAS on the Institutional and Legal Environment of Agricultural Input and Product Markets in the Sahel. Bamako, March.

- **Other Conference/Seminar Papers by PRISAS-Affiliated Staff**

Dioné, Josué. 1995. "Ajustement structurel et education au Mali." Introductory note at the Conference organized by the National Education Federation in Bamako, May 1.

Reardon, Thomas. 1994. "La diversification des revenus au Sahel et ses liens éventuels avec la gestion des ressources naturelles par les agriculteurs." In Actes du séminaire régional: promotion de systèmes agricoles durables dans les pays d'Afrique soudano-sahélienne, Dakar, Senegal, January 10-14. Rome: FAO.

Staatz, John. 1994. "The Strategic Role of Food and Agricultural Systems in Fighting Hunger through Fostering Sustainable Economic Growth." Agricultural Economics Staff Paper No. 94-39. East Lansing: Michigan State University. Paper prepared for workshop on "The Silent Challenge of Hunger" sponsored by USAID, Global Bureau, Office of Agriculture and Food Security. Washington, D.C., June 28-29.

Reardon, Thomas and M. Mercado Peters. 1993. "Self-Financing of Rural Household Cash Expenditures in Burkina Faso: The Case of Net Cereal Buyers." In Cuevas and Benoit-Cattin, eds., Finance and Rural Development in West Africa, proceedings of the 12th rural economy seminar sponsored by CIRAD, Ohio State University, and University of Ouagadougou, held in Ouagadougou, October 21-25, 1991. Montpellier, France: CIRAD. (Represents collaborative work with IFPRI.) PN-ABT-318.

Delgado, Christopher and Thomas Reardon. 1992. "Cereal Consumption Shifts and Policy Changes in Developing Countries: General Trends and Case Studies from the West African Semi-Arid Tropics." Chapter revised in March 1992, published in the 1991 International Sorghum and Millet CRSP Conference Proceedings, INTSORMIL Publication 92-1. Corpus Christi, Texas, May. (Represents collaborative work with IFPRI.) PN-ABT-270.

Hopkins, Jane and Thomas Reardon. 1992. "Potential Welfare Impacts of Trade Regime Changes on Rural Households in Niger: A Focus on Cross-Border Trade." Paper presented at the IFPRI/ISRA conference on the Regional Integration of Agricultural Markets in West Africa: Issues for the Sahelian Countries. Saly Portudal, Senegal, December 2-4, 1992. (Represents collaborative work with IFPRI.) PN-ABT-286.

Reardon, Thomas, Jane Hopkins, and Valerie Kelly. 1992. "Structural Adjustment Impacts on Real Incomes and Demand Patterns of Urban and Rural Households in the Sahel." Paper presented at the 29th Seminar of the European Association of Agricultural Economists, 'Food and Agricultural Policies Under Structural Adjustment,' September 21-25, 1992, Hohenheim, Germany. (Represents collaborative work with IFPRI.) PN-ABT-281.

Staatz, John M. 1992. "Institutionalist Perspectives on Agricultural Policy Reforms in West Africa." Agricultural Economics Staff Paper No. 92-61. East Lansing: Michigan State University. Paper presented at CIRAD Seminar on Institutional Economics and Agriculture, Montpellier, France, September 7-9. PN-ABS-765.

Dioné, Josué. 1989a. "Food Security Policy Reform in Mali and the Sahel." Invited paper at the IXth World Congress of the International Economic Association, Athens, Greece, 28 August-01 September, 1989. In P. Dasgupta, ed. Issues in Contemporary Economics, Volume 3: Policy and Development, 1991, pp. 148-169. London: MacMillan Academic and Professional Ltd and the International Economic Association. PN-ABT-261.

Dioné, Josué. 1989b. "Policy Dialogue, Market Reform and Food Security in Mali and the Sahel." In M. Rukini, G. Mudimu and T.S. Jayne, eds., Food Security Policies in the SADCC Region, proceedings of the Fifth Annual Conference on Food Security Research in Southern Africa, 16-18 October 1989, pp. 143-170. Harare: UZ/MSU Food Security Research Project, Dept. of Ag. Economics and Extension. PN-ABT-262.

- **Research Reports**

Dioné, Josué. 1995. "Food Security in Sub-Saharan Africa: Issues, Challenges, and Options." Research Paper No. 95-06, written for the World Coalition for Africa. Bamako: PRISAS, Institut du Sahel, March.

Dioné, Josué. 1994a. "Impact du commerce mondial, des politiques économiques et des programmes d'ajustement structurel sur la désertification en Afrique de l'Ouest." Research Paper No. 94-01. Bamako: PRISAS, Institut du Sahel, May.

Dioné, Josué. 1994b. "Human Capital Investment for Agricultural Competitiveness in West Africa." Research Paper No. 94-02. Bamako: PRISAS, Institut du Sahel, June.

Coulibaly, Ousmane N. and Josué Dioné. 1990. "Agricultural Technology Transfer in the Sahel: Baseline Literature Review." (Provisional Draft.) Research Paper No. 90-01. Bamako: PRISAS, Institut du Sahel, August. PN-ABS-871.

Dioné, Josué. 1990. "Sécurité alimentaire au Sahel: point sur les études et projet d'agenda de recherche." Research Paper No. 90-02. Bamako: PRISAS, Institut du Sahel, October. PN-ABS-873. **English version:** "Food Security in the Sahel: Review of Past and Current Studies and Agenda for Future Research and Dialogue on Policies." PN-ABS-872.

Kanté, Bakary and Josué Dioné. 1990. "Opération triangulaire d'aide alimentaire au Sahel: étude de case: USA - Mali - Niger: synthèse d'information partielle." Research Paper No. 90-03. Bamako: PRISAS, Institut du Sahel, December.

- **PRISAS Information Bulletins**

Tefft, James and Josué Dioné. 1995. "Riz importé: une menace pour la production malienne?" Information Bulletin No. 95-01. Bamako: PRISAS, Institut du Sahel, June.

- **PRISAS Working Papers**

Dioné, Josué. 1995. "Cadre conceptuel pour une réflexion sur la transformation de l'agriculture au Sahel." Working Paper No. 95-12. Bamako: PRISAS, Institut du Sahel, December. Paper prepared for a meeting on the transformation of agriculture in the Sahel, Bamako, December 4-5.

Dioné, Josué. 1994. "Décalage entre la production et la consommation des céréales au Sahel." Working Paper No. 94-01. Bamako: PRISAS, Institut du Sahel, January. Invited paper at the Regional Seminar on Promoting Sustainable Agricultural Systems in the Sudano-Sahelian Countries of Africa, organized by FAO and CIRAD, Dakar, Senegal, January 10-14.

Kanté, Bakary. 1994. "Du monopole à la libéralisation de la transformation du paddy à l'Office du Niger: quelle implications pour la nouvelle société des rizeries." Working Paper No. 94-02. Bamako: PRISAS, Institut du Sahel, February. PN-ABS-916.

Dioné, Josué. 1993. "Approches de la sécurité alimentaire dans les pays du CILSS." Working Paper No. 93-02. Bamako: PRISAS, Institut du Sahel, November. Invited paper at the Meeting of the "Réseau de prévention des crises alimentaires au Sahel." Club du Sahel, OECD, Paris, France, November 17-18. PN-ABS-894.

Kanté, Bakary. 1993. "Aperçu de la recherche sur les technologies agricoles au Sahel: résultats et contraintes." Working Paper No. 93-01. Bamako: PRISAS, Institut du Sahel. Paper prepared for the Regional Seminar on Agricultural Research Policy in the Sahel: Technology Development and Transfer in a Rapidly Changing Environment; organized by PRISAS, Institut du Sahel, Bamako, Mali, August 31-September 3. PN-ABS-893.

Kanté, Bakary. 1992. "Activités informelles non-agricoles et sécurité alimentaire au Sahel." Working Paper No. 92-01. Bamako: PRISAS, Institut du Sahel, October. PN-ABS-886. **English version:** "Informal Non-Agricultural Activities and Food Security in the Sahel." PN-ABS-885.

Dioné, Josué. 1990a. "Amélioration de l'utilisation des données au Sahel: nécessité d'un plan d'action pour le renforcement des capacités locales d'analyse et de diffusion de l'information sur les marchés." Working Paper No. 90-01. Bamako: PRISAS, Institut du Sahel, April. Paper prepared for the Regional Seminar on Cereals Market Information Systems in the Sahel, sponsored by CILSS and Club du Sahel, Bamako, Mali, April 23-25. PN-ABS-880.

Dioné, Josué. 1990b. "Libéralisation des économies et des échanges et sécurité alimentaire au Sahel." Working Paper No. 90-02. Bamako: PRISAS, Institut du Sahel, June. Invited paper at the International Colloquium on How to Feed the World: Food Policies in a Context of Liberalization of Economies and Trade, sponsored by SOLAGRAL, Paris, France, June 26-28. PN-ABS-881.

Dioné, Josué. 1990c. "Elargissement des espaces d'échanges et stabilisation des marchés alimentaires au Sahel." Working Paper No. 90-03. Bamako: PRISAS, Institut du Sahel, August. Invited paper at the International Seminar on the Future of Agriculture in Sahelian Countries, sponsored by the Club du Sahel and CIRAD, Montpellier, France, September 12-14. PN-ABS-883.

- **Other Working Papers by PRISAS-Affiliated Staff**

Reardon, Thomas and John M. Staatz. 1995. "Reflections on WALTPS Results and Recommendations: Implications for Food Security in West Africa." Food Security Briefing Paper No. 95-02. Bamako: PRISAS, Institut du Sahel, January.

D'Agostino, Victoire C. and John M. Staatz. 1989. "Food Security and Economic Growth in the Sahel: Summary of the September 1989 Sahel Cereals Workshop." Document prepared for the CILSS/Club du Sahel Conference on Regional Trade in West Africa: Current Dynamics and Future Inquiries. Lomé, Togo, November 6-11. PN-ABD-956. MSU International Development Working Paper No. 34. East Lansing: Michigan State University, November. **French version:** "Sécurité alimentaire et croissance économique au Sahel: atelier sur les céréales au Sahel." PN-ABT-263.

Dioné, Josué. 1989. "Comportement commercial des agriculteurs et commerce céréalier régional en Afrique de l'Ouest." Document prepared for the CILSS/Club du Sahel Conference on Regional Trade in West Africa: Current Dynamics and Future Inquiries. Lomé, Togo, November 6-11. PN-ABT-265. Agricultural Economics Staff Paper No. 89-93. East Lansing: Michigan State University. **English version:** "The Commercial Behavior of Farmers and Regional Cereal Trade in West Africa." PN-ABT-264.

- **Theses**

Abdelwahid, Yacoub M. 1995. "Institutional Constraints Affecting Cereals Marketing in Chad." M.S. Thesis, Department of Agricultural Economics, Michigan State University (Staatz was thesis supervisor.)

Diagne, Aliou. 1994. "Consumer Behavior and Welfare Measurement under Uncertainty: Theory and Empirical Evidence from Senegal." Ph.D. Dissertation, Department of Agricultural Economics and Department of Economics, Michigan State University (Eric Crawford and John Strauss were dissertation supervisors).

Maïga, Younoussa. 1994. "Analyse de la demande des céréales en milieu urbain au Mali: le cas de la ville de Bamako." Thesis for Doctorat 3ème Cycle in Agricultural Economics, University of Abidjan (Dioné was thesis supervisor).

Diarra, Daouda. 1993. "Analyse économique de l'intégration spatiale des marchés céréaliers et de l'impact du crédit P.R.M.C. sur le revenu des producteurs agricoles au Mali." Thesis for Doctorat 3ème Cycle in Agricultural Economics, University of Abidjan. Degree awarded with honors (Dioné was thesis supervisor).

- **Sahel-Oriented Journal Articles by PRISAS-Affiliated Staff**

Reardon, Thomas. 1995. "Sustainability Issues for Agricultural Research Strategies in the Semi-Arid Tropics: Focus on the Sahel." Agricultural Systems, Vol. 48, No. 3 (October): pp. 345-360. Agricultural Economics Staff Paper No. 94-43. East Lansing: Michigan State University, July. PN-ABT-294.

Reardon, Thomas and J. Edward Taylor. 1995. "Agroclimatic Shock, Income Inequality, and Poverty: Evidence from Burkina Faso." Forthcoming, World Development, Vol. 24, No. 5 (May).

Savadogo, Kimseyinga, Thomas Reardon, and Kyosti Pietola. 1995. "Mechanization and Agricultural Supply Response in the Sahel: A Farm-Level Profit Function Analysis." Forthcoming, Journal of African Economies.

Taylor, J. Edward and Thomas Reardon. 1995. "Income Diversification and the Impact of Agroclimatic Shock on Incomes, Inequality, and Poverty: Evidence from Burkina Faso." Agricultural Economics Staff Paper No. 95-13. East Lansing: Michigan State University, February. Submitted to Economic Development and Cultural Change, February; requested to revise and resubmit in May.

Kennedy, Eileen and Thomas Reardon. 1994. "Shift to Non-Traditional Grains in the Diets of East and West Africa: Role of Women's Opportunity Cost of Time." Food Policy, Vol. 19, No. 1 (February): pp. 45-56. (Represents joint work with IFPRI.) PN-ABT-299.

Savadogo, Kimseyinga, Thomas Reardon, and Kyosti Pietola. 1994. "Farm Productivity in Burkina Faso: Effects of Animal Traction and Non-Farm Income." American Journal of Agricultural Economics, Vol. 76, No. 3 (August): pp. 608-612. PN-ABS-954.

Haddad, Lawrence and Thomas Reardon. 1993. "Gender Bias in the Allocation of Resources Within Households in Burkina Faso: A Disaggregated Outlay Equivalent Analysis." Journal of Development Studies, Vol. 29, No. 2 (January): pp. 260-276. (Represents collaborative work with IFPRI.) PN-ABT-287.

Reardon, Thomas. 1993. "Cereals Demand in the Sahel and Potential Impacts of Regional Cereals Protection." World Development, Vol. 21, No. 1 (January): pp. 17-35. (Represents collaborative work with IFPRI.) PN-ABS-928.

Delgado, Christopher and Thomas Reardon. 1992. "Do the Poor Pay More? Interactions of Price, Quality and Transaction Costs with Public Grain Marketing in Ouagadougou, Burkina Faso." Submitted to Economic Development and Cultural Change, June 1992; requested to revise and resubmit November 1992. (Represents collaborative work with IFPRI.)

Reardon, Thomas, Christopher Delgado, and Peter Matlon. 1992. "Determinants and Effects of Income Diversification Amongst Farm Households in Burkina Faso." Journal of Development Studies, Vol. 28, No. 2 (January): pp. 264-296. (Represents joint work with IFPRI.) PN-ABS-957.

Reardon, Thomas, Christopher Delgado, and Taladidia Thiombiano. 1992. Substitution by Urban Sahelian Consumers Between Coarse Grains and Imported Rice and Wheat: The Case of Ouagadougou. Submitted to IFPRI June 1992; requested in November 1992 to revise and resubmit. (Represents collaborative work with IFPRI.)

Reardon, Thomas, Nurul Islam, and Michel Benoît-Cattin. 1992. "Questions de durabilité pour la recherche agricole en Afrique." Cahiers de la recherche développement. Montpellier, France: CIRAD, April. PN-ABS-927.

Reardon, Thomas, Peter Matlon, and Christopher Delgado. 1992. "Comment les ménages font face à l'insécurité alimentaire dans les régions touchées par la sécheresse au Burkina Faso." Cedres Etudes: Revue Economique et Sociale Burkinabé, Vol. XXXV (September). PN-ABT-278.

Schmid, A. Allan. 1992. "Legal Foundations of the Market: Implications for Formerly Socialist Countries of Eastern Europe and Africa." Journal of Economic Issues, Vol. XXVI, No. 3 (September): pp. 707-32. PN-ABS-926.

Webb, Patrick and Thomas Reardon. 1992. "Drought Impact and Household Response in East and West Africa." Quarterly Journal of International Agriculture, Vol. 3 (July-September). (Represents joint work with IFPRI.) PN-ABT-272.

Dioné, Josué. 1990. "Libéralisation interne et sécurité alimentaire." Supplement la lettre de Sologral - Strategies Alimentaires No. 34. Septembre/Octobre 1990. PN-ABT-266.

Staatz, John M., Victoire C. D'Agostino, and Shelly Sundberg. 1990. "Measuring Food Security in Africa: Conceptual, Empirical, and Policy Issues." American Journal of Agricultural Economics, Vol. 72, No. 5 (December): pp. 1311-17. PN-ABS-925.

- **Book Chapters**

Reardon, Thomas, Amadou Abdoulaye Fall, Valerie Kelly, Christopher Delgado, Peter Matlon, Jane Hopkins, and Ousmane Badiane. 1993. "Agriculture-led income diversification in the West African semi-arid tropics: nature, distribution, and importance of production-linkage activities," chapter in forthcoming book African Economic Issues, edited by A. Atsain, S. Wangwe and A. G. Drabek. (Represents joint work with IFPRI.) PN-ABT-296.

Reardon, Thomas and Patrick Webb. 1993. "Stratégies des ménages pour faire face aux crises alimentaires pendant et après la sécheresse en Afrique de l'Ouest et de l'Est." In Afrique-Asie: performances agricole comparées, edited by Etienne, Griffon, and Guillamont. Paris: Revue Française d'Economie, June. PN-ABT-289.

Staatz, John M. 1991. "Conceptual Issues in Analyzing the Economics of Agricultural and Food Self-Sufficiency." In National and Regional Self-Sufficiency Goals: Implications for International Agriculture, edited by Fred J. Ruppel and Earl D. Kellogg, pp. 13-25. Boulder, Colorado: Lynne Rienner Publishers. PN-ABT-273.

Staatz, John M. and Jennifer B. Wohl. 1991. "The Evolution of Food Self-Sufficiency Policies in West Africa." In National and Regional Self-Sufficiency Goals: Implications for International Agriculture, edited by Fred J. Ruppel and Earl D. Kellogg, pp. 65-87. Boulder, Colorado: Lynne Rienner Publishers. PN-ABT-267.

5.8. Written Reports - CFA Franc Devaluation

The written reports listed below represent work which specifically addresses impacts of the devaluation of the CFA franc.

- **PRISAS Policy Conference Reports**

PRISAS. 1995. "Atelier regional: impact de la dévaluation du franc CFA sur les revenus et la sécurité alimentaire en Afrique de l'Ouest: compte rendu provisoire." Bamako: PRISAS, Institut du Sahel, June 26-30.

PRISAS. 1995. "Principaux résultats des études nationales présentées à l'atelier régional tenu du 26 au 30 Juin 1995." Bamako: PRISAS, Institut du Sahel, June.

Dioné, Josué. 1994. "Atelier regional: impact de la dévaluation du franc CFA sur les revenus et la sécurité alimentaire au Sahel: introduction, note de presentation." Bamako: PRISAS, Institut du Sahel, July 11-14.

Fall, Abdoulaye, John Staatz, and Moussa Ba. 1994. "Regional Workshop: Impact of the Devaluation of the CFA Franc on Incomes and Food Security in the Sahel - Preliminary Summary Report." Bamako: PRISAS, Institut du Sahel, July 11-14. **French version:** "Impact de la dévaluation du franc CFA sur les revenus et la sécurité alimentaire au Sahel: compte rendu provisoire."

- **PRISAS Conference Papers**

Dibley, David, Thomas Reardon, and Bakary Kanté. 1995. "Experiences de dévaluation dans le Tiers Monde: cadre conceptuel, étude de cas, et implications pour les analyses du réseau PRISAS." Prepared for PRISAS conference on CFA franc devaluation, July.

Dioné, Josué. 1994. "Impact de la dévaluation du franc CFA sur l'agriculture, les échanges et la sécurité alimentaire au Sahel." Working Paper No. DT 94-03. Bamako: PRISAS, Institut du Sahel, October. Paper presented at the Annual Meeting of the CILSS-Club du Sahel, Le Rouret, France, October 17-20.

- **Other Conference/Seminar Papers by PRISAS-Affiliated Staff**

Reardon, Thomas, Josué Dioné, Akin Adesina, and James Tefft. 1995. "Rice in West Africa before and after Franc CFA devaluation: focus on CILSS countries." Paper presented at WARDA conference in Ndiaye, Senegal, March 25-29.

Kelly, Valerie, Thomas Reardon, Bocar Diagana, and Amadou Abdoulaye Fall. 1994. "Impacts of Devaluation on Senegalese Households: Policy Implications." Agricultural Economics Staff Paper No. 94-20. East Lansing: Michigan State University, March. PN-ABS-779. **French version:** "L'impact de la dévaluation sur les ménages Sénégalais: les implications politiques." Agricultural Economics Staff Paper No. 94-20F. East Lansing: Michigan State University, June. Also published in Food Policy, Vol. 20, No. 4, (November, 1995): pp. 299-313.

- **Research Reports**

Ba, Sadou Oumar, Belco Cissé, and Samba Diallo. 1995. "Stratégies développées par les producteurs pour assurer l'approvisionnement interne et externe en produits animaux." PRISAS Regional Collaborative Research Report. Bamako: Ministère du Développement Rural et l'Environnement, IER, June.

Coulibaly, Bakary Sékou, Ousmane Sanogo, and Dramane Mariko. 1995. "Cas du coûts de production du paddy à l'Office du Niger." PRISAS Regional Collaborative Research Report. Bamako: Ministère du Développement Rural et l'Environnement, IER, June.

Diagana, Bocar N., Valerie Kelly, and A. Abdoulaye Fall. 1995. "Dévaluation du franc CFA et décisions de production agricole. Une analyse des impacts de la dévaluation du franc CFA sur les choix de culture et de technologies de production par les ménages

ruraux du Bassin Arachider du Sénégal." PRISAS Regional Collaborative Research Report. Dakar: PRISAS-ISRA/BAME, June.

Diallo, Boubacar, Mahamadou Ali, Maï-Moussa Gaptou, and J.P. Attimdehou. 1995. "L'impact de la dévaluation du franc CFA sur les prix de l'oignon et du coton au Niger." PRISAS Regional Collaborative Research Report. Niamey: PRISAS-INRAM/University of Niamey, June.

Diène, Mame N'Diobo, Amadou F. Diouf, Babacar Fall, and Moussa Cissé. 1995. "Impact de la dévaluation du franc CFA sur la sécurité alimentaire et les revenus: module prix Senegal." Dakar: PRISAS-UPA/DPS/CSA, September.

Kébé, Demba, Hugo De Groote, Timothy Dalton, and Yacouba Koné. 1995. "Effets de la dévaluation sur l'intensification agricole au Mali-Sud." PRISAS Regional Collaborative Research Report. Bamako: PRISAS-IER, June.

Kébé, Moustapha, Matar Gaye, Moustapha Dème, Cheikh M'Backé N'Dioné, Abdoulaye Fall, and Mame N'Diobo Diène. 1995. "Etude de l'impact de la dévaluation du franc CFA sur les revenus et la sécurité alimentaire au Sénégal: premiers résultats Projet INSAH/ISRA." PRISAS Regional Collaborative Research Report. Dakar: PRISAS-ISRA/BAME, June.

Koné, Harouna, Sékou Traoré, Salif Diarra, Abdramane Traoré, and Pierre Traoré. 1995. "L'impact de la dévaluation du franc CFA sur les prix." PRISAS Regional Collaborative Research Report. Bamako: PRISAS-SIM/DNSI, June.

Moha, Aliou and Samba Ly. 1995. "L'impact de la dévaluation du franc CFA sur les coûts de production de l'oignon et du coton au Niger." PRISAS Regional Collaborative Research Report. Niamey: PRISAS-INRAM/University of Niamey, June.

Padacke, Fauba and Djimasbé Ngaradoum. 1995. "Impact de la dévaluation du franc CFA sur les revenus et la sécurité alimentaire au Tchad: prix et coûts de production." PRISAS Regional Collaborative Research Report. N'Djaména: PRISAS-DCPA/DPPASA, June.

Sangaré, Modibo, Boubou Sow, and Tapsirou Maïga. 1995. "Effets du développement des échanges commerciaux du bétail et de la viande sur l'accessibilité des populations à la viande." PRISAS Regional Collaborative Research Report. Bamako: Ministère du Développement Rural et de l'Environnement, OMBEVI, June.

Traoré, Boubacar. 1995. "Impact de la dévaluation du franc CFA sur le processus de transformation du paddy au Mali." PRISAS Regional Collaborative Research Report. Bamako: PRISAS-IER, June.

Ly, Samba, Amadou Kaka, and Boubacar Diallo. 1994. "Revue des initiatives de suivi et d'analyse des effets de la dévaluation du franc CFA au Niger." PRISAS Regional Collaborative Research Report. Niamey: INRAM/University of Niamey, July.

- **PRISAS Working Papers**

Dioné, Josué. 1995a. "Dévaluation du franc CFA et sécurité alimentaire au Sahel." Working Paper No. DT 95-05. Bamako: PRISAS, Institut du Sahel, March.

Dioné, Josué. 1995b. "Impact de la dévaluation du franc CFA sur l'agriculture, l'élevage, et les échanges au Mali." Working Paper No. DT 95-06. Bamako: PRISAS, Institut du Sahel, March.

Kanté, Bakary, Thomas Reardon, and Amagoïn Kéïta. 1995. "Dévaluation du franc CFA: analyse typologique des mesures d'accompagnement." Working Paper No. DT 95-11. Bamako: PRISAS, Institut du Sahel, December.

Koïta, Amadou, James Tefft, and Josué Dioné. 1995. "Impact de la dévaluation du franc CFA sur le secteur d'éducation au Mali." Working Paper No. DT 95-07. Bamako: PRISAS, Institut du Sahel, July.

Reardon, Thomas and Valerie Kelly. 1995. "Methods for Analysis of Impacts of CFA Franc Devaluation on Real Income of Households." Working Paper No. 95-02. Bamako: PRISAS, Institut du Sahel, January. **French version:** "Méthodes d'analyse de l'impact de la dévaluation du franc CFA sur le revenu réel des ménages."

Staatz, John. 1995. "Use of Simple Price Analyses for Analyzing the Impact of CFA Franc Devaluation." Working Paper No. 95-01. Bamako: PRISAS, Institut du Sahel, January.

Tefft, James, Salif Coulibaly, Josué Dioné, and Aboudou Diarra. 1995. "Impact de la dévaluation du franc CFA sur le secteur de santé au Mali." Working Paper No. DT 95-08. Bamako: PRISAS, Institut du Sahel, July.

Dioné, Josué. 1994. "Impact de la dévaluation du franc CFA sur les revenus et la sécurité alimentaire au Sahel." Project Document No. 94-01. Bamako: PRISAS, Institut du Sahel, April.

Kanté, Bakary, 1994. "Effets immédiats de la dévaluation du franc CFA sur la sécurité alimentaire et les revenus au Sahel: le cas du Mali." Project Document No. 94-04. Bamako: PRISAS, Institut du Sahel, November.

Staatz, John, Josué Dioné, Valerie Kelly, and Thomas Reardon. 1994. "Monitoring and Analysis of the Effects of the Devaluation of the CFA Franc on Food Security and Economic Growth in West Africa: Conceptual and Methodological Framework." Project

Document No. 94-05. Bamako: PRISAS, Institut du Sahel, July. **French version:** "Suivi et analyse des effets de la dévaluation du franc CFA sur la sécurité alimentaire et la croissance économique en Afrique de l'Ouest: cadre conceptuel et méthodologique."

- **Other Working Papers by PRISAS-Affiliated Staff**

Keita, Amagoin. 1995. "Suivi et analyse des mesures d'accompagnement des bailleurs de fonds au Mali suite à la dévaluation du franc CFA." Orsay: Centre d'Observation des Economies Africaines (COBEA), February.

Keita, Amagoin. 1994. "Suivi de l'impact de la dévaluation du franc CFA sur les filières du riz et du coton au Mali." Orsay: Centre d'Observation des Economies Africaines (COBEA), June.

5.9. Examples of Impact of Project Findings/Information

Food policy reforms in Mali--A briefing paper prepared for the Minister of Agriculture on food-security research results in Mali and elsewhere in the Sahel documented the adverse impact on rural food security of the head tax. This documentation was one element that led to the government's decision to abolish the head tax in 1993.

Broadened scope of food security debate--PRISAS documents, seminars, and other outreach activities have played an important role in broadening the food policy debate beyond national food self-sufficiency in the Sahel. Sahelian governments now generally have a broader conception of food security that includes greater reliance on trade and income generation.

- **Increasing the productivity of agricultural research in the Sahel**--PRISAS has contributed to reforming agricultural research strategies in the Sahel through activities such as the September 1993 Regional Seminar on Agricultural Research and Dioné's contribution to developing the INSAH/SPAAR framework for action. These actions have built momentum and consensus for agricultural research in the region to be more demand-driven, market/client-oriented, and accountable for its impact. PRISAS has played a key role in getting Sahelian NARS to endorse the concept of building impact assessment into their national agricultural research programs and advocating greater use of subsector approaches to plan agricultural research.

Incorporating transaction cost considerations into marketing and trade policy formulation and analyses--PRISAS has helped build policy makers' and researchers' awareness of the role transaction costs play in influencing market reforms--e.g., through sponsoring a regional workshop on the institutional and legal environment of agricultural markets and publishing documents on this topic.

Major contributions to the formation of a long-term strategic development plan by CILSS--Analyses carried out under the project have been incorporated into the ongoing CILSS work on the economic future of the Sahel and on strategies to promote agricultural transformation in the region.

Broadened debate on the impact of institutional arrangements on the distribution of benefits from devaluation--PRISAS-sponsored comparative analyses of the impact of devaluation on the participants in the cotton subsector in several CFA countries has broadened the debate within CILSS on the impact of different ways of organizing subsectors on the distribution of benefits from macro-economic reforms.

Contribution to rice import reforms in Mali--In conjunction with the Malian Market Information System, PRISAS helped support a study to evaluate the impact of reducing rice import tariffs in Mali following the devaluation. Rice prices rose rapidly in mid 1995, and the government proposed reducing the import tariff to lower consumer prices. Some in and out of government voiced concern that cutting the import-tariff would undermine production incentives in Mali. PRISAS-supported research demonstrated that because of the devaluation, even with the reduced import tariff, rice production in the Office du Niger zone would still be profitable for farmers. The government has cut the tariff, lowering consumer prices, with no noticeable impact on domestic production.

6. General Research Activities

Multi-country design of study of contractual arrangements and transaction costs in food markets.

Promotion of country and regional-level studies of commodity subsectors and comparative advantages.

7. Outputs Anticipated

More fact-based recommendations for reducing institutional and legal impediments to greater market flows of food at lower transfer and transaction costs.

More policies aimed at increasing the supply-response to new incentives brought about by the devaluation. Better targeting of safety-net measures to protect those most vulnerable to the adverse effects of the devaluation.

More comparative analyses across countries of how different institutional arrangements for the production and marketing of agricultural products affect who gains and who loses from devaluation.

Fact Sheet • ETHIOPIA FOOD SECURITY PROJECT

►FOOD SECURITY II COOPERATIVE AGREEMENT◄
between
►U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT and MICHIGAN STATE UNIVERSITY◄
►IN-COUNTRY TIME PERIOD: MARCH 1995 - AUGUST 1997◄◄◄◄◄

1. Cooperating Institutions

Ministry of Economic Development and Cooperation (MEDAC)
Agency for International Development, Ethiopia Mission (USAID/Addis)
Agency for International Development, Global Bureau, Economic Growth Center, Office of
Agriculture and Food Security (G/EG/AFS)
Department of Agricultural Economics, Michigan State University (MSU)

2. Researchers Involved

MEDAC/MSU Food Security Research Project (FSRP) In-country Researchers: Hagos Gebre
(Chairman, FSRP Technical Committee); (In-Country Field Coordinator, to be named, Ali
Said, Daniel Molla, Sirak Hailu, Debebe Habtewold, Tesfamichael Fessehaie, Abdella Jamal,
Asres Workneh

MSU Campus Backstop: Thomas Jayne (MSU Coordinator of Ethiopia Add-on), Julie Howard,
Michael Weber (Director, Food Security Cooperative Agreement), James Shaffer, David
Tschirley and Dan Clay

3. Objectives of the Research and Policy Outreach Activities

The add-on is designed to implement collaborative research and outreach by MSU and the
MEDAC/MSU Food Security Project's Technical Committee. These activities aim to strengthen
the empirical foundation for food policy decisions in Ethiopia by:

Strengthening Ethiopian analytical capacity to carry out food security policy analysis and
extension activities through on-the-job training;

Undertaking new studies on national food security issues in Ethiopia, under two activities: (1)
improving household access to food; and (2) improved grain market performance.

Diffusing more widely to Ethiopian researchers and policy makers the results of recent food
security research and their implications for guiding food policy in Ethiopia.

4. Research Approach

In order to carry out its research mandate effectively, the FSRP in Ethiopia aims at: (a) strengthening the capacity of MEDAC, Ethiopian Grain Trading Enterprise, and other government agencies responsible for food security in Ethiopia to carry out applied research on food security; and (b) strengthening the capacity of MEDAC to help coordinate research on national food security issues. The Project Technical Committee, representing the Ethiopian Government, has identified with MSU a research agenda and has approved a Terms of Reference to guide research and implementation activities over the life of the Project.

5. Outputs to Date

5.1. MEDAC/MSU-Sponsored Food Security Seminars and Workshops

Food Security Research Priority Setting Workshop: Presentation of Rapid Appraisal studies, discussion of priorities for future policy research and dialogue; Imperial Hotel, Addis Ababa, July 4-5 1995.

5.2. Oral Presentations by FSRP Affiliated Researchers

— To African Researchers and Policy Makers

Daniel Molla, presentation of paper on “Strategies to Promote Structural Transformation in Ethiopia: Toward a Research Agenda.” Côte d'Ivoire. USAID-sponsored Conference on Structural Transformation in Africa; organized by MSU/USAID, Abidjan, Côte d'Ivoire, September 1995.

Pat Diskin, presentation of paper on grain market performance at the Ethiopia Economics Society Conference on Agricultural and Food Security Policy in Ethiopia, May 1995.

— To AID/Washington, USAIDs, and Multi-Lateral Donor Agencies

Hagos Gebre and Thomas Jayne, informal presentation of food security policy issues and options at World Bank, Addis Ababa, June 21, 1995.

5.3. Short-Term Training

October 1995. MSU Training Workshop on Food Systems Performance and Market Information, Bamako, Mali, October 8-15, 1995. Organized by USAID/AFR, INSAH, and Department of Agricultural Economics, Michigan State University. Attended by FSRP-affiliated staff members: Ali Said (MEDAC), Feleka Wakjira (EGTE), Daniel Molla (MEDAC), Alemu Asfaw (FSRP), and Sirak Hailu (EFSRA).

September 1995. Workshop on Structural Transformation in Africa, September 26-29, 1995, Abidjan, Côte d'Ivoire; Organized by the African Development Bank, USAID (AFR/SD/PSGE/FSP), the Institut du Sahel (PRISAS Program), and the Department of Agricultural Economics, Michigan State University. Attended by Daniel Molla.

5.4. MSU Backstop Trips to In-Country Team

October 1995, trips by Howard, Clay, Weber, and Rubey to work on output and input marketing policy issues in Ethiopia, and on the implementation of a pilot grain market information system at EGTE.

September 1995, trip by Jayne to initiate analyses on food aid and food production incentives, and preliminary work on setting up a pilot market information system at Ethiopian Grain Trading Enterprise (EGTE).

June-July 1995, participation of Jayne, Howard, Diskin in MEDAC/MSU Food Security Workshop on Research Priority Setting (see list of publications for paper titles). Also trip by Weber, Clay, and Tschirley to assist in the design of a pilot public grain market information system in Ethiopia.

April 1995, trip by Howard. Rapid-appraisal analysis of constraints to adoption of agricultural technology and productivity growth in Ethiopia.

March 1995, trip by Jayne, Shaffer. Interaction with MEDAC/MSU FSRP Technical Committee to develop a long-term research agenda for the FSRP.

January 1995, trip by Jayne to support analyses on food aid and food production incentives, and preliminary work on setting up a pilot market information system at Ethiopian Grain Trading Enterprise (EGTE).

November 1994, trip by Jayne, Weber, Shaffer. Initial contacts made with MEDAC officials about possible collaborative national food security project.

5.5. Written Reports

- **MEDAC/MSU FSRP Conference Reports**

Howard, Julie, A. Said, D. Molla, P. Diskin, and S. Bogale. 1995. Toward Increased Domestic Cereals Production in Ethiopia. Food Security Research Project, Ministry of Economic Development and Cooperation, Addis Ababa, Ethiopia, September.

Jayne, Thomas S., and D. Molla. 1995. Toward a Research Agenda to Promote Household Access to Food in Ethiopia. Food Security Research Project, Ministry of Economic Development and Cooperation, Addis Ababa, Ethiopia, September.

Tschirley, David, P. Diskin, D. Molla, and D. Clay. 1995. Improving Information and Performance in Grain Marketing: An Assessment of Current Market Information Systems, and Recommendations for Developing a Public Grain MIS. Food Security Research Project, Ministry of Economic Development and Cooperation, Addis Ababa, Ethiopia, September.

- **Other Conference/Seminar Papers by FSRP-Affiliated Staff**

Gebry, Hagos, D. Molla, T. Jayne, J. Shaffer. 1995. Designing Strategies to Support a Transformation of Agriculture in Ethiopia. Invited paper presented at USAID-sponsored Conference on Structural Transformation in Africa; organized by MSU/USAID, Abidjan, Côte d'Ivoire; 15-18 June 1992.

- **FSRP Working Papers**

Howard, Julie, A. Said, D. Molla, P. Diskin, and S. Bogale. 1995. Toward Increased Domestic Cereals Production in Ethiopia. Working Paper 3, Food Security Research Project, Ministry of Economic Development and Cooperation, Addis Ababa, Ethiopia, September.

Jayne, Thomas S., and D. Molla. 1995. Toward a Research Agenda to Promote Household Access to Food in Ethiopia. Working Paper 2, Food Security Research Project, Ministry of Economic Development and Cooperation, Addis Ababa, Ethiopia, September.

Tschirley, David, P. Diskin, D. Molla, and D. Clay. 1995. Improving Information and Performance in Grain Marketing: An Assessment of Current Market Information Systems, and Recommendations for Developing a Public Grain MIS. Working Paper 1, Food Security Research Project, Ministry of Economic Development and Cooperation, Addis Ababa, Ethiopia, September.

6. General Research Activities

Activity 1.1: Design, Implementation, and Evaluation of a Pilot Grain Market Information System

The efficient and equitable performance of food markets may be impeded by high uncertainty about prices facing participants in various markets. A lack of timely and accurate information for market participants contributes to poorly functioning food markets and leads many farm households to rely on relatively low-productivity subsistence production for most of their food needs. Access to timely and accurate market information

is thus one important element for transforming Ethiopia from a subsistence-oriented, low-productivity, agriculturally-based economy into a modern, exchange-oriented, high-productivity economy.

Reducing uncertainty in grain marketing through the dissemination of timely and accurate information to market participants, may, by reducing marketing risks and margins, serve both to improve production incentives for grain producers, and to drive down prices for grain consumers. Improving farmer and trader awareness of prices in various markets throughout the country promotes grain system efficiency by: (1) encouraging grain flows from relatively surplus to relatively deficit areas, thus helping stabilize prices over space; (2) improving farmers' decisions and confidence regarding what to plant, how much to invest, and where and when to market their produce; and (3) promoting a more competitive marketing system, which will benefit both producers and consumers. In particular, small farmers will benefit from improved access to market information by improving their bargaining position, and increasing their marketing options. Access to timely and accurate grain market information is also crucial for policy makers and food relief agencies, to allow them to understand and effectively address food insecurity problems in Ethiopia.

Analysis of market information can also assist policy makers to understand the evolving structure and performance of the country's agricultural marketing system. This is especially important in a country such as Ethiopia, which is emerging from more than a decade of increasing state control over marketing activities and attempting to reestablish a viable private marketing system.

The objectives of this research are:

1. To test and improve procedures for grain market data collection, analysis, and dissemination;
2. To provide training and support to EGTE, MOPED, and other Ethiopian personnel to operate a public MIS; and
3. To monitor and evaluate the effects of the pilot MIS on access to grain market information and performance and its impact on the different market participants.

Price and other market information will be collected using EGTE's current data collection and reporting system, making some improvements where necessary. Data which is reported by EGTE branch offices to its headquarters in Addis Ababa will be made immediately available to the FSR project where it will be used for two purposes: (1) information on a subset of markets will be immediately broadcast by radio and newspaper to the general public; (2) information on all markets will be analyzed and disseminated for policy makers and relief agencies regularly.

The impact of the pilot MIS will be monitored in two ways: (1) through interviews with market participants (farmers, traders, consumers), policy makers, and relief organizations, asking them whether they perceive the MIS as useful; (2) through analysis of price information to assess changes in producer and consumer prices, marketing margins, and market integration. The costs and benefits of implementing an MIS through EGTE will also be assessed, relative to possible alternative agencies, particularly RRC and CSA.

Activity 1.2a: Analysis of Ethiopia's Grain Marketing System and Strategies to Improve Grain Market Performance.

The development of an efficient and equitable food marketing system is a critical component for improving food security in Ethiopia, improving both food availability and food access. Well functioning grain markets benefit both producers and consumers by reducing marketing margins and the transaction costs involved, thereby potentially lowering food prices to consumers while simultaneously raising price incentives to producers. Many factors constrain the performance of the Ethiopian grain marketing system. These include: barriers to entry into the market (e.g. rules on trader "residency," licensing requirements, importing restrictions); lack of competitiveness and fair trade practices in local markets; lack of access to capital by traders; poorly developed physical infrastructure and information systems; and grain market checkpoints and taxes.

Information which would be useful to guide policies and interventions to alleviate such constraints and to improve grain market performance in Ethiopia is currently lacking. This study will assist in developing a better understanding of the constraints facing grain market participants, and opportunities for alleviating these constraints.

The objectives of this research are:

1. To improve our understanding of constraints to improving the efficiency and equity of grain marketing in Ethiopia;
2. To identify policy, regulatory, and other constraints in the grain market system; and
3. To identify unexploited economic opportunities and cost-effective strategies to exploit them which have the potential to reduce real food prices to consumers, improve incentives to producers, and expand gainful employment.

Activity 1.2b: Agricultural Input Marketing, Profitability and Constraints to Availability

Intensification of agriculture through use of modern inputs is an important option for increasing agricultural productivity in Ethiopia. Evidence suggests that grain yields can be substantially increased by appropriate use of purchased inputs. In this regard the government has recently liberalized the marketing of agricultural inputs. However, there are major problems regarding input trading, delivery, acquisition and use by farmers; input

use is low and many inputs are not widely available. Identifying and alleviating these problems merits high priority. The problems in input trading by various groups -- distributors, wholesalers, and retailers -- need to be detailed. Barriers to entry in input supply and farm-level constraints to the use of productivity-enhancing technology need to be identified and strategies developed to respond to the constraints.

The objectives of this research are:

1. To examine the performance of markets for selected technological inputs (fertilizer and seed) at various stages (from port or point of production to final user) and identify bottlenecks and ways of improving the system to meet the needs of farmers and improve agricultural productivity. Important subtopics include:
 - (a) assessment of the impact of pan-territorial fertilizer pricing on the efficiency of input trading and availability;
 - (b) identification and assessment of strategies to promote cost-effective distribution of fertilizer and other critical inputs to enhance food system productivity;
 - (c) development of a "cost build-up" for fertilizer and seeds from port (or point of production) to final user to determine how costs and prices increase as one moves up the chain, where inefficiencies exist, and how they can be removed;
 - (d) evaluation of options for providing credit to traders and small-scale farmers;
 - (e) determination of which crops in regions that do not currently use fertilizer could benefit most from its introduction, and how the private sector could be attracted to supply fertilizer there; and
 - (f) assess the experience of selected NGOs in input distribution activities, and whether there are sustainable systems of input distribution, especially at the village level, that could be replicated and extended to larger areas.
2. To assess the profitability of improved seed and fertilizer from farmers' perspective and society's perspective. Important subtopics include:
 - (a) analyses of profitability under different output price and fertilizer price scenarios, and in particular, what the impact would be on fertilizer profitability and use if the current subsidies were reduced or eliminated;
 - (b) determination of farmers' assessments of main constraints limiting fertilizer and seed use;

- (c) assessment of the complementarity of fertilizer and selected improved seed varieties;
- (d) advantages and disadvantages of different ways of implementing fertilizer subsidies; and
- (e) comparisons of cost of importing food versus increasing food production by an equal amount through subsidies on fertilizer.

Activity 2.1: Assessment of Alternative Food Transfer Arrangements: Their Effects on Food Production, Market Development, and Household Food Security.

There has been longstanding concern over the possible disincentive effects of food aid, specifically the effects of food aid on market prices and production incentives. Since 1984, Ethiopia has become chronically dependent on food aid. The volume of food aid in Ethiopia in a normal year has often accounted for 25% or more of the total estimated marketed cereal supply. Depending on the manner in which food aid is distributed and utilized, additional cereal supplies of this magnitude could be expected to exert some influence on food market prices. Concerns have been raised as to whether food aid, while meeting critical short-run needs, is jeopardizing Ethiopia's ability to produce its own food needs over the long run. There is an urgent need to assess the long-run impacts of alternative food aid arrangements on market development and production incentives. The information generated through this study will help Ethiopian policy makers (e.g., MOPED, RRC, EFSRA) in the design of appropriate food transfer programs that complement, rather than substitute for, domestic food production growth.

A second important purpose of this research activity is to identify and assess alternative strategies to raise household access to food. This would include analysis of options relying on the market (e.g., those involving potential self-targeted foodstuffs to raise access to food among low-income consumers) as well as administered transfer programs such as employment-based food and cash transfer programs, food or cash voucher programs, etc. The main outcome of the studies under this Focus Area will be the identification of options for improving access to food by vulnerable groups in the short-run in a manner that also promotes long-run agricultural productivity and income growth in Ethiopia.

The objectives of this research are:

1. To evaluate the effect of alternative food aid arrangements on food prices and production incentives over the short and long run;
2. To evaluate effects of alternative food aid arrangements on trader behavior and performance of Ethiopian grain markets;

3. To identify the costs and benefits of targeting vulnerable groups through various food transfer arrangements, and to assess the implications for food aid policy in Ethiopia; and
4. To consider and evaluate alternative food transfer arrangements in the context of overall food security and development strategies in Ethiopia.

Activity 2.2: Assessment of Alternative Food Supply Stabilization Strategies

There has been considerable discussion in Ethiopia regarding the consequences of food price and supply stabilization policies to promote food production incentives and household food security. A major goal of price and supply stabilization is to keep food prices at tolerable levels and alleviate transitory food insecurity that might otherwise result from drastic increases in food prices. Another major concern is that good harvests may create supply gluts that depress producer prices, erode incomes among food-surplus households, and depress food production incentives and investment in farm technology over the long run. In this regard, cost-effective government programs to stabilize food supplies and mitigate downside price fluctuations may promote food grain production and productivity by encouraging investment in farm technology that otherwise might not be forthcoming in a more volatile and risky market environment.

However, the stabilization of food supply and prices is a complicated and potentially costly endeavor, especially in a country such as Ethiopia, where (a) important commodities, such as teff, are not traded on world markets; (b) a number of grains feature prominently in consumption patterns; and (c) there is substantial regional variation in cereal consumption patterns. There is a need for a comprehensive assessment of the costs, benefits, and distributional effects of alternative food supply stabilization programs in order to inform how, and whether, such a program should be undertaken. There is, furthermore, a need for pragmatic treatment of how such a program might be effectively implemented without causing a major burden on the treasury.

The objectives of this research are:

1. To identify alternative food price and supply stabilization strategies for analysis;
2. To evaluate the costs and benefits of the identified food price and supply stabilization strategies, with respect to: (a) household food expenditures by income and region, and effects on food security; (b) food production and revenue from marketed output; (c) government treasury costs; (d) effects on incentives for distribution and storage by private traders, and more generally, the development of a competitive and efficient private food marketing system; and (e) effects on farm technology adoption, food production, and productivity growth;
3. To discuss the implications of the results for food security and agricultural policy in Ethiopia.

A "food systems" approach will be the guiding framework in which the research is undertaken. A food systems approach explicitly examines interactions between the various stages in agriculture, from input supply to farm production, distribution and storage, to agro-processing, retailing and final consumption. The Systems approach is stressed due to ample evidence that productivity growth at one level of the food system is likely to be highly dependent on investments and innovations at other levels of the system. Interactions between various foodgrain commodities will be explicitly examined.

The information gathered in these surveys will fill critical knowledge gaps concerning how farmers and marketing agents might respond to alternative food pricing policy and trade environments. In particular, market-level data and primary survey-data will provide FSRP with the means to assess how households, traders, and other participants in Ethiopia's food system may respond to various proposed food price and supply stabilization schemes, including incentives to invest in productivity-enhancing farm and marketing technologies. We also seek to examine the substitutability between alternative foodgrain crops in consumption, in order to assess how stabilization of one commodity would affect the market for other food commodities.

Fact Sheet • AGRICULTURAL PRODUCTIVITY STUDIES

•FOOD SECURITY II COOPERATIVE AGREEMENT•

between

•U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT and MICHIGAN STATE UNIVERSITY•

•IN-COUNTRY TIME PERIOD: OCTOBER 1992 - OCTOBER 1996•*****

1. Cooperating Institutions

Agency for International Development, Africa Bureau, Office of Sustainable Development,
Productive Sectors, Growth and Environment Division, Food Security and Productivity Unit
(AFR/SD/PSGE/FSP)

Agency for International Development, Global Bureau, Economic Growth Center, Office of
Agriculture and Food Security (G/EG/FSA)

Department of Agricultural Economics, Michigan State University (MSU)

2. Researchers Involved

AFR/SD/PSGE/FSP: George Gardner, Brian D'Silva, and Tom Olson

G/EG/FSA: Dr. Ralph Cummings

African Collaborators: Bocar Diagana (Institut Senegalais de Recherches Agricoles (ISRA),
Senegal), Abdoulaye Fall (ISRA, Senegal), Matar Gaye (ISRA, Kaolack, Senegal), Anastase
Murekezi (Division of Agricultural Statistics (DSA), Ministry of Agriculture, Rwanda), Jean-
Leonard Ngirumwami (DSA, Rwanda), Pierre Rwalinda (DSA, Rwanda), Kimsey Savadogo
(University of Ouagadougou, Burkina Faso), Manievel Sene (ISRA, Bambey, Senegal), Bosco
Sibomana (DSA, Rwanda), Tobias Takavarasha (Ministry of Lands, Agriculture, and Rural
Resettlement, Government of Zimbabwe), Laurence Uwamariya (Ministry of Agriculture,
Rwanda), Joseph Rusike (University of Zimbabwe), Nango Dembele (IFDC/Burkina)

PARTS African Fellows: Hosted Mr. Okuku (Uganda) June-July 1993; hosted Mr. Diagana
(Senegal) June-July 1994

MSU Researchers: Thomas Reardon (coordinator), Eric Crawford, Daniel Clay, Thomas Jayne,
Valerie Kelly, Fidele Byiringiro, Josue Dioné (also INSAH/CILSS), John Duncan, Jaakko
Kangasniemi, Mattias Lundberg, Kyösti Pietola, Takeshi Sakurai, Duncan Boughton, Maria
Wanzala, David Yanggen

Other Collaborators: Ousmane Badiane (IFPRI), Yougesh Khatri (University of Reading), Peter
Matlon (WARDA), J. Edward Taylor (University of California at Davis), Colin Thirtle
(University of Reading), Stephen Vosti (IFPRI), Jane Hopkins (IFPRI), David Tardif-Douglin
(DAI)

3. Objectives of the Research

Development Fund for Africa (DFA) targets 3 and 4.4 seek to raise agricultural productivity in Africa, while enhancing the longer-term sustainability of natural resources required for food production and improving food security. The FS II Cooperative Agreement has priority applied research themes of studying ways to improve food access and to design more market oriented and cost-effective food systems, and related technologies and institutions. To help inform DFA and FS II objectives, this cross-country synthesis research focuses on (1) studying empirical patterns and determinants of agricultural productivity in four African case studies—Burkina Faso, Rwanda, Senegal and Zimbabwe; (2) identifying cross-country policy and research issues related to agricultural and food (output and input) system productivity increases; (3) clarifying methods for measuring productivity; and (4) strengthening African capacity to study agricultural and food system productivity issues.

4. Research Approach

Synthesize policy-relevant research findings and implications from work sponsored by the MSU-based Food Security Cooperative Agreements, and from others, on factors affecting agricultural and food system productivity in Africa. Examine empirical patterns and determinants of farm productivity and input system performance in African case studies. In country-level and cross-country studies, determine policy and research issues related to productivity increases; methods for measuring productivity at micro and meso levels, and comparison of these with measurement issues at macro levels.

5. Outputs to Date

5.1. Presentations to African Audiences

Reardon, Presentation at the Colloque International sur Intensification Agricole au Sahel: Mythe ou Realite? (organized by INSAH, IER, AB-DLO, Wageningen, ICRISAT, CIRAD, ICRAF, ILRI) "Capital-led intensification in Sahel agriculture: addressing structural constraints after policy reform," from joint paper with V. Kelly, J. Dioné, B. Diagana and D. Boughton. This paper was requested by INSAH as one of the presentations representing INSAH, Mali, November 30, 1995.

Kelly, Briefing INERA and IFDC on productivity research results. Burkina Faso, October 1995.

Kelly, Briefing ICRISAT Sahel Center on productivity research results. Niger, September 1995.

Kelly, Presentation on constraints to fertilizer use in Africa at the USAID INTERCRSP Workshop. Niger, September 1995.

Diagana, Talk at PRISAS/INSAH/CILSS workshop on devaluation impacts in the Sahel, "Agricultural intensification and productivity in Senegal: impacts of devaluation." Mali, July 1995.

Diagana and Kelly, Briefed 20 organizations on productivity research results; examples include: (1) Unite de politiques agricoles; (2) Unite de politiques economiques; (3) ISRA Bureau d'analyses macroeconomiques; (4) ISRA Director General office; (5) FAO/Senegal; (6) Ministry of Agriculture: Direction d'Agriculture; Direction de statistiques; (7) Direction de statistiques, ESAM; (8) Rodale/Senegal. Senegal, July 1995.

Reardon, Talk at workshop at the Institut du Sahel in Bamako on Natural Resources Management, "Links between food security, productivity, and natural resource management in the Sahel." Mali, March 27-29, 1995.

Kelly, Presentation at USAID Technology Development and Transfer Collaborators' Workshop, "Raising Farm Productivity in Africa to Sustain Long-Term Food Security" by Reardon, Kelly, Crawford, Savadogo, and Jayne. Zimbabwe, January, 1995.

Kelly, Presentation at USAID Technology Development and Transfer Collaborators' Workshop, "Agricultural Growth Linkages" by Delgado, Hopkins, and Kelly, Zimbabwe, January, 1995.

Clay and Reardon, Presentation at IAAE 22nd Congress to international audience including many African researchers, "Determinants of Farm-Level Conservation Investments in Rwanda." Harare, August 1994.

Jayne, Takavarasha, Attwood, and Kupfuma. Poster presentation at IAAE 22nd Congress, "Postscript to Zimbabwe's Maize Revolution: Policy Lessons for Eastern and Southern Africa." Harare, August 1994.

Kangasniemi and Reardon, Presentation at IAAE 22nd Congress to international audience including many African researchers, "Demographic Pressure and the Sustainability of Land Use in Rwanda." Harare, August 1994.

Khatri, Jayne, and Thirtle, Presentation at IAAE Annual Meetings in Harare, "A Profit Function Approach to the Efficiency Aspects of Land Reform in Zimbabwe." Zimbabwe, August 1994.

Reardon, Participation in mini-symposium at the biennial meetings of the International Association of Agricultural Economists (IAAE), organized by Peter Hazell (IFPRI), Carl Liedholm (MSU, Economics) and Thomas Reardon, "Potential for Increasing Rural Non-Farm Income and Employment in Africa." Eight papers were presented. Reardon presented results of productivity project on non-farm income diversification's effect on productivity and farm capital expenditures, Harare, August 1994.

Savadogo and Reardon, University of Ouagadougou, Faculty of Economics, "Farm-Level Productivity in Burkina Faso." Burkina Faso, December 1, 1993.

Uwamariya (Ministry of Agriculture, Rwanda), Kangasniemi, and Reardon, Seminar to the Ministry of Agriculture, "Results of Productivity Work." Kigali, Rwanda, November 19, 1993.

Reardon, Invited seminar presentation at the National University of Rwanda, Faculty of Agronomy, "Methods for Agricultural Productivity Research." Rwanda, June 7, 1993.

Reardon, Invited seminar presentation at the Ministry of Agriculture, Division of Agricultural Statistics, "Methods for Agricultural Productivity Research." Rwanda, June 5, 1993.

5.2. Presentations to AID/Washington and USAIDs

Kelly, Briefing to USAID/Niger on productivity research results. Niger, September 1995.

Diagana and Kelly, Briefing at USAID/Senegal on productivity research results. Senegal, July 1995.

Kelly, Talk at the 'Income, Employment, and Food Security for 21st Century Africa: Agriculture and Natural Resources Development Officer (ANRDO)/Private Sector Officer (PSO) Joint Conference' (a USAID conference sponsored by Africa Bureau, SD/PSGE), "Agricultural growth linkages in Africa." Annapolis, July 1995.

Reardon, Talk at USAID/Mali to the Economics Group, "Results of MSU Research on Agricultural Productivity and Sustainability: Implications for Strategic Planning." Mali, July 1995.

Reardon, Two talks at the 'Income, Employment, and Food Security for 21st Century Africa: Agriculture and Natural Resources Development Officer (ANRDO)/Private Sector Officer (PSO) Joint Conference' (a USAID conference sponsored by Africa Bureau, SD/PSGE), First talk: "Agricultural Productivity and Economic Growth in Africa"; second talk: "Links between Environment and Agriculture." Annapolis, Maryland, July 1995.

Clay and Reardon, Presentation at AID, Global Bureau, Office of Agriculture and Food Security, and Africa Bureau, Food Security and Productivity Unit, "Promoting Agricultural Productivity in Rwanda." May 2, 1995.

Kelly, Presentation to FSP Collaborators Workshop at AID Africa Bureau, SD/PSGE/FSP, "Agricultural Growth Linkages." Washington, D.C., November 29-30, 1994.

Reardon, Presentation to FSP Collaborators Workshop at AID Africa Bureau, SD/PSGE/FSP, "MSU African Agricultural Productivity Research Results." Washington, D.C., November 29-30, 1994.

Diagana, Presentation at AID/W-ARTS/FARA, "Income Diversification and Cereal Productivity in the Senegalese Peanut Basin." Washington, D.C., July 1994.

Kelly, Briefing to USAID/Dakar, "MSU Senegal Case Study Work in Determinants of Cropping Productivity and Growth Linkages." Senegal, July 1994.

Kelly, Presentation at AID/W-ARTS/FARA, "Links among Nonfarm Income, Credit, and Cropping Productivity in the Peanut Sector." Washington, D.C., July 1994.

Kelly, Presentation to AFR/ARTS/FARA/FSP workshop on agricultural growth linkages in Sub-Saharan Africa, "Senegal Case Study of Growth Multipliers: Implications of Openness." Washington, D.C., May 26, 1994.

Savadogo, Presentation to USAID/Burkina economists, "Results and Policy Implications of Farm Productivity Research in Burkina Faso." Burkina Faso, May 15, 1994.

Reardon, Jayne, Kelly, and Weber, Presentation at AID/W, "Agricultural Productivity Research for ARTS/FARA/FSP: Emerging Research Findings and Policy Implications." Washington, D.C., February 17, 1994.

Reardon, Presentation at Round Table on Food Security and Productivity Research (A.I.D. Africa Bureau, ARTS/FARA), "Productivity Research Results Under the Food Security II Project." Washington, D.C., December 6-8, 1993.

Reardon, Clay, and Tardif-Douglin, Presentation to USAID/Rwanda, "Research Results on Farm-Level Productivity in Rwanda." Rwanda, November 24, 1993.

Reardon, Presentation at Round Table on Productivity of Agriculture in Africa (A.I.D. Africa Bureau, ARTS/FARA), "Labor Use and Productivity in African Households." Washington, D.C., April 22, 1993.

MSU Researchers, Presentation at ARTS/FARA/FSP seminar, "Synthesis of First Year Results of Productivity Studies." Washington, D.C., February 15, 1993.

Reardon, Presentation at the Food Security and Productivity Unit's 'Premier Food Security and Productivity Collaborators' Round Table' (A.I.D. Africa Bureau), "The Agricultural Productivity Project of FS II." Washington, D.C., October 22-23, 1992.

5.3. Oral Presentations to Other Food Security Research and Policy Groups

Kelly, Participation in 1-day workshop on soil fertility, World Bank, November 1995.

Reardon, Talk at the African Studies Association Meetings, Panel on "Sustainable Intensification and Environment in Africa"; talk title: "Intensification, Productivity, and the Environment in Africa: Policy effects and structural constraints," Orlando, FL, November 1995.

Reardon, Talk at the American Anthropological Association Meetings, Panel on "Post-Structural Adjustment and Food Security in Africa: Policy, Theory, and Cross-Disciplinary Evidence"; talk title: "Raising productivity in Sahel Agriculture: Addressing Structural Constraints in the Food System after Policy Reform," Washington, D.C., November 1995.

Reardon, Talk on WKAR public television, Panel on "Food and Hunger in the Third World," on World Food Day, East Lansing, MI, October 1995.

Kelly, Briefing at the Agricultural Technical Division, World Bank, July and August 1995.

Reardon, Talk at the Hunger Research Briefing and Exchange, World Hunger Program, in session entitled "Food Security and Agricultural Productivity in Resource-Poor Areas"; talk title: "Agricultural Productivity for Food Security in Africa," Brown University, Providence, R.I., April 7, 1995.

Reardon, Byiringiro, Clay, Kangasniemi, Talk at Center for Advanced Studies in International Development (CASID), Michigan State University, "Soil conservation and fertility investments for long-term productivity increases in Rwandan agriculture." East Lansing, MI, October 30, 1994.

Hopkins, Kelly, and Delgado, Selected Paper presented at the 1994 AAEA meetings, "Farm-Nonfarm Linkages in the West African Semi- Arid Tropics: New Evidence from Niger and Senegal." San Diego, August 1994.

Reardon, 1994 Annual AAEA Meetings Symposium, Title of Session: "Policies for Fragile Lands Development in the Tropics: New Challenges for Economic Analysis"; talk title: "Sustainability issues in agricultural development in the Sahel." San Diego, August 1994.

Reardon, Crawford, and Kelly, 1994 Annual AAEA Meetings Principal Paper Session, organized by Peter Hazell (IFPRI) and Thomas Reardon, on behalf of the International Committee of the AAEA; Title of Session: "Promoting Farm-Nonfarm Growth Synergies in Rural Africa"; 3 papers presented: (a) Reardon, Crawford and Kelly. "Links Between Nonfarm Income and Farm Investment in African Households: Adding to the Capital Market Perspective." (b) Delgado, Hazell, Hopkins, and Kelly. "Promoting Intersectoral Growth Linkages through Agricultural Technology and Policy Reform." (c) Liedholm,

McPherson and Chuta. "Small Enterprise Employment Growth in Rural Africa," San Diego, August 1994.

Reardon and Jayne, 1994 Winter AAEA Meetings Invited Paper Session. Panel on "Agricultural Productivity in Africa: Concepts, Measures, and Implications." 5 papers were presented: (a) Thomas Block (Abt/Harvard), macro productivity measures and issues in Africa; (b) Jayne and Thirtle, panelist (Jayne also an organizer), "Agricultural Productivity in Zimbabwe." (c) Reardon, "Farm Productivity in Burkina Faso: Effects of Animal Traction and Nonfarm Income" (d) Discussants: Robert Evenson (Yale) and Jock Anderson (World Bank); Uma Lele (Florida) was chairing the session. At Allied Social Science Association meetings in Boston, January 3-5, 1994.

Reardon, Department of Agricultural Economics, Michigan State University, Departmental Seminar Series. "Farm-Level Productivity in Burkina Faso." East Lansing, MI, December 9, 1993.

Reardon, Crawford, Bernsten, Eicher, Jayne, Oehmke, and Savadogo, Paper presented at the 1993 AAEA Pre-Conference Workshop on "Post-Green Revolution Agricultural Development Strategies in the Third World: What Next?" Talk title: "Challenges for Creating and Sustaining a Green Revolution in Africa." Orlando, Florida, July 30-31, 1993.

Reardon, Rapporteur and panelist at Institute of International Agriculture, University of Florida (sponsored by Florida and Cornell), "Reconciling Sustainability with Productivity Growth." Gainesville, FL, May 19-21, 1993.

Reardon, Seminar for Burkinabe and Senegalese case study collaborators, Review of literature on methods for agricultural productivity research, Michigan State University, May 7, 1993.

Reardon, Two talks at Roskilde University, Conference on natural resource management in fragile lands of Africa. 1) "Alternate Income Sources and Natural Resource Management in Fragile, Drought-Prone Areas of the African Semi-Arid Tropics," 2) "Issues in the Analysis of Macro and Sectoral Policy Impacts on Productivity and Conservation Investments at the Household Level." Denmark, November 1-4, 1992.

Reardon, World Food Day presentation at the University of Missouri (sponsored by FAPRI), "Sustainable Increases in Agricultural Productivity and Food Security – Issues and Tradeoffs." Columbia, MO, October 19, 1992.

5.4. Collaborative Research Activities with African and Other Researchers

Research under the Agricultural Productivity set of activities has facilitated collaboration with:

Nango Dembele, IFDC/Burkina, collaborating with Kelly on fertilizer portion of productivity work, 1995/6.

Mr. Bocar Diagana, researcher at Institut Senegalais de Recherches agricoles (ISRA) spent 1 month at MSU November-December 1993 working with Dr. Valerie Kelly, and produced single-authored working paper on household typologies.

Matar Gaye, ISRA Kaolack, conducted follow-up surveys from October-December 1994 of a subset of households used in the Senegal productivity study. The surveys addressed peanut seeding density, credit access, and land tenure issues that were raised by the MSU productivity research. Manievel Sene (ISRA, Bambey) and Bocar Diagana (ISRA/BAME) also assisted in the effort.

In December 1995, Diagana will travel to Senegal to undertake another survey with Mr. Gaye, in the Peanut Basin.

Dr. Valerie Kelly was a researcher with IFPRI until October 1, 1993, when she joined MSU. Dr. Kelly (working with Reardon) supervised a field project in Senegal 1988-1993 (working with Senegalese Agricultural Research Institute, ISRA). She came to MSU for 2 weeks in May 1993 to work with Drs. Savadogo and Reardon on planning the Senegal case study.

Mr. Yougesh Khatri (graduate student, University of Reading) spent 2 weeks at MSU in July 1993 working with Jayne and Reardon, and then Jayne spent 1 week in September at Reading working with Thirtle and Khatri; several papers coming out of this collaboration have been finished, and one underway in which a Zimbabwean graduate student at MSU is participating; one of the papers was presented by Jayne and Thirtle in Boston at the ASSA meetings in January 1994.

Mr. Juma Okuku (professor, Dept. of Political Science, Makerere University, Uganda) came to MSU for 5 weeks in July-August 1993 as a USAID African Fellow, worked with Reardon and other MSU faculty and graduate students, as well as productivity research collaborators Savadogo and Uwamariya.

Donna Perry, Department of Anthropology, Yale University, is doing her dissertation on "Production, Power, and Islam in the Senegalese Peanut Basin." Kelly is working with her to facilitate access to the Senegal data base and coordinate her research with that of others working on the same data base. She did her Pre-dissertation field work last summer, producing a paper about how the market in Dioly has changed consumption and production behavior. Dissertation fieldwork: August 1994-November 1995.

Dr. Kimsey Savadogo (Professor, Faculty of Economics, University of Ouagadougou, Burkina Faso)

In April-July 1993, Dr. Savadogo came to MSU and worked closely with Reardon and Pietola (a number of research documents first-authored by Savadogo, resulting from this work);

In November-December 1993, Reardon spent a week at University of Ouagadougou working with Savadogo, and presented a seminar on results at the Faculty.

In July-August 1994, Dr. Savadogo came to MSU to collaborate in productivity work.

In July-August 1995, Dr. Savadogo came to MSU to collaborate in productivity work.

Dr. Colin Thirtle (Professor, University of Reading, England) was visited by Thomas Jayne and Thomas Reardon in Washington, D.C. in April 1993 to plan productivity work, and then came to MSU at the end of April to work out details of collaboration.

Ms. Laurence Uwamariya (Agronomist-researcher, Division of Agricultural Statistics (DSA), Ministry of Agriculture, Rwanda) spent 2 months at MSU June-August 1993 working with Reardon and two graduate students, Kangasniemi and Byiringiro (Rwandan student on leave from Ministry of Agriculture); Reardon spent three weeks at DSA working with her in November 1993, and presented seminar on results at the Ministry. She produced a working paper first-authored by her.

Until April 1994, Ms. Uwamariya continued to collaborate on the productivity research, and is joined by Jean-Leonard Ngiruwami, Anastase Murekezi (director of DSA), and David Tardif-Douglin (DAI, working in subordinate agreement with MSU in Rwanda) on coffee productivity and other crop-specific studies.

Matt Warning, Department of Agricultural and Resource Economics, University of California, Berkeley, is doing his dissertation on "Access to Credit, Agricultural Practice and the Organization of Agricultural Production." He has finished field work and is now back in U.S. to write dissertation. Kelly is working with him to facilitate access to the Senegal data base and coordinate his research with that of others working on the same data base.

5.5. MSU Backstop Trips to African Research Sites

December 1995, Diagana to Senegal, 3 weeks.

November-December 1995, Reardon to Mali, one week.

September 1995, Kelly to Niger, Senegal, and Burkina Faso, four weeks.

July 1995, Diagana to Senegal, Mali, three weeks.

July 1995, Kelly to Mali, Senegal, three weeks.

July 1995, Reardon to Mali, three weeks.

March 1995, Reardon to Mali, two weeks.

July 1994, Kelly to Mali, Senegal, two weeks.

July 1994, Reardon to Mali, part of a week.

November-December 1993, Reardon to Burkina Faso, one week.

November 1993, Jayne to University of Reading, England.

November 1993, Reardon to Rwanda, part of three weeks.

September 1993, Jayne to University of Reading, England.

August-September 1993, Jayne to Zimbabwe (stop-over visit).

June 1993, Reardon to Rwanda, part of three weeks.

5.6. African Field Surveys Used in Productivity Analysis

Burkina Faso: Case studies are based on additional analysis of data already available from an ICRISAT survey of 150 households in three zones 1981-1985.

Rwanda: Case studies are based on additional analysis of data already available from an ongoing 1200 household sample survey undertaken by DSA/Ministry of Agriculture and MSU.

Senegal: Case studies are based on additional analysis of data already available from an ISRA/IFPRI survey of 360 rural and 70 urban households in eight rural and two urban zones 1988-1990.

Senegal: Additional surveys on input access-Fall 1994 and Fall 1995.

Zimbabwe: Case studies are based on secondary district-level data compiled by Colin Thirtle and Zimbabwean researchers, as well as by Thomas Jayne and Bernard Kupfuma.

5.7. Written Outputs on Agricultural Productivity Topics

- **Published Synthesis Reports for Host Country Agencies, USAIDs and AID/Washington**

Clay, D., F. Byiringiro, J. Kangasniemi, T. Reardon, B. Sibomana, L. Uwamariya, and D. Tardif-Douglin, *Promoting Food Security in Rwanda Through Sustainable Agricultural Productivity: Meeting the Challenges of Population Pressure, Land Degradation, and Poverty*, MSU International Development Paper No. 17, 1995.

Kelly, V., J. Hopkins, T. Reardon, E. Crawford, *Improving the measurement and analysis of African agricultural productivity: promoting complementarities between micro and macro data*, MSU International Development Paper No. 16, 1995.

Reardon, T., E. Crawford, and V. Kelly, *Promoting Farm Investment for Sustainable Intensification of African Agriculture*, MSU International Development Paper, No. 18, 1995.

- **Not-Yet-Published Synthesis Reports Submitted to Project Donors**

Kelly, V., B. Diagana, T. Reardon, M. Gaye, E. Crawford, "Cash crop and foodgrain productivity in Senegal: Historical view, new survey evidence, and policy implications," submitted to USAID/AFR/SD/PSGE/FSP, MSU Staff Paper No. 95-05, January 1995.

Reardon, T., V. Kelly, E. Crawford, K. Savadogo, T. Jayne, "Raising Farm Productivity in Africa to Sustain Long-Term Food Security," draft-for-review, November 1994 to AID/AFR/SD/PSGE/FSP. MSU Staff Paper No. 94-77.

Savadogo, K., T. Reardon, and K. Pietola, "Determinants of Farm Productivity and Supply Response in Burkina Faso," November 1994 to AID/AFR/SD/PSGE/FSP. MSU Staff Paper No. 94-79.

- **Unpublished Documents Submitted to Project Donors**

Diagana, B. "Developing a Rural Household Typology for Agricultural Policy Analysis in Senegal: the Dioly Case." Working paper, December 1993.

Uwamariya, L., J. Kangasniemi, et T. Reardon. 1993 (August). "La productivité Agricole au Rwanda, 1989-1990: la productivité moyenne de la terre, du travail, et la rentabilité de la terre, et les fonctions de production," working paper submitted to USAID/Rwanda and to Africa Bureau.

Diagana, B. "Role du Foncier Dans l'access au credit Agricole et la diversification des revenus au Senegal." ISRA, December 1990.

- **Outreach Documents for Food Security Research and Policy Community**

Briefs:

Jayne, T.S., D. Tschirley, L. Rubey, J.M. Staatz, M. Weber "Confronting the Silent Challenge of Hunger: A Conference Synthesis," 1995.

Reardon, T. and A. Shaikh, "Links between Environment and Agriculture in Africa: Implications for Economic Growth and Policy," Policy Brief of the Natural Resources Policy Consultative Group for Africa (PCG), September 1995 (published by World Resources Institute).

Reardon, T., "Strategies for Redressing Chronic Food Insecurity: Marriage of Zone-Specific Strategies and Broad-Based Growth," Brief prepared for workshop on "The Silent Challenge of Hunger" sponsored by U.S. Agency for International Development, Global Bureau, Office of Agriculture and Food Security, Washington, D.C., June 28-29, 1994.

Reardon, T., T. Jayne, and V. Kelly. "Synthesis Note on Agricultural Productivity Research for ARTS/FARA/FSP: Emerging Research Findings and Policy Implications." February 1994 to AID/W.

Conference Papers:

Clay, C. and T. Reardon. "Determinants of farm-level conservation investments in Rwanda," in *IAAE Occasional Paper No. 7*. Contributed Paper for IAAE 22nd Congress (International Association of Agricultural Economists) August 1994 in Harare; forthcoming in IAAE Conference Proceedings.

Kangasniemi, J. and T. Reardon. "Demographic pressure and the sustainability of land use in Rwanda," in *IAAE Occasional Paper No. 7*. Contributed Paper for IAAE 22nd Congress (International Association of Agricultural Economists) August 1994 in Harare; forthcoming in IAAE Conference Proceedings.

Khatri, Y., T. Jayne, and C. Thirtle. "A Profit Function Approach to the Efficiency Aspects of Land Reform in Zimbabwe." In *IAAE Occasional Paper No. 7*. Contributed Paper for IAAE 22nd Congress (International Association of Agricultural Economists) August 1994 in Harare; forthcoming in IAAE Conference Proceedings.

Reardon, T., E. Crawford, R. Bernsten, C. Eicher, T. Jayne, J. Oehmke, and K. Savadogo. "Challenges for Creating and Sustaining a Green Revolution in Africa." In Delgado, Colyer, and Rosegrant (eds.) *Post-Green Revolution Agricultural Development Strategies in the Third World: What Next?* Forthcoming, Johns Hopkins University Press. Presented at AAEA meetings, August 1993, Orlando, Florida.

Staff Papers and Articles

Reardon, T. and S. Vosti. "Policy analysis of conservation investments: Extensions of traditional technology adoption research," in Vosti and Reardon (editors), *Sustainability, Growth, and Poverty Alleviation: Policy and Agroecological Perspectives*; Johns Hopkins University Press, forthcoming 1996.

Savadogo, K., T. Reardon, and K. Pietola. "Mechanization and Agricultural Supply Response in the Sahel: A Farm-Level Profit Function Analysis," forthcoming 1996, *Journal of African Economies*.

Gaye, Matar and Valerie Kelly. "Les facteurs determinants de l'allocation des terres dans le Bassin Arachidier du Senegal." ISRA, November 1995, MSU/BAME Working Paper.

Reardon, T. and S.A. Vosti. "Links between rural poverty and environment in developing countries: Asset categories and investment poverty," *World Development*, Vol. 23, No. 9, September 1995, pp. 1495-1506.

Clay, D., T. Reardon, and J. Kangasniemi, "Sustainable intensification in the highland tropics: Rwandan farmers' investments in soil conservation and fertility," MSU Staff Paper No. 95-21, March 1995.

Byiringiro, F. and T. Reardon, "Farm productivity in Rwanda: effects of farm size, erosion, and soil conservation investments," February 1995, MSU Staff Paper No. 94-10.

Reardon, T. "Sustainability Issues for Agricultural Research Strategies in the Semi-Arid Tropics: Focus on the Sahel," *Agricultural Systems*, Vol. 48, No. 3, 1995, pp. 345-360.

Reardon, T., E. Crawford, and V. Kelly, "Links between nonfarm income and farm investment in African Households: adding the capital market perspective," *American Journal of Agricultural Economics*, Volume 76, No. 5, December 1994; pages 1172-1176.

Gaye, Matar, Manievel Sene, and Valerie Kelly. "Les fortes densites de semis de l'arachide au Senegal: Motivations paysannes et interpretation agronomiques." ISRA, November 1994, MSU/BAME Working Paper.

Jayne, T.S., Y. Khatri, C. Thirtle, and T. Reardon. "Determinants of Productivity Change using a Profit Function Approach: Smallholder Agriculture in Zimbabwe," *American Journal of Agricultural Economics*, Volume 76, No. 3, August 1994.

Reardon, T. "Alternative Income Sources and Natural Resource Management for Productivity Growth." Chapter in *Proceedings of Conference on Natural Resource Management in Fragile Lands of Africa*, Roskilde University, Denmark (November 1993), forthcoming 1994.

Reardon, T. "Issues in the Analysis of Macro and Sectoral Policy Impacts on Productivity and Conservation Investments at the Household Level in Developing Countries." Chapter in *Proceedings of Conference on Natural Resource Management in Fragile Lands of Africa*, Roskilde University, Denmark (November 1993), published 1994.

Savadogo, K., T. Reardon, and K. Pietola, "Farm productivity in Burkina Faso: effects of animal traction and nonfarm income," *American Journal of Agricultural Economics*, Volume 76, No. 3, August 1994.

Jayne, T., T. Takavarasha, E.A. Attwood, and B. Kupfuma. "Postscript to Zimbabwe's Maize Success Story: Policy Lessons for Eastern and Southern Africa." MSU Agricultural Economics Staff Paper, December 1993.

Reardon, T. and S. Vosti. "Issues in the Analysis of the Effects of Policy on Conservation and Productivity at the Household Level in Developing Countries", *Quarterly Journal of International Agriculture*, Vol. 31, No. 4, October-December 1992. pp. 380-396.

5.8. Long Term Training-Agricultural Productivity Topics

Mr. Fidele Byiringiro (MS at MSU, and researcher at the Rwandan Ministry of Agriculture, Productivity Unit) did an independent study on methods for analysis of agricultural productivity during summer semester, and estimated production functions. He completed his MS thesis on agricultural productivity in Rwanda in May 1995.

Mr. Bocar Diagana (Ph.D. candidate at MSU, Senegalese citizen, also researcher at ISRA).

Mr. Jaakko Kangasniemi (Ph.D. candidate at MSU, Finnish citizen, is doing his thesis on land use and productivity/sustainability issues in Rwanda).

Mr. Bernard Kupfuma (MS candidate at MSU and researcher at the Ministry of Lands in Zimbabwe) is doing his thesis with Carl Eicher on hybrid maize in Zimbabwe, and is participating in the writing of the International Development Paper from the case study.

Mr. Mattias Lundberg (Ph.D. candidate at MSU, Swedish citizen).

Ms. Maria Wanzala (Ph.D. candidate at MSU, Ugandan citizen).

6. Overview of Ongoing Research Activities

Activities to date have included:

- (a) analyzing large primary and secondary data bases,

- (b) involving African collaborators in the planning, analysis, write-up, and dissemination of the results,
- (c) leveraging Food Security buy-in field work (in Rwanda, in Mali, in the Sahel (PRISAS)),
- (d) creating situations where a number of collaborators from various African countries are interacting with each other and with MSU researchers on methods and issues,
- (e) disseminating the results in Africa-wide, country-specific, and extra-African policy and research circles.

The work analyzes basic patterns and determinants of factor productivity in Africa, using household-and district-level data with four case studies cutting across agroecological zones (Burkina, Senegal, Rwanda, Zimbabwe). The goal is to derive cross-country development strategy and policy implications of use to governments, USAID missions, and AID.

Specifically:

What are productivity patterns in different types of years, zones, and policy contexts?

What are the policy and non-policy determinants of these patterns (contributions to knowledge of situation and measurement): (i) traditional physical factors (land, labor, and capital); (ii) non-traditional or non-physical variables; (iii) prices; (iv) non-agriculture linkages (access to off-farm income...); (v) policy context; (vi) institutions; (vii) research and extension. How similar or different are stories in different agroecological zones, and at different levels of aggregation (macro, meso, micro)?

How can productivity be increased: what are the key policies and development strategies? (i) allocation of public resources to agriculture; (ii) public resources to the infrastructural context of agriculture; (iii) incentive policies faced by farmers.

Study the way that different agricultural product mixes (e.g. cash crops with food crops, or trees/agroforestry with crops, or crops with livestock), affect overall factor productivity. How should methods of productivity measurement be improved to account for mixed production activities?

Examine factors (e.g., access to credit, cash crop revenues, off-farm income, and government policy) that affect key determinants of long-term productivity growth and agricultural transformation (especially investment dynamics, income growth, and asset accumulation). Explore interrelations among these factors (e.g., how access to credit is affected by linkages to off-farm income in the absence of asset collateral systems).

Identification of cost-effective and sustainable policy and investment options to raise household access to improved inputs and to increase the productivity of the food system. We explore the role of public action in promoting private investment and institutional change to increase the productivity and sustainability of the food and fiber systems in Sub-Saharan Africa.

7. Project Impact to Date

Impacts on policymaker and research strategic thinking--that leads to long-term impacts on policies and strategies:

The research has contributed greatly to bringing the issue of access to improved inputs-- particularly fertilizer, as well as animal traction and seed and manure--back onto center stage in policy debates in Africa, as well as in Washington and Rome. We drew attention to the decline in input use and its productivity consequences following on the heels of reduction of agricultural support programs during structural adjustment. We have done much to reverse complacency on this crucial topic and reopen the debate on cost-effective means to improve input access. The latter has produced a lot of excitement, as noted below, and will require further concerted effort with African collaborators to seek practical policies and systems to tackle the problem.

Those involved in reorganizing and reengineering AID/Washington and USAID missions have told us that our empirical insights on the links between environment and agricultural productivity and growth come at a crucial time -- when these links can inform and are informing thinking that links programs and increases the effectiveness of AID's programs.

The research has shown a number of practical ways that nonfarm business programs and agricultural productivity/growth programs can be linked to mutually strengthen each other. This has already been taken up in policy debates in missions and ministries.

Below we outline impacts by group:

Impact on PVOs:

CARE, Catholic Relief, and World Vision, using productivity project outputs to inform their strategies in Africa.

World Vision/Eritrea request for mission to discuss how productivity results inform agriculture strategy; World Vision/Ghana, the same.

Requested to present results to Brown Hunger Briefing, to large group of NGOs and others. Bread for the World (BFW) especially affected by this presentation. (nomination to board).

Impact on Regional African institutions:

CILSS (West Africa) requested that MSU productivity work represent CILSS on West Africa conference on agricultural intensification in 11/95.

CILSS food security strategy informed by results (especially related to investment, and links between environment and agriculture).

Presentation of results at Africa workshop (TDT) in January 1995 led to spontaneous formation of interest group across regions of researchers that want to pursue fertilizer access issue (WARDA, REDSO/West Africa, IFDC, IITA, WB, AID/W, IFPRI, ISRA, ICRAF, CRSP).

Impact on USAID missions' strategy and policy debate and formulation in Africa and Asia:

Burkina mission economist's work informed by results.

Kenya ADO request to have presentation of results to inform their strategy discussions.

Madagascar mission widely distributed our Rwanda report, to inform their strategy discussions.

Mali mission requested presentation of results to inform their strategy and reengineering discussions.

Rwanda mission (before war) using results to connect PSO and ADO activity. After war, using results to inform relief to development efforts.

Ex-director of Rwanda mission, now working with GHAI, using Rwanda report results to inform agricultural and environmental strategy, particularly in Ethiopia.

Senegal mission.

Bangladesh mission found results useful.

Impact on national and international agricultural research systems and development agencies--strategic planning and approach:

Food security planning in Guinea informed by our synthesis report.

Ministry of Agriculture in Rwanda--shifted focus to productivity and comparative advantage; request by MA for renewal of research activity after war.

Senegalese Seed Service and the Agricultural Research Institute--alerted to soil degradation outcomes from declining productivity, and policy impacts of devaluation on intensification potential via fertilizer, and need to renew animal traction equipment.

Ministry of Agriculture, and FAO, in Senegal, very interested in fertilizer access issues, and in follow up. Very interested in our troubling results about decline of animal traction equipment in Senegal, and need to formulate policy to deal with this.

Our results all coming out in French in Senegal, Burkina, and Rwanda, at the request of the collaborating institutions.

Impact on Africa Bureau and AID/W generally, and World Bank, informing debate on agriculture development strategies and growth-environment links:

Presentation of results to plenary of ADO/NRM/PSO 1995 conference; also important in debate on reengineering and links between agriculture and environment in AID's strategy.

Strong response to work (and citation of it) from World Bank, including effect on fertilizer access, and from country desks; SPAAR agenda affected by results.

Policy Consultative Group, sponsored by AFR and WRI: affected direction of the group toward productivity-environment linkages; letter with productivity results sent by group to Carol Lancaster.

Request for productivity synthesis from Food For Peace.

Request for collaboration from the World Bank group on soil fertility.

that facilitate beneficial changes in crop mix and technology use; (3) identifying appropriate short-run and long-run strategies for dealing with environmental shocks and supply variability, to enhance disaster relief while promoting longer-run agricultural development objectives; (4) enhancing the ability of disaster relief efforts to promote long-run development objectives; and (5) strengthening African capacity to study food security issues.

4. Research Approach

Synthesize policy-relevant research findings and implications from work sponsored by the MSU-based Food Security Cooperative Agreements, and from others, on factors causing inadequate access to food. Conduct statistical analyses of market-level data to assess trends in real food prices for vulnerable groups and their determinants. Conduct statistical analyses of household-level data to assess the effectiveness of selected market-based and administered targeting programs in various countries. Conduct selected household surveys designed to assess market-based approaches to target vulnerable groups and promote their access to food.

5. Outputs to Date

5.1. Oral Presentations to African Researchers and Policy Makers

Rubey, Lawrence, Richard Ward and David Tschirley, 1995. "Incorporating Consumer Preferences into the Design of Maize Technology Development Strategies." Paper presented at a workshop on "The Emerging Maize Revolution in Africa," Kellogg Center, Michigan State University, 9-12 July 1995.

Molla, Daniel and T.S. Jayne, "Strategies to Enhance Access to Food by Vulnerable Groups: Implications for Food Policy in Ethiopia, Presentation at the First Workshop of the Ministry of Planning and Economic Development/MSU Food Security Research Project, Addis Ababa Ethiopia, June 28, 1995.

Mukumbu, Mulinge, 1995. "Consumer and Milling Industry Response to Maize Market Reform in Kenya," paper presented at the Conference on Market Reforms, Agricultural Production, and Food Security, Nairobi Kenya, KMDP/Policy Analysis Matrix Project, June 23, 1995.

Jayne, T.S. and Tobias Takavarasha, "Policy Harmonization and Regional Agricultural Trade Issues in Southern Africa." Invited paper presentation at the Annual Meetings of the Agricultural Economics Association of South Africa, September 1994. Reporting on policy findings partially funded by research under ARTS/FARA/PSGE.

International mini-symposium: Accepted proposal for mini-symposium at the Biennial meetings of the International Association of Agricultural Economists (IAAE) August 1994

in Harare. Organizers are Peter Hazell (IFPRI), Carl Liedholm (MSU Economics) and Thomas Reardon; title is "Potential for Increasing Rural Non-Farm Income and Employment in Africa." Eight papers will be presented. At least one of the papers will be dissemination of Food Security II access work on non-farm employment, income diversification, and linkages, in Sahel (Burkina and Senegal, perhaps in Mali) and in Rwanda. The papers will be edited into a book.

Mukumbu, Mulinge and T.S. Jayne, 1994. "Urban Maize Meal Consumption Patterns: Strategies for Improving Food Access for Vulnerable Households in Kenya," selected paper presented at the Symposium on Agricultural Policies and Food Security in East Africa, East African Association of Agricultural Economists, May 1994.

Rubey, Lawrence, 1994. Results of paper entitled "Consumer Preferences and Self-Targeting Opportunities to Promote Access to Food Among Vulnerable Groups in Zimbabwe" presented at a seminar held at the University of Zimbabwe and attended by USAID staff, Grain Marketing Board officials and university researchers, May 1994.

Jayne, T.S. Invited presentation to African National Congress conference on maize market reform and food access in South Africa, April 1994.

Jayne, T.S. "Food Marketing Reform and Structural Adjustment in Africa." Plenary address, Conference on Structural Adjustment and Poverty, Cornell Food and Nutrition Policy Program/USAID, Accra, Ghana, March 1994.

Rubey, Lawrence, 1994. Results of paper entitled "Consumer Preferences and Self-Targeting Opportunities to Promote Access to Food Among Vulnerable Groups in Zimbabwe" presented and discussed at a seminar at the Ministry of Lands, Agriculture and Water Development attended by several senior Ministry staff, March 1994.

Takavarasha, Tobias and T.S. Jayne, "Uses of Micro-Level Survey Data to Inform Food Security Policy in Africa." Invited paper, Conference on Structural Adjustment and Poverty, Cornell Food and Nutrition Policy Program/USAID, Accra, Ghana, March 1994. Presentation of food access findings and policy implications funded by ARTS/FARA/FSP.

Presentation of market reform and food access issues, based on funding by ART/FARA/FSP, at the Cornell-sponsored Conference on Food and Nutrition Policy in Sub-Saharan Africa, Accra Ghana, March 1994.

Reardon, T. "Income Diversification in the WASAT, and Implications for Food Security and Natural Resource Management." (Presented by Josué Dioné on behalf of Reardon as he was unable to attend) at CIRAD/FAO conference on sustainable agriculture in the Sudano-Sahelian region, Dakar, 1994, January 11-14.

Policy recommendations from research in Zimbabwe (partially funded by ARTS/FARA/FSP) were discussed during 3-day policy retreat attended by T. Jayne and

senior officials of Government of Zimbabwe, May 1993. Several important policy recommendations were adopted by the GOZ in June 1993.

Institut du Sahel/CILSS, Mali (Seminar presentation by Thomas Reardon, November 1992: "Role and Determinants of Income Diversification in the Sahel: Illustration from Burkina)." (Food Access and PRISAS activity).

Reardon, T., A. Fall, V. Kelly, C. Delgado, P. Matlon, and O. Badiane. "Is Income Diversification 'Agriculture-Led' in the WASAT? Survey Evidence and Development Strategy Implications." Presentation at the International Conference on African Economic Issues. Sponsored by the West African Economic Association and the Economic Association of East and Southern Africa, and the World Bank, in Abidjan, Côte d'Ivoire, 11-16 October 1992. Collaboration with ISRA (Senegal), IFPRI, and WARDA.

5.2. Oral Presentations to AID/Washington and USAIDs

March 1995: Planning and program meeting between G. Gardner, B. D'Silva of ARTS/FARA/PSGE and MSU faculty at Michigan State University.

February 1994: Presentation on "Consumer Preferences and Food Market Reform: Implications for Food Security in East and Southern Africa," presented by T.S. Jayne, Mulinge Mukumbu, and Munhamo Chisvo at USAID/Washington Food Access seminar.

December 1993: Collaborators workshop at USAID/Washington. Presentations made by Weber, Jayne, and Tschirley on ongoing food access research and findings.

October 1993: Planning and progress meeting between G. Gardner, B. D'Silva, and T. Olson of ARTS/FARA/FSP and MSU faculty at Michigan State University.

June 1993: Collaborators workshop at USAID/Washington. Presentations made by Weber, Jayne and Tschirley on ongoing food access research and findings.

April 1993: Collaborators workshop at USAID/Washington. Presentations made by Weber, Jayne, and Tschirley on ongoing food access research and findings.

October 1992: Planning and progress meeting between G. Gardner, M. Lowdermilk and B. D'Silva of ARTS/FARA/FSP and MSU faculty at Michigan State University.

5.3. Oral Presentations to Other Food Security Research and Policy Groups

Jayne, T.S. 1995. "Researcher-Decisionmaker Interactions in the Research Process: Food Market Reform in Zimbabwe," presentation at the Organized Symposium on "Policy Entrepreneurship: Generating and Delivering Agricultural Economics Research in the

Policy Process," American Agricultural Economics Association Annual Meeting, August 7, 1995, Indianapolis, MD.

Principal Paper Session at the August 1994 American Agricultural Economists Association Annual Meetings in San Diego; organizers are Peter Hazell (IFPRI) and Thomas Reardon (Michigan State University) on behalf of the International Committee of the AAEA; Title of session: Promoting Farm – Nonfarm Growth Synergies in Rural Africa; Paper Titles: (1) Promoting intersectoral growth linkages through agricultural technology and policy reform in Africa (Hazell and Delgado); (2) On-farm linkages between agriculture and non-agriculture in Africa: growth and risk management considerations (Reardon, Savadogo, Kelly, Crawford); (3) Rural microenterprise employment growth in Africa: is there a missing agricultural link? (Liedholm and Chuta); Discussant: Alain de Janvry; chairperson to be determined.

Reardon, T. "Income Diversification and Food Security in the Sahel." Invited presentation at FEWS/Tulane in New Orleans, March 4, 1994.

Reardon, T., and J. E. Taylor. "Agro-Climatic Heterogeneity, Income Diversification, and Inequality in Rural Burkina Faso." Select Paper written as FS II Food Access activity, presented at AAEA 1993 Meetings. Abstract. *American Journal of Agricultural Economics*, forthcoming December 1993. Collaboration with University of California at Davis.

Staatz, J., T. Jayne, D. Tschirley, J. Shaffer, J. Dioné, J. Oehmke, and M. Weber, "Restructuring Food Systems to Support a Transformation of Agriculture in Sub-Saharan Africa." Paper presented at the 1993 AAEA Pre-Conference Workshop at Orlando, Florida, July 30-31, 1993 "Post-Green Revolution Agricultural Development Strategies in the Third World: What Next?"

Reardon, T. at Michigan State University, Dept. of Agricultural Economics, Departmental Seminar Series, March 25, 1993, "Agro-Climatic Heterogeneity, Income Diversification and Inequality in Rural Burkina Faso."

OECD/Development Center, France (Invited presentation by Thomas Reardon, income diversification in West Africa), February 1993; Food Access Activity.

University of Hohenheim, Germany (Invited presentation by Thomas Reardon, Policy and development strategy implications of income diversification in West Africa), January 1993 (Food Access Activity).

Center for Advanced Studies in International Development (CASID), Michigan State University, 1st Special Seminar, presentation by Thomas Reardon, October 29, 1992, "Income Diversification in the West African Semi-Arid Tropics (WASAT): Policy and Development Strategy Implications."

5.4. Collaborative Research Activities with African Researchers

Gem Argwings-Kodhek, Research Fellow, Egerton University/Kenya Market Development Programme/Policy Analysis Matrix Project. PSGE funding was used to support analysis of food prices and household food security resulting from grain market reform in Kenya. Ongoing, October-December 1995.

Mulinge Mukumbu, Research Fellow, Egerton University/Kenya Market Development Programme/Policy Analysis Matrix Project. FSP funding was used to support Mukumbu's mini-sabbatical research on food access issues at MSU, January-February 1995.

Munhamo Chisvo, Research Fellow, University of Zimbabwe. FSP funding was used to support Chisvo's mini-sabbatical research on food access issues at MSU, February-March 1994.

Mulinge Mukumbu, Research Fellow, Egerton University/Kenya Market Development Programme/Policy Analysis Matrix Project. FSP funding was used to support Mukumbu's mini-sabbatical research on food access issues at MSU, February 1994.

Kapola Sipula, Acting Director, Rural Development Studies Bureau, University of Zambia. FSP funding was used to support collaborative research between Sipula and MSU on food access issues in Zambia, January-February 1994.

Collaborative policy analysis research between FS II researchers and Government of Zimbabwe analysts at Ministry of Lands, Agriculture and Water Development/Government of Zimbabwe, November 1992-May 1993.

5.5. MSU Backstop Trips to African Research Sites

September 1995, T.S. Jayne: one week in Nairobi, Kenya, collaborating with African associates in outreach activities connected with Food Access add-on.

June 1995, T.S. Jayne: one week in Nairobi, Kenya, collaborating with African associates in outreach activities connected with Food Access add-on.

March-April 1994, T.S. Jayne: one week in Nairobi, Kenya, collaborating with African associates in outreach activities connected with Food Access add-on; one week in South Africa, presentation on food access issues at African National Congress Agricultural Policy Meeting.

January 1994, Patrick Diskin: two weeks in Lusaka, Zambia working with researchers from the University of Zambia Research Bureau on a household survey of urban consumers to assess the potential to promote food access by vulnerable groups through

improved market operations in Zambia. Also worked on a report for ARTS/FARA assessing the strengths and limitations of strategies taken in Zambia to mitigate food insecurity in response to the 1992/93 drought.

November 1993, T.S. Jayne: one week in Nairobi, Kenya working with researchers from Egerton University on a report for ARTS/FARA/FSP on the potential for market-based reforms to promote food access by vulnerable groups in Kenya.

August 1993, T.S. Jayne: one week in Nairobi, Kenya working with researchers from Egerton University on a household survey of urban consumers to assess the potential for market-based reforms to promote food access by vulnerable groups in Kenya.

May 1993, T.S. Jayne: one week in Lusaka, Zambia working on report on the strengths and limitations of strategies taken in Zambia to mitigate food insecurity in response to the 1992/93 drought.

May 1993, T.S. Jayne: one week in Nairobi, Kenya working with researchers from Egerton University on food access issues in Kenya.

April 1993, T.S. Jayne: one week in Harare, Zimbabwe on retreat with officials of the Government of Zimbabwe to discuss agricultural policy reforms implemented in July 1993.

5.6. Supplemental Field Surveys Undertaken in Africa

Kenya: Household survey of 450 consumers in Nairobi to assess the potential for market-based reforms to promote access to food for vulnerable groups in Kenya, conducted October-December 1995.

Zimbabwe: Household survey of 460 urban consumers in Harare to assess the potential for market-based reforms to promote access to food for vulnerable groups in Zimbabwe; January-February 1994.

Zambia: Household survey of 150 Lusaka consumers to assess the potential for market-based reforms to promote food access by vulnerable groups in Zambia, conducted January 1994.

Kenya: Household survey of 350 consumers in Nairobi to assess the potential for market-based reforms to promote access to food for vulnerable groups in Kenya, conducted September-October 1993.

Zimbabwe: Rapid appraisal household and miller surveys in Harare, Zimbabwe, 1992.

The above surveys were designed to be consistent with parallel surveys undertaken in Zimbabwe and Mozambique, funded under FS II.

5.7. Written Output on Food Access Topics

- **Reports for Host Country Agencies, USAIDs and AID/Washington**

Jayne, T.S., Milan Hajek, and Johan Van Zyl, 1995. "An Analysis of Alternative Maize Marketing Policies in South Africa." MSU International Development Paper No. 50.

Jayne, T.S., Frank Lupi, and Mulinge Mukumbu, 1995. "Effects of Food Subsidy Elimination in Kenya: An Analysis Using Revealed and Stated Preference Data." MSU Staff Paper No. 95-23 (March).

Jayne, T.S., Mulinge Mukumbu, John Duncan, Mattias Lundberg, Kim Aldridge, Francis Keita, Abdel Kader Sanankoua, John Staatz, and Daniel Molla, 1995. "Trends and Determinants of Real Food Price Changes in Africa," Report to USAID/AFR/SD/PSGE under the Food Access add-on.

Jayne, T.S. and Daniel Molla, 1995. "Toward a Research Agenda to Promote Access to Food by Vulnerable Groups Through Food Transfer Arrangements and Food Markets." MSU Food Security Research Project Working Paper (draft for discussion, June).

Jayne, T.S., Lawrence Rubey, David Tschirley, Mulinge Mukumbu, Munhamo Chisvo, Ana Paula Santos, Michael T. Weber, and Patrick Diskin, 1995. "Consumer Response to Food Market Reform in Eastern and Southern Africa: Implications for Targeting Vulnerable Groups through the Market." Report for AID/AFR/SD/PSGE under Food Access add-on.

Jayne, T.S., L. Rubey, D. Tschirley, M. Mukumbu, M. Chisvo, A.P. Santos, M.T. Weber, and P. Diskin, 1995. "Effects of Market Reform on Access to Food by Low-Income Households: Evidence from Four Countries in Eastern and Southern Africa (draft for review), MSU International Development Working Paper (forthcoming, 1995).

Jayne, T.S., D. Tschirley, L. Rubey, T. Reardon, J. M. Staatz, and M. Weber, 1995. "Confronting the Silent Challenge of Hunger: A Conference Synthesis." MSU International Development Working Paper No. 51.

Rubey, Lawrence, T.S. Jayne, and Munhamo Chisvo, 1995. "Strategies to Promote Access to Food Among Vulnerable Groups in Zimbabwe." Report for AID/AFR/SD/PSGE under Food Access add-on.

Diskin, Patrick, 1994. "Understanding Linkages among Food Availability, Access, Consumption, and Nutrition in Africa: Empirical Findings and Issues from the Literature." MSU International Development Working Paper No. 46 (July).

Jayne, T.S., T. Takavarasha, and Johan van Zyl, 1994. "Interactions Between Food Market Reform and Regional Trade in Zimbabwe and South Africa: Implications for Food Security." MSU International Development Paper No. 48.

Jayne, T.S., David L. Tschirley, John M. Staatz, James D. Shaffer, Michael T. Weber, Munhamo Chisvo, and Mulinge Mukumbu, 1994. "Market-Oriented Strategies to Improve Household Access to Food: Experience from Sub-Saharan Africa," *MSU International Development Paper 15*, East Lansing.

Lundberg, Mattias and Patrick Diskin, 1994. "Targeting Assistance to the Poor and Food Insecure: A Review of the Literature." MSU International Working Paper No. 47 (July).

Mukumbu, Mulinge and T.S. Jayne, 1994. "Urban Maize Meal Consumption Patterns: Strategies for Improving Food Access for Vulnerable Households in Kenya," in *Proceedings of the Symposium on Agricultural Policies and Food Security in East Africa*, East African Association of Agricultural Economists, May 1994.

Mukumbu, Mulinge and T.S. Jayne, 1994. "Urban Maize Meal Consumption Patterns: Strategies for Improving Food Access to Vulnerable Groups in Kenya." Egerton University-Tegemeo Institute of Agricultural Policy and Development, Working Paper No. 1.

Tagwireyi, Julia, T.S. Jayne and Mungai Lenneiye, "Nutrition-Relevant Actions in Zimbabwe: 1980-92," United Nations Report, Administrative Committee on Coordination-- Subcommittee on Nutrition, Geneva, prepared in collaboration with the International Food Policy Research Institute, 1994.

Takavarasha, Tobias, and T.S. Jayne. 1994. "Uses of Micro-Level Data and Analysis in Support of Food Market Reform: The Case of Maize in Zimbabwe." Paper presented at the Conference on "Adjustment and Poverty in Sub-Saharan Africa." March 18-20, 1994, Accra, Ghana.

Jayne, T.S. and M. Rukuni. 1993. "The Costs of Food Self-Sufficiency: Maize Pricing and Trade Policy in Zimbabwe." *Agricultural Economics Analysis and Rural Development* 3.2, 1993.

Rubey, Lawrence, 1993. "Consumer Maize Meal Preferences in Zimbabwe: Survey Results and Policy Implications." A Final Report prepared for Ministry of Lands, Agriculture and Water Development, and USAID/Harare (December).

- Tschirley, David, Cynthia Donovan, Rui Benfica, Michael Weber, and Paul Strasberg, 1993. "The Pricing and Distribution of Yellow Maize Food Aid in Mozambique: An Analysis of Alternatives." MSU Department of Agricultural Economics Staff Paper 93-69 (September).
- **Outreach Documents for Food Security Research and Policy Community**

Staatz, J., T. Jayne, D. Tschirley, J. Shaffer, J. Dioné, J. Oehmke, and M. Weber, "Restructuring Food Systems to Support a Transformation of Agriculture in Sub-Saharan Africa." In Delgado, Colyer, and Rosegrant (eds.) *Post-Green Revolution Agricultural Development Strategies in the Third World: What Next?* Forthcoming 1996, Johns Hopkins University Press.

Lundberg, Mattias and Patrick Diskin, 1995. "Targeting Assistance to the Poor and Food Insecure: A Literature Review." USAID/SD Publication Series, Office of Sustainable Development Bureau for Africa, Technical Paper No. 9, May.

Mukumbu, Mulinge and T.S. Jayne, 1995. "Urban Maize Meal Consumption Patterns: Strategies for Improving Food Access for Vulnerable Urban Households in Kenya." USAID/SD Publication Series, Office of Sustainable Development Bureau for Africa, Technical Paper No. 8, May.

Takavarasha, T., T.S. Jayne, and Johan van Zyl, "Interactions Between Food Market Reform and Regional Trade in Zimbabwe and South Africa: Implications for Food Security," *Agrekon*, forthcoming, December 1994.

Reardon, Thomas and J. Edward Taylor. "Agroclimatic Shock, Income Inequality, and Poverty: Evidence from Burkina Faso." MSU Department of Agricultural Economics Staff Paper No. 94-27, May 1994.

Kennedy, E. and T. Reardon. "Shift to Non-traditional Grains in the Diets of East and West Africa: Role of Women's Opportunity Cost of Time in Prepared-Food Consumption." *Food Policy* (February 1994). Collaboration with IFPRI.

Tschirley, David, and Michael Weber. "Food Security Strategies under Extremely Adverse Conditions: The Determinants of Household Income and Consumption in Rural Mozambique." *World Development*, Vol.77, No. 2, February 1994.

Jayne, T.S. "Do High Food Marketing Costs Constrain Cash Crop Production?" *Economic Development and Cultural Change*, Vol. 42, No. 2 (January 1994): 387-402.

Jayne, T.S. M. Chisvo and M. Rukuni. "Zimbabwe's Food Insecurity Paradox." In Carl Eicher and Mandivamba Rukuni (eds.), in *Zimbabwe's Agricultural Revolution*, University of Zimbabwe Press, 1994.

Jayne, T.S. and M. Rukuni. "Managing Zimbabwe's Food Economy in the 1990s." In Carl Eicher and Mandivamba Rukuni (eds.), in *Zimbabwe's Agricultural Revolution*, University of Zimbabwe Press, 1994.

Tschirley, D., C. Donovan, and M. Weber. "Food Aid, Food Markets, and Food Security: Lessons from Mozambique." Submitted to *Food Policy*, 1994.

Reardon, T., A. Fall, V. Kelly, C. Delgado, P. Matlon, and O. Badiane. "Agriculture-Led Income Diversification in the West African Semi-Arid Tropics: Nature, Distribution, and Importance of Production-Linkage Activities." In A. Atsain, S. Wangwe, and A.G. Drabek (eds.) *African Economic Issues*, manuscript October 1993.

Jayne, T.S. and E. Nuppenau. "Maize Market Reform in Zimbabwe." *Food Policy*, Vol. 18, No. 4 (August 1993): 308-315.

Jayne, T.S. and M. Rukuni. "Distributional Effects of Maize Self Sufficiency in Zimbabwe: Implications for Pricing and Trade Policy." *Food Policy*, Vol. 18, No. 4 (August 1993): 334-341.

Jayne, T.S. and Lawrence Rubey. "Maize Milling, Market Reform and Urban Food Security: The Case of Zimbabwe." *World Development*, Vol. 21, No. 6 (June 1993): 975-988.

Jayne, T.S. and Munhamo Chisvo. "Unravelling Zimbabwe's food insecurity paradox: Implications for grain market reform in Southern Africa." *Food Policy*, August 1991, pp. 319-330.

6. Overview of Ongoing Research

Food access research activities to date have included a) developing a conceptual framework for analyzing the relationship between the performance of exchange systems for inputs, factors and commodities and household access to food in Africa, b) an assessment of the cost-effectiveness of alternative forms of targeting food to vulnerable groups in Africa, c) synthesizing cross-country evidence on the performance of administered mechanisms to promote access to food, d) synthesizing cross-country evidence on the performance of market-based strategies to promote access to food, and e) assessing the linkages between food production, availability, consumption and nutrition, and the factors reducing their correlation.

Key findings highlight a) the extensive failure of food, input and factor markets, and the need to alleviate these market failures to promote productivity growth and access to food in the long run, b) policy barriers that impede household access to food, c) the potential to improve household access to food by restructuring the market to better articulate the preferences of low-income consumers, d) the advantages and cost-effectiveness of self-targeting mechanisms to promote access to food relative to administered forms of targeting (under specified conditions), and e) the variety

of factors (e.g., sanitary conditions, water supply, health delivery system, sectoral and macro policies, and methodological research problems) that reduce the direct correspondence between food production, availability, consumption and nutrition.

MSU, Sahelian, and CGIAR collaborators are drawing synthetic cross-country development strategy and policy implications from our past field survey work on income diversification and food security (diversification on access to food, on productivity investments, and the nature of diversification activities [to what extent are in direct, 'production linkages' with agriculture, and impact on income distribution and poverty], in the Sahel (Mali, Burkina, Senegal, Niger), and doing new work in Burkina and Senegal on the subject.

MSU and Rwandan colleagues are also exploring these topics in the Rwandan context; an effort will be made to do a cross-country comparison using other Eastern African evidence.

7. Written Outputs Anticipated in 1995

"Managing African Food Systems under Extreme Production Fluctuations: A Review of the 1992/93 Experience with Drought and Bumper Harvests in Zimbabwe, Mozambique and Zambia." D.T. Tschirley and Lawrence Rubey. Ongoing.

"Food Market Restructuring in Africa: A Survey of Recent Experience," Stephen Jones and T.S. Jayne. Ongoing.

"Agricultural Productivity Growth and Access to Food by Vulnerable Groups," for AID/AFR/SD/PSGE, Thomas Reardon, Duncan Boughton, and T.S. Jayne.

"Analysis of Trends in Real Food Prices: A Review of Five African Countries," T.S. Jayne, M. Mukumbu, J. Duncan, M. Lundberg, K. Aldridge, F. Keita, A. K. Sanankoua, J. Staatz, and D. Molla. Ongoing.

8. Examples of Impact of Project Findings/Information

a) A.I.D.-Supported Research on Food Security Helps Raise Household Incomes and Reduce Government Deficits in Zimbabwe

Over the past 8 years, USAID-funded research under the MSU/University of Zimbabwe Food Security Project has led to (a) 10% to 25% higher cash incomes for at least 200,000 low-income rural consumers; (b) cost savings on staple maize meal equal to 7%-13% of household income for 100,000 low-income urban consumers; and (c) a reduction in government treasury losses equal to 2% of the country's GDP. A more detailed chronology of Food Security Project research, interaction with Zimbabwean policy makers, government policy changes, and their effects are as follows:

In 1989/90, research under the MSU/UZ Food Security Project estimated the adverse impacts of maize movement controls on rural household incomes and food insecurity in Zimbabwe. This project was funded by R&D and Africa Bureau in conjunction with the USAID Southern Africa Regional Office in Harare. It was implemented by staff in the Department of Agricultural Economics and Extension at the University of Zimbabwe (UZ) and at Michigan State University (MSU). Project findings were incorporated into the Agricultural Ministry's recommendations to Cabinet in early 1992. In June 1992, the Government of Zimbabwe (GOZ) adopted these recommendations, specifically the abolition of movement controls between smallholder areas in the country. This policy change reduced intra-rural grain marketing costs, *ceteris paribus*, therefore raising average prices received by producers and lowering prices paid by consumers. Jayne and Chisvo (1991) estimated that this policy change, under normal weather, increases the real disposable incomes of rural consumers by up to 25%.

The Agricultural Ministry commissioned a report by the UZ/MSU Project in 1991 to study possible changes to the grain marketing system for inclusion in its recommendations to Cabinet. Among the changes recommended by the report were (a) allow grain to be sold at collection points (i.e., temporary marketing board depots in rural areas), which were previously used only to buy grain and transport it on to urban depots; and (b) allow licensed private traders to sell grain to consumers (licensed traders were previously required to forward all grain bought from farmers to urban depots). Both of these recommendations were adopted by the Government of Zimbabwe in 1992. Government reports confirm that several of these collection points were instrumental in ensuring access to food for rural consumers during the 1992 drought.

PARTS-funded research, extending previous analysis in Zimbabwe under Food Security I, established that maize stocks at Grain Marketing Board depots were not being made available for purchase by small-scale buyers (i.e., households and informal traders). Large-scale millers' preferential access to government-held maize artificially inflated consumer food prices and exacerbated food insecurity, by impeding the development of small-scale indigenous millers that produce a less expensive and more nutritious form of maize meal, the staple food of Zimbabweans. In response to this research and dissemination by Zimbabwean collaborators, the Government of Zimbabwe, in 1993, has opened its maize stocks to all buyers, and has made deliberate efforts to promote the development of small-scale millers. President Mugabe's call, in June 1993, for analysis of policy options to expand the role of small-scale mills was motivated largely by results of PARTS-funded research by MSU (Jayne, Rukuni, Hajek, Sithole, and Mudimu, 1991).

MSU research commissioned by the Agricultural Ministry in 1992 (partially funded by ARTS/FARA) estimated that the budget losses arising from subsidies on maize meal and marketing board activities were over 2% of the country's GDP. UZ/MSU research also indicated that these subsidies were untargeted and unnecessary if less-costly straight run meal were made more accessible to low income urban households through the development of the small-scale milling sector. FS II recommendations to eliminate the subsidy on refined maize

meal was adopted by the Government in June 1993. This move provided an annual saving to the treasury of over 2% of the GOZ's GDP.

PARTS-funded research, also extending previous findings under FS I, indicated that elimination of controls on maize movement into urban areas would substantially increase access to, and affordability of, maize by small millers and low-income urban households. This recommendation was incorporated into the Ministry of Land's Agricultural Policy Strategy for 1993. In August 1993, this recommendation was adopted, specifically the abolition of controls on maize movement into urban areas. The reforms, based largely on analysis drawn from FS I and II, have clearly expanded private investment in Zimbabwe's food system, and have substantially reduced the cost of staple maize meal compared with the meal supplied through the official marketing channel. MSU research findings reveal that (a) within a span of two years, the proportion of staple maize meal procured through informal distribution channels has soared from 8% to about 50%; (b) the market reforms have allowed urban household to acquire maize meal at 60%-70% of the cost of maize meal manufactured by large-scale millers; and (c) the cost saving to consumers equals 7%-13% of average household income among the lowest income quintile in the capital city, Harare (Rubey 1995). Government policy makers and the general public widely regard these maize market reforms as among the most successful aspects of structural adjustment in Zimbabwe.

b) Food Market Reform and Household Access to Food: Implications for Reaching the Poor

USAID-funded research by MSU in Zimbabwe and Kenya has demonstrated that food market reform can improve household food security and real incomes, without the need for costly food subsidies.

For decades, trade restrictions and regulations impeded households' access to low-cost, unrefined maize flour produced and distributed through private trading channels in Eastern and Southern Africa. These restrictive policies endured because of perceptions by policy-makers that consumers, particularly those in urban areas, strongly preferred highly refined, expensive maize flours produced by large-scale mills. As a result, governments chose to subsidize the highly-refined flours, an option that became fiscally unsustainable by the late 1980's and threatened agricultural growth by creating pressures to reduce producer prices.

Findings: USAID-funded research by MSU demonstrated that

- * urban consumers would benefit from policy reforms that increased the availability of low-cost whole-grain maize flour;
- * linking subsidy removal with policy reform would promote the development of private sector marketing channels for lower-cost maize flour products, offsetting the adverse effects of subsidy removal on the poor;
- * there were system-wide efficiency gains from liberalizing a single-channel marketing system dominated by a government marketing boards and inefficient large-scale processing firms.

Effect on Policy: In Zimbabwe, this research influenced policy decisions by:

- * convincing policy-makers that the political ramifications of subsidy removal would be sharply reduced if alternative marketing channels composed of private-sector traders and food processors were permitted to develop;
- * providing the analytical foundation for the design of USAID's Grain Marketing Reform Support Program that committed the Government of Zimbabwe to a series of phased reforms undertaken from 1991 to 1994.

People-Level Impacts: Over the past 8 years, USAID-funded research under the MSU/University of Zimbabwe Food Security Project has led to

- * 10% to 25% higher cash incomes for at least 200,000 low-income rural consumers;
- * cost savings on staple maize meal equal to 7%-13% of household income for low-income urban consumers; and
- * a reduction in government treasury losses equal to 2% of the country's GDP.

c) *USAID-Funded Research Challenges the Perceived Wisdom on the Need for Food Subsidies in Eastern and Southern Africa*

The case for structural adjustment and food market reform, while widely accepted by donors and international analysts, has not been fully convincing to many African policy makers. Concerns have typically arisen regarding the elimination of food subsidies and decontrol of food prices on low-income urban consumers, a politically volatile group. A critical problem facing African governments has been how to keep food prices at tolerable levels for poor consumers at a time when production incentives must be increased and subsidies must be eliminated.

In much of eastern and southern Africa, there has been a longstanding perception that urban consumers strongly prefer the relatively expensive refined maize flour produced by large-scale industrial mills over less-refined whole flour produced by small-scale mills and are not responsive to price changes between them. This conventional wisdom had been the major impetus for subsidies and controls on refined maize flour distributed through the official marketing system. However, country-level research carried out by the USAID-funded Food Security II Project in Kenya, Zimbabwe, Zambia, and Mozambique in 1992-1994 have shown that the perceived popularity of refined flour has been exaggerated by decades of controls on maize marketing, which had restricted consumers' access to the less expensive, whole maize flour. When the marketing controls and subsidies on refined flour were removed, whole meal through informal trading networks became available in urban areas at prices about 55% to 75% the cost of refined meal. Small-scale maize milling expanded rapidly in all four countries. Also low-income households were consistently found to purchase a greater proportion of whole maize flour than high-income consumers. These findings indicate that (a) the conventional wisdom of fixed urban preferences for refined flour was greatly exaggerated; (b) subsidies on refined meal were regressive, in that they transferred income disproportionately to high-income

consumers; (c) market reforms that introduced greater competition into food marketing and milling have improved access to food by low-income urban households through the introduction of cheaper food products; and (d) consumer subsidies on products in the official marketing system did not necessarily promote food security, because they had entrenched a relatively high-cost marketing system and impeded the development of lower-cost channels from developing (Jayne, Tschirley, Rubey, Mukumbu, Chisvo, Santos, Weber, and Diskin 1995).

d) *AID-Funded Analysis Reveals Minimal Effects on Household Food Security From Elimination of Maize Meal Subsidies: Findings from Kenya* ◆◆◆◆◆◆◆◆◆◆

The recent wave of structural adjustment programs in many developing countries has put pressure on governments to eliminate costly subsidies on key food staples. However, concerns have arisen regarding the social costs of subsidy removal, particularly the impact on low-income consumers. While accurate information on consumer behavior is necessary to evaluate these effects, the database on consumer behavior is particularly sparse in many developing regions.

This article determines how elimination of the subsidy on refined maize flour in Kenya has affected access to food among various urban income groups, and to assess the implications of these findings for food security policy. A selectivity model is developed to assess how consumption of refined and unrefined maize flour differs by income and other household attributes. The model is applied to survey data of 344 randomly-chosen households in Nairobi, Kenya, incorporating both revealed and stated preference information. Revealed preference data refers to survey respondents' actual behavior; stated preference data refers to respondents' statements about how they would respond under a range of carefully structured conditions. This approach is relevant to situations, commonly found in developing countries, where time series data on observed household consumption behavior is limited, but where information on expected behavioral responses is necessary to evaluate alternative policy options.

Maize flour is the dominant food staple throughout Eastern and Southern Africa. There are two main types: a highly-refined sifted flour processed by large-scale urban roller milling firms (usually linked to the state food marketing channel), and an unrefined whole maize flour, processed by small-scale private mills. There has been a longstanding perception that urban consumers throughout Eastern and Southern Africa strongly prefer the relatively expensive refined maize flour and are not responsive to relative price changes between the different flour. Government subsidies have been typically applied to refined flour marketed through the official marketing channel.

Findings: Model results indicate that, in the case of Nairobi, Kenya, the subsidy on refined maize flour was untargetted, and that the benefits of the subsidy were actually inversely related to household incomes. Results indicate that refined flour is a normal good, but with a very

◆◆◆◆◆◆◆◆◆◆Report entitled "*Food Subsidies and Food Security in Urban Kenya*," by T.S. Jayne, Frank Lupi, and Mulinge Mukumbu, funded by AID/AFR/SD/PSGE and AID/G/EGC/OEID.

Through longstanding subsidies, government policy in much of Eastern and Southern Africa has encouraged the consumption of highly-refined, expensive, and less nutritious maize flour compared to informally-produced whole meal. Public policies and investments designed to improve the functioning of alternative marketing channels may be a more cost-effective way of improving food access to low-income consumers than a return to untargeted subsidies on refined products through a high-cost controlled marketing system.

e) *Food Aid and Food Markets: Lessons from Mozambique*

Lessons from Research

- 1. The effects of monetized food aid on food security, food markets, and local food production is critically mediated by the food system into which the food aid is being injected:** Monetization is often seen as one way to reconcile the potential conflict between the short-run objectives of food aid and the long-run development objectives of the country. However, whether monetization in fact relieves this conflict in any given country depends on many details of the food aid program. Experience in Mozambique shows that food aid can destabilize the market and can also generate very large rents (or losses) to first-buyers. A more positive result of this approach is that it fueled the growth of an active informal marketing system and a small-scale milling industry which now provides low-cost meal to the majority of urban residents.
2. Subsidies placed on commercial food aid often do not reach intended beneficiaries: Thus, selling commercial food aid at prices below import parity to traders may sacrifice development resources without reducing prices to poor consumers.
3. The effects of emergency food aid on markets are most obvious during periods of crisis, but can linger long after the crisis is over. Excess supplies from food aid in Mozambique depressed market prices of yellow maize to approximately half previous lows (in real terms) for over a year after the 1992 Southern Africa drought.
- 4. Administrative procedures for local purchases in Mozambique made it difficult for traders to participate effectively.** The large scale of purchases made it especially difficult for competitive smaller scale traders to participate.
5. Lack of feedback from market prices to commercial food aid quantities increases the market disruptions caused by monetization programs. The result is often large rents for private traders involved in the commercial program.
6. Coordination is often poor between emergency and commercial food aid programs: Sharing of information across emergency and commercial food aid programs regarding quantity and timing of food aid arrivals is essential.
7. White and yellow maize are likely to be (or become) substitutes in consumption in Southern and Eastern Africa: This implies that donors, government and analysts must not

ignore the potential disincentive effects of yellow maize food aid on white maize production and marketing.

8. Basing food aid programs on a pot of money rather than a bushel of corn would be one of the most effective means to design market friendly food aid programs: Relaxing the requirement that emergency assistance monies be used to purchase surplus commodities in donor countries could bring significant benefits to recipient countries. First, such food aid would reduce international transport costs and procurement delays. Second, flexible food aid could increase donor and national government abilities to facilitate effective market response to emergency situations. For example, with more flexibility in using cash resources set aside for acquiring food aid, donors and the local government could mount cash for work or infrastructure development projects in areas of the country affected by drought, increasing effective demand in the area. Finally, flexible food aid can reduce disruptions in recipient country markets caused by poor coordination across commercial and emergency food aid programs by reducing or eliminating administrative divisions between monetized and free distribution food aid activities.

Guidelines for the design of Market-Friendly Food Aid Programs

1. Invest in local analytical capacity to understand the behavior of the food system into which food aid is injected.
2. Create a food aid distribution system that ensures active exchange of information across commercial and emergency programs.
3. Work with government agencies, trade associations, NGOs and other donors to invest in public goods (roads, market information systems, legal foundations of markets, etc.).
4. Maximize flexibility in food aid programs by allocating a larger share of food aid resources to local missions as cash rather than commodities.
5. Integrate the commercial food aid program into the country's overall food policy: To generate the fewest short-run problems and be most effective in the long-run, commercial food aid should be made, as far as possible, indistinguishable from commercial imports in the eyes of traders.
6. **The use of local purchases to meet emergency distribution needs can contribute to market development, but should be designed to encourage participation of small scale traders.** For this to happen, NGOs need to develop a more sophisticated understanding of markets.

Fact Sheet • STRATEGIC PLANNING STUDIES

▸ FOOD SECURITY II COOPERATIVE AGREEMENT-DEPARTMENT OF AGRICULTURAL ECONOMICS, MSU ▸
▸ ACTIVITY TIME PERIOD: OCTOBER 1, 1993 - SEPTEMBER 31, 1996 ♦♦♦♦♦♦♦♦♦♦

1. Cooperating Institutions

Agency for International Development, Africa Bureau, Office of Sustainable Development,
Productive Sectors, Growth and Environment Division, Technology Development and Transfer
Unit (AFR/SD/PSGE/TDT)

Agency for International Development, Global Bureau, Economic Growth Center, Office of
Agriculture and Food Security (G/EG/AFS)

Department of Agricultural Economics, Michigan State University (MSU)

International/Regional Collaborating Institutions:

Association for Strengthening Agricultural Research in Eastern and Central Africa
(ASARECA)

Institut du Sahel (INSAH)

Southern African Center for Cooperation in Agricultural Research and Training (SACCAR)

Special Program for Strengthening African Agricultural Research (SPAAR/World Bank)

CIMMYT Eastern Africa Regional Program

USAID Missions and Host Country Collaborating Institutions:

Mali

- Institut d'Economie Rurale, Programme Economie des Filières (IER/ECOFIL)
- Strengthening Research Planning and Research on Commodities Project (SPARC)
- USAID/Mali

Ethiopia

- Alemaya University of Agriculture
- Ethiopian Science and Technology Commission
- Institute of Agricultural Research
- Ministry of Economic Development and Cooperation
- USAID/Ethiopia

Kenya

- Kenya Agricultural Research Institute

Uganda

- Agricultural Secretariat, Bank of Uganda
- Makerere University
- Ministry of Agriculture, Animal Industry and Fisheries
- Ministry of Finance
- National Agricultural Research Organization

Tanzania

- Ministry of Agriculture Department of Research and Training
- Zambia**
- Ministry of Agriculture, Food and Fisheries Department of Agriculture (Research Branch)
- University of Zambia
- USAID/Zambia

2. Researchers Involved

AFR/SD/PSGE/TDT: Jeff Hill

G/EG/AFS: Ralph Cummings

Host Country and MSU In-Country Researchers:

- Mali:** Dr. Bino Témé (Director of Research); Ousmane Sanogo (Head ECOFIL), Bakary S. Coulibaly, and professional staff of the "Commodity Subsector Economics Program" of IER, and commodity specialists of IER
- Ethiopia:** Dr. Tadesse Gebre Medhin, General Manager, IAR; Tesfaye Zegaye, Economics Unit, IAR; Dr. Beyene Kebede, Head, Dept. of Food, Agriculture and Environment, Ethiopian Science and Technology Commission; Dr. Efrem Bechere, Vice President for Research and Development, Alemaya University of Agriculture; Seifu Bogale, Senior Researcher, Ministry of Agriculture
- Kenya:** Dr. A.N. Mbabu (Head Socio-Economics/KARI), Daniel Karanja, Lois Wambuguh, Dr. Bradford Mills
- Uganda:** Dr. J. Mukiibi, Director General, NARO; Dr. J. Mugerwa, Interim Executive Secretary, ASARECA; Dan Kisauzi, Director of Planning, NARO; William Nanyeenya Ntege, Socioeconomics Unit, NARO; Charles Gashuma, Director, Agricultural Secretariat, Bank of Uganda; Hadija Gava, Ministry of Finance, Fortunate Sewankambo, Asst. Commissioner, Ministry of Agriculture, Animal Industry and Fisheries; Dr. F. Opio, Executive Director, Economic Policy Research Center, Makerere University
- Tanzania:** Dr. Francis Shao, Commissioner, Research and Training, Ministry of Agriculture; George Sempeho, Head, Planning, Monitoring and Evaluation, Department of Research and Training, Ministry of Agriculture; T. N. Kirway, Assistant Commissioner, Farming Systems Research, Department of Research and Training, Ministry of Agriculture
- Zambia:** Dr. K. Munyinda, Assistant Director, Department of Agriculture (Research Branch), Ministry of Agriculture, Food and Fisheries; Dr. W. Mwale, Region II Coordinator, Ministry of Agriculture, Food and Fisheries; Dr. C. Mungoma, Chief Agricultural Research Officer, Ministry of Agriculture, Food and Fisheries; Sylvester Kalonge, ARPT Research/Extension Officer, Research Branch, Ministry of Agriculture, Food and Fisheries; George Chitalu, Research Associate, University of Zambia
- SACCAR:** Dr. P. Anandajayasekeram (Impact Evaluation and Policy Analysis Advisor) Professor Mandi Rukuni, Dept. of Agricultural Economics, University of Zimbabwe

- ASARECA:** Professor J. Mugerwa (Interim Executive Secretary), Dr. J. Mukiibi (Chairperson)
INSAH: Dr. Josué Dioné, (PRISAS-INSAH) and researchers of the Sahel region participating in PRISAS programs, Dr. Touba Bedingar, Research Management Coordinator (PADRES)
SPAAR: Dr. Moctar Touré, Marie-Hélène Collion
MSU Campus Backstop: Duncan Boughton, Rick Bernsten, Eric Crawford, Julie Howard, Mywish Maredia, Jim Oehmke, Mandi Rukuni, Jim Shaffer, John Staatz, Michael Weber

3. Objectives

The Development Fund for Africa (DFA) has a target of stimulating greater agricultural technology development and utilization in Africa. As part of its focus on enhancing food access and income growth, the FS II Cooperative Agreement has a priority applied research theme of studying ways to design more cost-effective food systems, and related technologies and institutions. To help inform DFA and FS II objectives, the strategic planning research project focuses on: (1) contributing to the methodology and processes for identifying subsector constraints to improved performance, assess their importance, assess their tractability, and develop strategies to apply knowledge acquired in subsector analysis to reducing the constraints to improved food systems performance; (2) identifying technological and institutional innovations with the potential for a broad-based and sustainable impact on food system productivity; (3) strengthening the capacity of African researchers to organize and conduct research which results in technological and institutional innovations to improve the economic performance of food systems in Africa; and (4) increase understanding of and capacity to promote agricultural transformation.

4. Approach

The approach to achieving the objectives includes the following: (1) developing materials to assist African researchers and administrators to understand and implement commodity systems strategic planning processes designed to improve food systems performance; (2) participating in the conduct of at least 2 African country studies of commodity subsectors and in the development of strategies to reduce the constraints to improved food system performance through technological and institutional innovation; and (3) participating in country-level and regional workshops and other outreach activities to: (a) provide information about methods and procedures for conducting and using subsector analysis and strategic planning to improve food system performance; and (b) bring researchers, administrators, and policy officials together to share knowledge and to develop cooperative relationships to deal with common problems.

5. Outputs to Date

5.1. Written Outputs on Strategic Planning/Subsector Analysis Topics

Maredia Mywish, Duncan Boughton, Julie Howard, Daniel Karanja, Marie-Hélène Collion, Oumar Niangado and Toubamatingar Bedingar. February 1996. "No Shortcuts to Progress: Case Studies of the Status and Impact of Strategic Agricultural Research Planning in Africa." Draft IDWP Paper. East Lansing: Michigan State University.

Howard, Julie A. and Catherine Mungoma. January 1996. "Zambia's Stop-and-Go Revolution: The Impact of Policies and Organizations on the Development and Spread of Maize Technology." Draft IDWP Paper. East Lansing: Michigan State University.

Maredia, Mywish, Julie Howard, Laura Farrelly, Kei Kajisa, Larry Rubey, Duncan Boughton, James Oehmke and James Shaffer. January 1996. Technology Frontiers and Agricultural Transformation in Sub-Saharan Africa: Concepts and Empirical Evidence. East Lansing: Michigan State University.

Boughton, Duncan, Eric Crawford, Julie Howard, James Oehmke, James Shaffer, and John Staatz. "A Strategic Approach to Agricultural Research Program Planning in Sub-Saharan Africa." MSU International Development Working Paper No. 49. Department of Agricultural Economics, Michigan State University, 1995.

Howard, J. and C. Mungoma. 1995. "Zambia: Factors Affecting the Development and Adoption of New Maize Varieties Before and After Market Liberalization." Paper presented at the International Workshop on Maize in Africa, July 8-12, 1995, Michigan State University, East Lansing, Michigan.

Howard, J., Ali Said, Daniel Molla, Patrick Diskin and Seifu Bogale. 1995. "Toward Increased Domestic Cereals Production in Ethiopia: Using a Commodity Systems Approach to Evaluate Strategic Constraints and Opportunities." Food Security Research Project Working Paper. Addis Ababa: Ministry of Economic Development and Cooperation and Michigan State University.

Boughton, D. and B. Henry de Frahan. 1994. "Agricultural Research Impact Assessment: The Case of Maize Technology Adoption in Southern Mali." East Lansing, Michigan State University: IDWP No.41.

Boughton, D. and O. Sanogo. 1994. "Analysis of Household Cereal Procurement in Bamako: Implications of the Devaluation of the FCFA for Urban Food Security." Maize Subsector Study Information Note 5. Bamako: Institut d'Economie Rurale, Ministère du Développement Rurale (original version in French).

Boughton, D., B. Témé, O. Sanogo, J. Staatz, T. Reardon and E. Crawford. 1994. "Development Strategies for Maize in Mali: Using a Commodity Subsector Perspective to

Increase the Impact of Agricultural Research and Development." East Lansing, Michigan State University: Draft IDWP.

Boughton, Duncan, John Staatz, and James Shaffer. "Analyzing the Impact of Structural Adjustment on Commodity Subsectors: Currency Devaluation and the Maize Subsector in Mali." Paper presented at the African Studies Association meetings in Toronto. Department of Agricultural Economics, Michigan State University, November 3-6, 1994.

Howard, Julie. "Improved Maize in Zambia: A Qualified Success Story." Paper accepted for the Mini-Symposium, "Assessment of Agricultural Research Impacts and Research Priority Setting in Africa," 1994 Meeting of the International Association of Agricultural Economists, Harare, Zimbabwe, August 22-29, 1994.

Shaffer, Jim and Simeon Wei. "The Transformation from Low Income Agricultural Economies: Observations Focusing on Africa and China." Paper presented at the 22nd Conference of the International Association of Agricultural Economists, Harare, Zimbabwe, August 22-29, 1994.

Howard, Julie. "Improved Maize in Zambia: A Qualified Success Story." Paper accepted for the Organized Symposium "Recent Technological Successes in sub-Saharan Agriculture," Annual Meetings of the American Agricultural Economics Association, San Diego, August 7-10, 1994.

Staatz, John M. "The Strategic Role of Food and Agricultural Systems in Fighting Hunger Through Fostering Sustainable Economic Growth." Paper presented at the workshop on "The Silent Challenge of Hunger," sponsored by USAID, Global Bureau, Office of Agriculture and Food Security. Washington, D.C., June 28-29, 1994.

Boughton, Duncan, John Staatz, and James Shaffer. "From Pilot Study to Commodity Subsector Economics Program: Institutionalizing a Market-Oriented Approach to Agricultural Research in Mali." Paper presented at USAID (Africa Bureau ARTS/FARA/TDT) Seminar on Strengthening Linkages Between Demand and Supply of Agricultural Technology in Africa. Department of Agricultural Economics, Michigan State University, June 21, 1994.

Kupfuma, Bernard, Duncan Boughton, Thom Jayne, and James Shaffer. "Agricultural Technology Development and Policy Change in Zimbabwe: A Proposal for Ex-Ante Impact Assessment." Michigan State University, June 1994.

Coulibaly, Bakary S. and Bino Témé. 1994. "Evolution du Programme Economie des Filières de l'IER: Une Contribution à la Planification Stratégique de la Recherche Agricole." Paper presented at the Regionalization of Agricultural Research in West Africa workshop, Banjul, March 14-18, 1994.

Boughton, Duncan and James Shaffer. "Summary Activity Report: Support to the IER Commodity Subsector Economics Program Design Workshop." Progress report on FS II activities in Mali in support of the ARTS/FARA/TDT-funded "Strategic Planning/Subsector Analysis" add-on. Department of Agricultural Economics, Michigan State University, February 10, 1994. PN-ABT-300.

Boughton, Duncan and John Staats. "Using the Commodity Subsector Approach to Design Agricultural Research: The Case of Maize in Mali." Poster Paper, 1994 meetings of the International Association of Agricultural Economists, Harare. Department of Agricultural Economics, Michigan State University, November 1993. PN-ABS-947.

Howard, J., with G. Chitalu and S. Kalonge. 1993. "The Impact of Investments in Maize Research and Dissemination in Zambia." MSU International Development Working Paper, No. 39/1. Department of Agricultural Economics, East Lansing: Michigan State University.

Boughton, Duncan and Bino Témé. "Farming Systems and Markets: Combining Analytical Frameworks for Development of Commodity Subsectors: The Case of Maize in Southern Mali." Selected Paper, 12th Annual Farming Systems Symposium, "The Association for Farming Systems Research/Extension," East Lansing, September 1992. PN-ABS-923.

Howard, Julie. 1992. "Impact of Maize Research in Zambia: Methodology and Preliminary Results." In Proceedings, SADCC/ICRISAT Sorghum and Millet Improvement Program Research Planning Meetings, Sept. 21-26, 1992, Bulawago, Zimbabwe.

Témé, Bino and Duncan Boughton. "Preliminary Analysis of the Maize Subsector and Principal Questions." PN-ABI-277. French Version: "Analyse préliminaire sur la filière maïs et principales interrogations." Ministère de l'Agriculture, de l'Elevage et de l'Environnement, Institut d'Economie Rurale, Département de Planification Agricole et Economie Rurale. Comité Technique du Programme Systèmes de Production et Economie Rurale. Bamako: April 1992. PN-ABS-929.

5.2. Oral Presentations–Strategic Planning/Subsector Analysis Topics

Boughton presentation to USAID-funded Natural Resource Management inter-CRSP workshop, Washington, D.C. August 10-11, 1995: "Strategic Agricultural Research Planning-An Overview."

Kelly presentation to USAID-funded Natural Resource Management inter-CRSP workshop, Washington, D.C. August 10-11, 1995: "Proposal for Economic Analysis of Fertilizer and NRM Technologies."

Howard invited presentation on factors affecting development and adoption of new maize varieties in Zambia at the International Workshop on Maize in Africa, East Lansing, Michigan, July 1995.

Howard presentation on using a food systems framework to identify key constraints to cereals system productivity in Ethiopia at the First MSU/MEDAC Food Security Research Project Workshop, June 1995.

Boughton presentation on the linkages between technology, investment, productivity and competitiveness at the INSAH/PRISAS devaluation workshop, Bamako, June 26-30, 1995.

Boughton presentation on the implications of urban household cereal consumption patterns for policies to promote coarse grain processing and utilization to the Programme de Restructuration du Marché Céréalière, Bamako (Mali), February 1995.

Boughton presentation on planning agricultural research in a food systems framework at the IER Commodity Subsector Economics research program design workshop, Segou (Mali), February 1995.

Staatz presentation on livestock research in Africa at the IER Commodity Subsector Economics research program design workshop, Segou (Mali), February 1995.

Howard presentation of a strategic approach to agricultural research program planning in sub-Saharan Africa at the TDT Collaborators' Workshop, Harare, Zimbabwe, January 1995.

Kelly presentations on agricultural growth linkages and raising farm productivity in Africa at the TDT Collaborators' Workshop, Harare, Zimbabwe, January 1995.

Oehmke presentation on increasing the contribution of technology to economic growth and sustainable use of natural resources at the TDT Collaborators' Workshop, Harare, Zimbabwe, January 1995.

Boughton presentation on the use of a commodity subsector framework to analyze the impact of devaluation on the demand for technology at the African Studies Association meetings, Toronto, November 1994.

Staatz presentation on the impact of technology development in West Africa at the African Studies Association meetings, Toronto, November 1994.

Howard seminar on lessons from the Zambia Maize Impact Study for strategic planning of agricultural research to the Ministry of Agriculture, Food and Fisheries, Lusaka, Zambia, September 15, 1994.

Howard invited presentation on Zambia's experience with improved maize development for the organized symposium "Recent Technological Successes in Sub-Saharan Agriculture" at the 1994 Annual Meetings of the American Agricultural Economics Association, San Diego, August 1994.

Boughton presentation on a commodity subsector approach to ex-post and ex-ante assessment of agricultural research impact using the case of maize in Mali at the 23rd International Association of Agricultural Economists meetings, Harare, August 1994.

Howard presentation of the impact of maize research in Zambia at the 23rd International Association of Agricultural Economist meetings, Harare, August 1994.

Shaffer presentation on agricultural transformation in China and implications for Africa at the 23rd International Association of Agricultural Economists meetings, Harare, August 1994.

Boughton, Oehmke, and Shaffer presentations at Africa Bureau seminar on strengthening linkages between demand and supply of agricultural technology in Africa, Washington, D.C., June 1994.

Statz presentation on the strategic role of food and agricultural systems in fighting hunger through sustainable economic growth to USAID (G/ED/AFS), Washington D.C., June 1994.

Shaffer and Weber presentations on subsector approach to strategic planning to the Kenya Agricultural Research Institute researchers in Nairobi, Kenya and to USAID office of Agricultural officials in Nairobi on April 4-14, 1994.

Howard invited seminar, on the impact of policies on returns to agricultural research in Zambia for the Department of Agricultural Economics, the University of Helsinki, March 1994.

Oehmke presentations on methodological issues in impact assessment, returns to MSU training of West African Scientists, and the Zambia and Malawi research impact studies, at the SACCAR Training Workshop, Harare, Zimbabwe, March 1994.

Oehmke presentations on the Malawi and Zambia research impact studies at the SACCAR Impact Assessment Awareness Seminar, Lilongwe, Malawi, February 1994.

Boughton presentation to USAID/Bamako on the potential impact of devaluation on urban consumption patterns and potential donor responses. Bamako, Mali, January 1994.

Boughton and Sanogo presentation to the Technical Committee of the Mali Cereals Market Restructuring Program (PRMC) on the potential impact of devaluation on urban consumption patterns. Bamako, Mali, January 1994.

Shaffer and Boughton presentations to IER researchers during Subsector Economics Workshop in Mali in December 1993.

Boughton and Staatz presentations on subsector approach at PRISAS workshop in Bamako, Mali, November 1993.

Shaffer presentation in October 1993, to DSA officials/researchers on the ARTS/FARA/TDT strategic planning/subsector research project.

Oehmke presentation on the achievements of African agricultural technology development and transfer at the SPAAR/World Bank Seminar, Washington D.C., July 1993.

5.3. Short-Term Training

In February 1995, senior researchers from IER's commodity subsector economics program and MSU researchers (Staatz and Boughton) planned and implemented an interdisciplinary workshop bringing together staff from planning units, commodity and farming systems researchers, to design a commodity subsector economics research program.

In December 1993, researchers from the Malian national research organization (IER), working in the Commodity Subsector Economics Program, and MSU researchers (Shaffer and Boughton) planned and implemented a workshop for research program heads and extension counterparts on strategic planning in a subsector framework.

5.4. Long Term Training

Laura Farrelly completed a Master's degree in Agricultural Economics at MSU with a paper on lessons for agricultural transformation in Africa's poultry subsector from other developing regions (Latin America, India, South-east Asia).

Julie Howard completed a Ph.D. degree in Agricultural Economics at MSU with a dissertation on the economic impact of improved maize varieties in Zambia, including the role and consequences of policy on research impact.

Duncan Boughton completed a PhD degree in Agricultural Economics at MSU, working with a dissertation on a commodity subsector approach to the design of agricultural research, focusing on maize in Mali.

Georges Dimithe, a Cameroonian PhD candidate in the Department of Agricultural Economics at MSU, is carrying out dissertation research in collaboration with IER in Mali. The study focuses on the potential for productivity increases in Mali's inland valley rice subsector.

5.5. MSU Backstop Trips

- ASARECA:** October 1995 (Oehmke and Howard), September 1995 (Oehmke)
- Côte d'Ivoire:** November 1993 (Oehmke)
- Ethiopia:** April-May 1995 (Howard), June 1995 (Howard), October 1995 (Howard)
- Ghana:** November 1993 (Oehmke), July 1995 (Boughton)
- INSAH:** April 1995 (Boughton to Cape Verde and Guinea Bissau with Touba Bedingar), June 1995 (Boughton to Mali for PRISAS devaluation workshop), July 1995 (Boughton to Chad with Touba Bedingar)
- Kenya:** November 1993 (Oehmke), April 1994 (Shaffer and Weber), October 1995 (Howard); November 1995 (Boughton)
- Mali:** December 1993 (Boughton and Shaffer), January 1994 (Boughton), February 1995 (Boughton and Staatz), June 1995 (Boughton), September 1995 (Bernsten)
- Rwanda:** October 1993 (Shaffer), April 1994 (Shaffer and Weber)
- Tanzania:** April 1995 (Howard)
- Uganda:** November 1993 (Oehmke), April 1995 (Howard); October 1995 (Howard)
- Zambia:** November 1993 (Oehmke), September 1994 (Howard)

5.6. Examples of Impact

IER scientists who participated in the Commodity Subsector Economics workshop held in December 1993 made significant progress in working out among researchers of different disciplines more cooperative relationships and methods for approaching practical problems facing various commodity subsectors in Mali. More effective cooperation among scientists to diagnose and research priority problems in commodity subsectors is expected to yield a high payoff. In February 1995, IER's first national commodity subsector economics research program was designed to conduct research on input and output marketing problems to complement technical and farming systems research.

Through earlier FS I project work, and continued through the Strategic Planning and PRISAS add-on studies to the FS II Cooperative Agreement, there is a building momentum and consensus in the Sahel for agricultural research to be more demand-driven and

market/client-oriented, and more accountable for its impact. Examples of this come from PRISAS input into the INSAH/SPAAR framework for action in revitalizing agricultural research in the Sahel, and from FS II promotion among Sahelian researchers participating in the PRISAS network of the subsector approach in commodity research.

Collaboration with INSAH's new research management activity has focussed on the problems of smaller national agricultural research systems among the CILSS member countries. Although the main impact of this work will be through its contribution to a larger synthesis of the status and impacts of strategic agricultural research planning in Africa, there have already been concrete impacts at national level. For example:

- in **Cape Verde**, the president of the national research organization (INIDA) agreed to give careful attention to international considerations during the upcoming strategic planning activity funded by USAID under the WARD project. Hitherto, strategic planning had been conceived solely in domestic terms even though Cape Verde has only 60,000 hectares of arable land, totally insufficient to justify research activities beyond phytosanitary inspection. If regional research interests in which Cape Verde has a potential comparative advantage are taken into account (e.g., soil conservation research, vegetable seed breeding and multiplication), regional funding sources could be increasingly tapped. The INSAH/MSU mission convinced the local FAO representative to seek funding to help INPA identify and address regional research concerns.
- in **Guinea Bissau**, the importance of long-term human capital development and infrastructure rationalization were addressed. Research managers from the national research organization (INPA) recognized that existing programs are unrealistic given present personnel resources and the collapse of other public sector agricultural services. There was agreement on the need, at least in the near term, for a less ambitious program focussed on understanding farmer needs and the identification of potential technologies that could be easily transferred within the farming community. The need to reduce the number and identify more logistically cost-effective research sites was also agreed. As a practical follow-up to the mission, upgraded statistical analysis software in English and Spanish has been provided to INPA.
- in **Chad**, very significant progress was made toward building a coalition to finalize and implement the 1993 long-term national research plan. Although adopted by government, implementation was stalled after the World Bank, which funded the plan, changed its mind about building a national research system and opted instead for an extension project with a small participatory research component. This is in sharp contrast to World Bank project activities in all the other large CILSS member countries, and the INSAH/SPAAR Sahel framework for action. Following high-level meetings that gained strong backing from the Minister of Plan, it was agreed that INSAH would help organize a national forum in November to bring together NARS stakeholders and donors. This forum will make concrete recommendations for action to the CNRST (national council for scientific and technical research).

In Ethiopia, initial discussions about participation of IAR and the Science and Technology Commission in the regional program focusing on strategic planning and ex ante research evaluation has taken place with officials of these organizations. Julie Howard and Jim Shaffer have also consulted on the development of the work plan of the Food Security Project of the Ministry of Planning and International Cooperation. There is a potential for a complementary relationship between these two activities which is yet to be worked out.

Oehmke, Howard and Boughton have been working with the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) regarding strategic planning for research and the interface between technical and policy innovation. Oehmke has acted as a resource person at the ASARECA working group on policy research planning meetings held in August 1995 at the Kenya Agricultural Research Institute (KARI) headquarters, and helped draft the preliminary proposal from the working group to ASARECA for an Agricultural and Natural Resource Policy Research Initiative (ANARPRI). This proposal was discussed at a consultative workshop held in October 1995 at KARI headquarters. Oehmke helped with the planning of this workshop, and Oehmke and Howard acted as resource persons. The workshop provided representation from the ten current ASARECA member countries, and was designed to give feedback on the proposal. Several important outcomes emerged: 1) the proposal was endorsed in principle, with some suggestions for improvement made; 2) following the workshop a revised and final proposal was drafted and put forward to ASARECA, with Oehmke contributing significantly to the revision of the proposal; 3) Hudson Masambu, representing USAID, supported ASARECA and ANARPRI with an offer to provide an in-country policy analyst to backstop the Initiative; 4) Oehmke has a proposal in to USAID to provide that backstopping; 5) Joseph Mukiibi, representing ASARECA as chairman of the Committee of Directors, accepted the USAID offer, noting that this position was something that ASARECA had requested, and that the details had been worked out over a number of months and two ASARECA board meetings; 6) Luis Navarro, representing the Canadian Institute for Development Research, also supported the idea of a policy research initiative; and 7) the workshop endorsed strategic planning as a key component to which the policy initiative should contribute, and a sectoral constraint analysis as the primary tool for informing strategic planning and determining policy research priorities.

6. Ongoing Research Activities

During the final year of the add-on, strategic planning team members will continue to build on the proven model of focussed country-level collaborative research and institution building combined with outreach through regional organizations.

In West Africa, the team will continue to collaborate with Mali's national agricultural research program to institutionalize a food systems/commodity subsector approach to inform research priorities and the design of complementary institutional and policy innovations, and with INSAH to extend this approach to other countries in the region through the PRISAS and research management activities.

In East Africa, the team will collaborate with the Kenyan agricultural research institute (KARI) to help selected ASARECA member countries on moving from ex-post research impact assessment studies to ex-ante assessment and priority-setting in a commodity subsector perspective. Team members will continue to provide assistance to non-governmental organizations involved in technology development and transfer. The work with ASARECA will draw on the experience of Professor Mandi Rukuni from the Department of Agricultural Economics, University of Zimbabwe, who is distilling the experience of Southern Africa in institutional strengthening at national and regional level for technology development and transfer.

Oehmke continues to work with ASARECA and the Uganda National Agricultural Research Organization to help prepare for the SPAAR Plenary session to be held February 7-8, 1996, hosted by the NARO.

Working paper on the current status and impacts of strategic planning for NARS. This paper is under preparation in response to a request from Drs. Jeff Hill and Moctar Touré (Executive Secretary of SPAAR/World Bank). Coordinated by Dr. Mywish Maredia, the paper will critically evaluate the experience with strategic research planning for a limited number of NARS in sub-Saharan Africa. It will assess the current status of strategic planning and impacts to date, identify constraints to institutionalization, and draw implications for the design of activities to improve strategic research program planning. The paper will complement and extend the work initiated by Dunstan Spencer et al. for the SPAAR plenary meeting in 1995, which focussed mainly on Mali and Tanzania.

Working paper on technology frontiers. The paper will present a conceptual framework for understanding the different types of food system technology and their associated mechanisms, and relate the concept of "technological frontier" to agricultural transformation in Africa. Commodity case studies will be used to explore how technical and institutional factors have promoted or hindered the shift towards a higher technological frontier in different countries. Implications for research planning by NARS, regional and international research systems will be drawn from the conceptual discussion and case studies.

As an extension of the technology frontiers theme, Strategic Planning add-on team members are collaborating with the AFR/SD/PSGE/FSP funded Productivity Studies to address constraints to improved effectiveness in agricultural input subsectors. These studies recognize that sustained increases in agricultural productivity can only be realized if there is effective demand for productivity enhancing innovations. Effective demand will depend on access to improved technology, and efficient input and output marketing systems. An annotated bibliography of published and unpublished material is being prepared to address this complex set of issues in a systematic way.

Translation into French of "A Strategic Approach to Agricultural Research Program Planning in Sub-Saharan Africa." The English version of this paper has been in strong demand from NARS managers and IARCs alike, and the final French version is eagerly anticipated by INSAH.

2. Researchers Involved

ARTS/FARA/TDT: Jeff Hill

G/EG/EID/RAD: Gloria Steele

Host Country and MSU In-Country Researchers:

Cameroon: Georges Dimithé, (IRA); James Sterns (MSU In-Country Researcher)

Kenya: Daniel Karanja, (KARI/MSU In-Country Researcher), David Makanda (MSU/IDS In-Country Researcher), Valentina Mazzucato (MSU/ISNAR)

Malawi: James Oehmke

Mali: Dr. Bino Témé, Amadou Diarra, Sidi Diallo, Mme. Boré Assa Kante, (IER/DPER); Duncan Boughton and Bruno Henry de Frahan (MSU In-Country Researchers); Bakary S. Coulibaly, and professional staff of the "Commodity Subsector Economics Program" of IER, and commodity specialists of IER

Niger: Samba Ly, (INRAN); Valentina Mazzucato (ISNAR and MSU In-Country Researcher)

Uganda: Bernard Bashaasha, Elizabeth Balirwa, Godfrey Turiho-Habwe (MUFAF); Rita Laker-Ojok (MSU In-Country Researcher)

Zambia: George M. Chitalu, (RDSB), Sylvester M. Kalonge (MOAFF); Julie Howard (MSU In-Country Researcher)

MSU Campus Backstop: Jim Oehmke, Eric Crawford, Richard Bernsten, Jim Shaffer, John Staatz, Carl Eicher, Duncan Boughton, and Michael Weber

ISNAR: Dr. Philip Pardey

3. Objectives of the Research

The Development Fund for Africa (DFA) has a target of assisting African Countries to achieve sustained increases in agricultural productivity, in part through the increased utilization of higher yielding technologies, in order to increase the agricultural sector's contribution to economic growth. As part of its focus on enhancing food access and income growth, the FS II Cooperative Agreement has a priority applied research theme of studying ways to design more cost-effective food systems, and related technologies and institutions. To help inform these DFA and FS II objectives, the technology assessment research focuses on: (1) Critically reviewing the literature on *ex post* and *ex ante* evaluation of agricultural research with emphasis on implications for Africa and methodologies applicable to Africa; (2) Assessing the potential for application of current methodologies to evaluate African agricultural research; (3) Collaborating with staff of AFR/ARTS/FARA/TDT to design studies in selected African countries on the impacts of investment in agricultural research; (4) Determining factors that contributed to or inhibited research impact; and (5) Undertaking other selected activities to evaluate the effects of alternative investments in agricultural research.

4. Research Approach

Following the review of literature and a workshop to discuss methods of choosing and undertaking the country studies, three countries (Kenya, Malawi, Mali) were chosen for Phase I studies, and four other countries (Cameroon, Niger, Uganda, Zambia) were chosen for Phase II studies. Short-term studies (five months or less) were conducted in Cameroon, Kenya (maize), Malawi, and Niger; long-term studies (twelve months or more) were conducted in Kenya (wheat), Mali, Uganda, and Zambia.

5. Outputs to Date

5.1. Written Outputs on Technology Assessment Topics

- **Reports**

Howard, Julie, with George Chitalu and Sylvester Kalonge. "The Impact of Investments in Maize Research and Dissemination in Zambia. Part I: Main Report." International Development Working Paper No. 39/1. East Lansing, MI: Department of Agricultural Economics, Michigan State University. 1993. PN-ABS-724.

Howard, Julie, with George Chitalu and Sylvester Kalonge. "The Impact of Investments in Maize Research and Dissemination in Zambia. Part II: Annexes." International Development Working Paper No. 39/2. East Lansing, MI: Department of Agricultural Economics, Michigan State University. 1993. PN-ABS-727.

Laker-Ojok, Rita. "The Rate of Return to Agricultural Research in Uganda: The Case of Oilseeds and Maize." East Lansing, MI: Department of Agricultural Economics, Michigan State University. 1993. PN-ABS-730.

Laker-Ojok, Rita. Potential Returns to Oilseeds Research in Uganda: The Case of Groundnuts and Sesame." East Lansing, MI: Department of Agricultural Economics, Michigan State University. 1993.

Oehmke, James F. and Eric W. Crawford. "The Impact of Agricultural Technology in Sub-Saharan Africa: A Synthesis of Symposium Findings." International Development Paper No. 14. PN-ABP-321. (French version No. 14F). East Lansing, MI: Department of Agricultural Economics, Michigan State University. 1993. PN-ABQ-056.

Sterns, J. A. and R. Bernsten. "Assessing the Impact of Cowpea and Sorghum Research and Extension in Northern Cameroon." Department of Agricultural Economics, Michigan State University, East Lansing, MI. 1993. PN-ABS-731.

Boughton, Duncan and Henry de Frahan, Bruno. "Agricultural Research Impact Assessment: The Case of Maize Technology Adoption in Southern Mali." Department of Agricultural Economics, Michigan State University, East Lansing, MI. 1992. PN-ABS-729.

Mazzucato, Valentina and Samba Ly. "An Economic Analysis of Research and Technology Transfer of Millet, Sorghum, and Cowpeas in Niger." The Hague, Netherlands: ISNAR/Michigan State University, East Lansing, MI. 1992.

- **Working Papers**

- **General:**

Crawford, Eric W. "Constraints to the Development and Use of Improved Technology." MSU Staff Paper No. 93-64. Department of Agricultural Economics, MSU. 1993.

Crawford, Eric W. "Assessment of the Economic Impact of Agricultural Research: Summary of Studies Conducted by Michigan State University." MSU Staff Paper No. 93-66. Department of Agricultural Economics, MSU. 1993. PN-ABS-777. (Also available in French. PN-ABS-778.)

Bernsten, Richard H. and John M. Staatz. "The Role of Subsector Analysis in Setting Research Priorities." Paper presented at the Symposium on the Impact of Technology on Agricultural Transformation in Africa, Washington, D.C., October 14-16, 1992. MSU Staff Paper No. 92-104. Department of Agricultural Economics, MSU. PN-ABS-772.

Oehmke, James F. "Technology, Impact and Agricultural Transformation: Lessons Learned from Impact Assessments." Paper presented at the Symposium on the Impact of Technology on Agricultural Transformation in Africa, Washington, D.C., October 14-16, 1992. PN-ABT-274.

Choe, Y. C. and J. F. Oehmke. "Dynamic Analysis of Returns to Research I: A Time Series Methodology." MSU Staff Paper No. 92-54. Department of Agricultural Economics, MSU. 1991. PN-ABS-767.

Choe, Y. C. and J. F. Oehmke. "Dynamic Analysis of Returns to Research II: An Application to Kenyan Maize." MSU Staff Paper No. 92-55. Department of Agricultural Economics, MSU. 1991. PN-ABS-768.

Kangasniemi, J. and B. Kupfuma. "Minutes: Technology Assessment Workshop, June 17-21, 1991, Michigan State University, Department of Agricultural Economics." Department of Agricultural Economics, MSU. 1991. PN-ABT-268.

Daniels, Lisa, et al. "Assessment of Agricultural Research: Ex-Post, Ex-Ante, and Needed Methodologies." Paper presented at AID/Washington Africa Bureau (TR/ARD) sponsored workshop on returns to investment in agricultural research, April 24-25, 1990, Washington, D.C.

Daniels, Lisa, et al. "The Impact of Agricultural Research: A Review of the Ex-Post Assessment Literature With Implications For Africa." East Lansing: Michigan State University, Department of Agricultural Economics, 1990. PN-ABS-958.

Oehmke, James F. and James A. Sterns. "Assessing Returns to Research: Implications for Sub-Saharan Africa." MSU Staff Paper No. 92-43. 1992.

Oehmke, James F. and Ruben G. Echeverria. "Sequential Evaluation of Agricultural Research: Foundations, Indicators and Use." MSU Staff Paper No. 90-40. Department of Agricultural Economics, MSU 1990. PN-ABS-762.

Cameroon:

Sterns, James A. and Richard Bernsten. "Assessing the Impact of Cowpea and Sorghum Research and Extension: Lessons Learned in Northern Cameroon." (Revised version) Department of Agricultural Economics, Michigan State University, East Lansing, MI. 1993.

Sterns, James A. and Richard Bernsten. "Assessing the Impact of Cowpea Research and Extension in Northern Cameroon: Lessons Learned." Proceedings of the Symposium on the Impact of Technology on Agricultural Transformation in Africa, Washington D.C., October 14-16, 1992. PN-ABT-284.

Kenya:

Choe, Y. C. and James F. Oehmke. "Dynamic Analysis of Returns to Research II: An Application to Kenyan Maize." MSU Staff Paper No. 92-55. 1992. PN-ABS-768.

Karanja, Daniel. "The Payoff to Maize Research in Kenya: An Institutional and Economic Analysis." Working Paper, Department of Agricultural Economics, Michigan State University, March 1992.

Karanja, Daniel. "Wheat Research in Kenya: The Challenge Ahead." Department of Agricultural Economics, MSU. 1992.

Makau, Boniface P. "The History of Wheat Research in Kenya." Nairobi, 1991. PN-ABT-269.

Malawi:

Oehmke, J. F. "Assessing the Impacts of Malawian Maize Research." Department of Agricultural Economics, MSU. 1991.

Mali:

Boughton, Duncan. "The Impact of Maize Research in Mali." Paper presented at the Symposium on the Impact of Technology on Agricultural Transformation in Africa, Washington, D.C., October 14-16, 1992.

Staatz, John M. "The Role of Market Conditions in Influencing the Adoption of New Agricultural Technologies in Mali." Department of Agricultural Economics, MSU, East Lansing, MI. 1989. PN-ABS-761.

Niger:

Mazzucato, Valentina and Samba Ly. "An Economic Analysis of Research and Technology Transfer of Millet, Sorghum and Cowpeas in Niger: Issues Raised." Paper presented at the Symposium on the Impact of Technology on Agricultural Transformation in Africa, Washington, D.C., October 14-16, 1992. PN-ABT-283.

Uganda:

Laker-Ojok, Rita. "The Rate of Return to Agricultural Research in Uganda: The Case of Oilseeds and Maize." Department of Agricultural Economics, Michigan State University, November 1992. PN-ABS-730.

Laker-Ojok, Rita. "The Impact of USAID Supported Research on Maize and Oilseeds in Uganda." Paper presented at the Symposium on the Impact of Technology on Agricultural Transformation in Africa, Washington, D.C., October 14-16, 1992. PN-ABT-282.

Balirwa, Elizabeth. "Maize Research and Production in Uganda." July 1992.

Laker-Ojok, Rita. "A Preliminary Assessment of the On-Farm Research Into Maize, Soybeans and Sunflower in Uganda Which Was Sponsored by USAID Under the MFAD Project." July 1992.

Turiho-Habwe, Godfrey. "The Accomplishments and Constraints of Sunflower Research in Uganda." July 1992. PN-ABT-275.

Bashaasha, Bernard. "Soybean Research in Uganda." June 1992. PN-ABT-271.

Zambia:

Howard, Julie, George Chitalu, and Sylvester Kalonge. "The Impact of Investments in Maize Research and Dissemination in Zambia: Preliminary Results." Paper presented at the Symposium on the Impact of Technology on Agricultural Transformation in Africa, Washington, D.C., October 14-16, 1992. PN-ABT-285.

Howard, Julie. "The Impact of Maize Research in Zambia: Methodology and Preliminary Results." Paper presented at the SADCC/ICRISAT Sorghum and Millet Improvement Program Research Planning Meetings, September 21-26, 1992, Bulawayo, Zimbabwe. PN-ABT-279.

- **Theses**

Makanda, David. "Research and Policy Impacts on the Kenyan Wheat Sector." Ph.D. dissertation, Department of Agricultural Economics, Michigan State University. Draft, December 1992.

Mazzucato, Valentina. "Non-Research Policy Effects on the Rate of Return to Maize Research in Kenya: 1955-88." M.S. thesis, Department of Agricultural Economics, Michigan State University. 1992.

Sterns, James A. "Ex-Post Assessments of Investments in Cameroon's Cowpea and Sorghum Research and Extension Systems." M.S. thesis, Department of Agricultural Economics, Michigan State University. December 1992. PN-ABS-946

- **Journal Articles**

Makanda, David W. and James F. Oehmke. "Promise and Problem in the Development of Kenya's Wheat Agriculture." Submitted to *Economic Development and Cultural Change*. Dept. of Agricultural Economics Staff Paper No. 93-33, July 1993. PN-ABS-773.

Oehmke, James F. and Eric W. Crawford. "The Impact of Agricultural Technology in Sub-Saharan Africa." Submitted to *Journal of African Economics*. 1993. PN-ABP-321.

Oehmke, James F. and Eric W. Crawford. "Evaluating the Impacts of Selected Investments in Agricultural Technology in Sub-Saharan Africa." *AID Evaluation News*. Vol. 4 No. 4:17-21. 1992. PN-ABS-766.

5.2. Oral Presentations–Technology Assessment Topics

Presented methods and results of MSU TDT studies at conference in Kampala, Uganda, November 1993.

Presented methods and results of MSU TDT studies at conference in Accra, Ghana, November 1993.

Presented research impact assessment methodology and implications for training and design of future studies in Southern Africa at informal meetings with SACCAR and USAID staff, Botswana, October 25-27, 1993.

Presented a summary of the MSU TDT studies, in French at PRISAS workshop entitled "Développement et Transfert de Technologies dans un Environnement en Mutation Rapide," Bamako, Mali, August 30-September 2, 1993.

Presented paper on constraints to development and use of improved technology, at AID/TDT Collaborators Workshop, Washington, D.C., seminar, June 28-30, 1993.

Briefings on the results of the impact studies were given to USAID Missions and local collaborating institutions by MSU in-country researchers in Cameroon (August 1991), Niger (June 1992), Uganda (July 1992), Zambia (November 1992), Kenya (January 1993) and Uganda (January 1993).

Presentation of the symposium synthesis, Kenya maize studies by Oehmke, and Karanja, respectively. REDSO Conference on Regional Networking in Agricultural Research, Nairobi, Kenya, January 18-22, 1993.

Presentation of the draft symposium synthesis report to AID/ARTS/FARA by James Oehmke, Washington, D.C., November 24, 1992.

Organized, with AID/ARTS/FARA, the Symposium on the Impact of Technology on Agricultural Transformation, Washington, D.C., October 14-16, 1992.

Presented Bernsten/Staatz paper on "The Role of Subsector Analysis in Setting Research Priorities," at 1992 ADO Conference.

Conducted workshop on issues and methods of assessing the impact of agricultural research, Department of Agricultural Economics, MSU, June 1991.

Presented results of literature review at USAID-sponsored workshop on returns to agricultural research, Washington, D.C., April 24-25, 1990.

5.3. Short-Term Training–Technology Assessment Topics

In-service training conducted by MSU in-country researchers and faculty on backstopping trips in Cameroon, Mali, Niger, Uganda, and Zambia.

Oehmke presentations at Malawi and Zimbabwe workshops, March 1994.

5.4. Long Term Training

Duncan Boughton is expected to complete a Ph.D. degree in Agricultural Economics at MSU in 1994, working with project support on a dissertation topic of the economies of the maize subsector in Mali.

Georges Dimithe is expected to compete an MS degree in Agricultural Economics at MSU in 1994, working on an assessment of returns to investment in commodity research in Cameroon. (Dimithe worked with Sterns on the in-country work in Cameroon.)

Julie Howard is expected to complete a Ph.D. in Agricultural Economics at MSU in 1994, working with project support on a dissertation topic dealing with the economic impact of investments in maize research and technology adoption in Zambia, with emphasis on the influence of policy and institutional factors.

Rita Laker-Ojok completed a Ph.D. in Agricultural Economics in 1994 at MSU, working with project support on a dissertation topic dealing with the economics of the oilseed subsector in Uganda.

Lydia Neema Kimenye completed a Ph.D. in Agricultural Economics at MSU in 1993, receiving assistance from Professors Shaffer and Crawford on the topic of the economics of smallholder flower and french bean production and marketing in Kenya.

David Makanda completed a Ph.D. degree in Agricultural Economics at MSU in 1992 , working with project support on a dissertation topic dealing with research and policy impacts in the Kenyan wheat sector.

Valentina Mazzucato completed an MS degree in Agricultural Economics at MSU in 1992, working with project support on a research topic examining the non-research policy effects of the rate of return to maize research in Kenya.

James Sterns completed an MS degree in Agricultural Economics at MSU in 1992, working with project support on an ex-post assessment of investments in Cameroon's cowpea and sorghum research and extension system.

5.5. MSU Backstop Trips to In-Country Team–Technology Assessment

Cameroon: June 1991 (Bernsten)

Kenya: November 1990, May 1992, January 1993 (Oehmke)

Malawi: October 1991, May 1992 (Oehmke)

Niger: November 1991 (Crawford); February 1992 (Pardey/ISNAR)

Uganda: June 1991, December 1991, July 1992 (Crawford); January 1993 (Oehmke)

Zambia: July 1991, December 1991, July 1992 (Crawford)

5.6. Examples of Impact of Project Findings–Technology Assessment

The State of the Arts submission by ARTS/FARA to the Africa Bureau in September 1993 included the following statement: "The 22 detailed case studies at the [MSU/AID-organized Oct. 1992] symposium represented the largest collection ever of such information for sub-Saharan Africa. Presented to the public for the first time, the results and findings challenge much of the conventional wisdom about changes in productivity in Sub-Saharan Africa and the returns to research." These materials and subsequent deliberations were instrumental in turning around A.I.D. thinking about the value of investment in agricultural research.

6. Ongoing Research Activities

Support to USAID-funded SACCAR-implemented research impact assessment training and studies, including scheduled Lilongwe and Harare workshops in March 1994, and planned workshops in Zambia and Tanzania later in 1994.

Editing and publishing of final ROR reports, and proceedings of October 1992 Symposium.

7. Outputs Anticipated

Final ROR reports and proceedings of October 1992 Symposium.

Concept papers and synthesis report on impact assessment in a commodity sector and regional perspective, under USAID-funded contract with USDA.

Fact Sheet • AGRICULTURAL TRANSFORMATION WORKSHOP: ABIDJAN, SEPT. 26-29, 1995

▶ FOOD SECURITY II COOPERATIVE AGREEMENT-DEPARTMENT OF AGRICULTURAL ECONOMICS, MSU ◀
▶ ACTIVITY TIME PERIOD: OCTOBER, 1994 - JANUARY 31, 1996

1. Cooperating Institutions

African Development Bank
Agency for International Development, Africa Bureau, Office of Sustainable Development
(AFR/SD/PSGE/FSP)
Institut du Sahel (INSAH)/Programme Régional de Renforcement Institutionnel en Matière de
Recherche sur la Sécurité Alimentaire au Sahel (PRISAS)
Department of Agricultural Economics, Michigan State University (MSU)

2. Participants Involved

AFR/SD/PSGE/TDT:	Tom Olson, George Gardner, Brian D'Silva, Mildred Morton
USAID/REDSO/WCA:	Coffi Prudencio, Sanath K. Reddy
G/EG/AFS:	Ralph Cummings
Coordinators:	Lual Deng (ADB), Moussa Batchily Ba (INSAH), John Staatz (MSU)
ADB:	A. Aklilu, Oumar Aw, Lual Deng, Charles Lufumba, Charles Mbwanda, Nadir Mohammed, Brave Ndisale
Burkina Faso:	Kimseyinga Savadogo
CILSS:	Yamar M'Bodj (Executive Secretariat)
Club du Sahel:	Serge Snrech
Côte d'Ivoire:	Pity Balle, Louis Ban-Koffi, Kama Berté, Aisata Camara,
Ethiopia:	George Abalu, Hagos Gebre (paper contributor but could not attend), Daniel Molla
Ghana:	Sam Dapaah, Yerfi Fosu
IFPRI:	Ousmane Badiane
INSAH:	Moussa Batchily Ba, Touba Bedingar, Josué Dioné, Fatoumata Sanogo, Hamdou Rabby Wane
Christian Michelsen Institute (Norway):	Johan Helland
MSU:	John Staatz, Youssouf Camara, Laura Farrelly
Nigeria:	Anthony Ikpi
Sierra Leone:	Dunstan Spencer, Kandeh Yumkella
South Africa:	Luther Sibisi, Johan van Rooyen
Swaziland:	Glenn Magagula
Winrock International:	Pierre Antoine, Henk Knipscheer
Zambia:	Benedict Kapita, Guy Scott (paper contributor but could not attend)
Zimbabwe:	Gordon Sithole

3. Objectives

The workshop, held in Abidjan on Sept. 26-29, 1995, brought together 40 senior African researchers and policymakers, along with a few participants from Europe and North America. The Africans came from 19 different Subsaharan nations, and represented 22 distinct African and international organizations. The aim of the workshop was to identify *strategic investments and policy actions* that African governments, firms, and organizations and donors can undertake to foster agricultural and economic transformation. The challenge was to identify ways of fostering agricultural transformation that will stimulate broader economic growth while increasing food security, reducing poverty, and protecting the environment.

4. Approach

The structure of the workshop involved three modules. The module laid out the challenges and key issues of agricultural transformation. These issues were introduced by three presentations, followed by discussion and debate. The second module involved case studies of experiences with agricultural transformation in different geographical regions of Africa. The third module consisted of smaller working groups focussing on three distinct aspects of agricultural transformation: Group 1) technology issues, in particular the criteria for defining agro-ecological zones and the production, diffusion, and use of technologies; Group 2) investment issues, with an emphasis on problems of financing and access to credit; and Group 3) institutional and policy dimensions, focussing on macroeconomic and sectoral policies, land tenure, and integration/regional cooperation. A workshop report synthesized the key recommendations of the working groups.

5. Papers Presented at Workshop

Dapaah, S. K. "Empirical Analysis of the Likely Future Evolution of Agriculture in Ghana and How it Will Affect the Prospects for Longer Term Growth of Agriculture, the Food System and the Broader Economy." Paper presented at the Workshop on Agricultural Transformation in Africa. Abidjan, Côte d'Ivoire. September 1995.

Deng, Lual A., Charles Mbwanda, Nadir Mohammed, and Charles L. Lufumpa. "Agricultural Transformation in Africa: The Missing Links." Paper presented at the Workshop on Agricultural Transformation in Africa. Abidjan, Côte d'Ivoire. September 1995.

Dioné, Josué. "Adjustment, Policy Reform, and Agricultural Transformation in the Sahel." Paper presented at the Workshop on Agricultural Transformation in Africa. Abidjan, Côte d'Ivoire. September 1995.

Gebre, Hagos, Daniel Molla, T.S. Jayne, and James Shaffer. "Designing Strategies to Support a Transformation of Agriculture in Ethiopia." Paper presented at the Workshop on Agricultural Transformation in Africa. Abidjan, Côte d'Ivoire. September 1995.

Ngirwa, Wilfred. "Agriculture Transformation Issues in Tanzania." Paper presented at the Workshop on Agricultural Transformation in Africa. Abidjan, Côte d'Ivoire. September 1995.

Ng'ong'ola, D. H. "Analysis of Policy Reforms and Structural Adjustment Programs in Malawi with Emphasis on Agriculture and Trade." Paper presented at the Workshop on Agricultural Transformation in Africa. Abidjan, Côte d'Ivoire. September 1995.

Njobe-Mbuli, Bongiwe. "Opening Remarks to the Workshop on Analysing Agricultural Comparative Advantage Within an Agroecological Zone Framework in Southern Africa." Paper presented at the Workshop on Agricultural Transformation in Africa. Abidjan, Côte d'Ivoire. September 1995.

Scott, Guy. "Agricultural Transformation in Zambia: Past Experience and Future Prospects." Paper presented at the Workshop on Agricultural Transformation in Africa. Abidjan, Côte d'Ivoire. September 1995.

Spencer, Dunstan S. C. "Past Trends and Future Prospects for Agricultural Development in Sub-Saharan Africa." Paper presented at the Workshop on Agricultural Transformation in Africa. Abidjan, Côte d'Ivoire. September 1995.

van Rooyen, C.J., J.F. Kirsten, J. van Zyl, and N. Vink. "Structural Adjustment, Policy Reform and Agricultural Performance in South Africa." Paper presented at the Workshop on Agricultural Transformation in Africa. Abidjan, Côte d'Ivoire. September 1995.

5.1. Outputs to Date

Comité de redaction. "Draft Report: Workshop on Agricultural Transformation in Africa." Abidjan, Côte d'Ivoire. September 26-29, 1995.

6. Ongoing Research and Outreach Activities

Short synthetic reports and policy bulletins on key issues identified by the workshop.

A report describing how strategies for fostering agricultural transformation can be incorporated into overall Bank Group lending operations.

A workshop proceedings volume to be made available to key research and policy centers in Africa.

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- IDP 14F *L'Impact de la technologie agricole en Afrique subsaharienne: Synthese des conclusions du colloque* par James F. Oehmke and Eric W. Crawford. 1993. 34 pp. \$7.00 **(CDIE reference PN-ABQ-056)**
- IDP 15 *Market-Oriented Strategies to Improve Household Access to Food: Experience from Sub-Saharan Africa* by T.S. Jayne, D.L. Tschirley, John M. Staatz, James D. Shaffer, Michael T. Weber, Munhamo Chisvo, and Mulinge Mukumbu.* 1994. 61 pp. \$9.00 **(CDIE reference PN-ABS-755)**
- IDP 16 *Improving the Measurement and Analysis of African Agricultural Productivity: Promoting Complementarities between Micro and Macro Data* by Valerie Kelly, Jane Hopkins, Thomas Reardon, and Eric Crawford. 1995. 44 pp. \$7.00 **(CDIE reference pending)**
- IDP 17 *Promoting Food Security in Rwanda Through Sustainable Agricultural Productivity: Meeting the Challenges of Population Pressure, Land Degradation, and Poverty* by Daniel C. Clay, Fidele Byiringiro, Jaakko Kangasniemi, Thomas Reardon, Bosco Sibomana, Laurence Uwamariya, and David Tardif-Douglin. 1995. 115 pp. \$11.00 **(CDIE reference pending)**
- IDP 18 *Promoting Farm Investment for Sustainable Intensification of African Agriculture* by Thomas Reardon, Eric Crawford, and Valerie Kelly. 1995. 37 pp. \$7.00 **(CDIE reference pending)**.

- IDP 19 *Effects of Market Reform on Access to Food by Low-Income Households: Evidence from Four Countries in Eastern and Southern Africa* by T.S. Jayne, L. Rubey, D. Tschirley, M. Mukumbu, M. Chisvo, A. Santos, M. Weber, and P. Diskin. 1995. 83 pp. \$9.00. **(CDIE reference pending)**
- IDP 20 *Cash Crop and Foodgrain Productivity in Senegal: Historical View, New Survey Evidence, and Policy Implications* by Valerie Kelly, Bocar Diagana, Thomas Reardon, Matar Gaye, and Eric Crawford. 1996. 140 pp. \$13.00 **(CDIE reference pending)**

WORKING PAPERS

- IDWP 39/1 *The Impact of Investments in Maize Research and Dissemination in Zambia. Part I: Main Report.* Julie Howard with George Chitalu and Sylvester Kalonge. 1993. 112 pp. \$11.00 **(CDIE reference PN-ABS-724)**
- IDWP 39/2 *The Impact of Investments in Maize Research and Dissemination in Zambia. Part II: Annexes.* Julie Howard with George Chitalu and Sylvester Kalonge. 1993. 81 pp. \$9.00 **(CDIE reference PN-ABS-727)**
- IDWP 40 *An Economic Analysis of Research and Technology Transfer of Millet, Sorghum, and Cowpeas in Niger* by Valentina Mazzucato and Samba Ly. 1994. 104 pp. \$11.00. **(CDIE reference PN-ABT-283 or PN-ABS-728)**
- IDWP 41 *Agricultural Research Impact Assessment: The Case of Maize Technology Adoption in Southern Mali* by Duncan Boughton and Bruno Henry de Frahan. 1994. 95 pp. \$11.00 **(CDIE reference PN-ABS-729)**
- IDWP 42 *The Rate of Return to Agricultural Research in Uganda: The Case of Oilseeds and Maize* by Rita Laker-Ojok. 1994. 56 pp. \$7.00 **(CDIE reference PN-ABS-730)**
- IDWP 43 *Assessing the Impact of Cowpea and Sorghum Research and Extension in Northern Cameroon* by James A. Sterns

- and Richard H. Bernsten. 1994. 48 pp. \$7.00 **(CDIE reference PN-ABS-731)**
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- IDWP 50 *An Analysis of Alternative Maize Marketing Policies in South Africa*, by T.S. Jayne, Milan Hajek and Johan van Zyl. 1995. 51 pp. \$7.00 **(CDIE reference pending)**
- IDWP 51 *Confronting the Silent Challenge of Hunger: A Conference Synthesis*, by T.S. Jayne, David Tschirley, Lawrence Rubey, Thomas Reardon, John M. Staatz, and Michael Weber. 1995. 37 pp. \$7.00 **(CDIE reference pending)**
- IDWP 52 *An Ex-Ante Evaluation of Farming Systems Research in Northeastern Mali: Implications for Research and Extension Policy*, by Bruno Henry de Frahan. 1995. 82 pp. \$9.00 **(CDIE reference pending)**
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- IDWP 54 *Food Security II Cooperative Agreement: Project Fact Sheets (1995/96 Version)*, compiled by MSU Food Security II Research Team. 1996. 151 pp. \$13.00. **(CDIE reference pending)**

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