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**FOOD SECURITY II COOPERATIVE AGREEMENT:
PROJECT FACT SHEETS (1994 VERSION)**

compiled by

MSU Food Security II Research Team

June 1994

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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 Economic and Institutional Development
AID/Africa Bureau, Office of Analysis, Research and Technical Support
AID/Africa Bureau, Office for Sahel West Africa
USAID Field Missions and Host Country Institutions
Department of Agricultural Economics, Michigan State University

2. MSU Faculty and Staff Involved

Daniel Clay, Eric Crawford, Josué Dioné, Carl Eicher, James Oehmke, Thomas Jayne, Don Mead, Thomas Reardon, James Shaffer, John Staatz, David Tardif-Douglas, James Tefft, David Tschirley, Raul Varela, Michael T. Weber, Margie Aimery, Nancy Fair, Janet Munn, Elizabeth Bartilson, and Chris Wolf

3. 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.

4. 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

5. Operationalizing the Applied Research: Countries/Topics Covered

- Mali Maize Subsector Study
- Mali Market Information Study
- Mozambique Study
- Rwanda Study
- Sahel Regional Program — INSAH/PRISAS

Africa Bureau/ARTS/FARA Topics on:

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

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 1, 1992-JANUARY 31, 1994 ◀

1. Cooperating Institutions

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

2. Researchers Involved

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

3. Objectives of the Research

The maize sub-sector 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.

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

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

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

PRMC Technical Committee, June 1992.

PRMC Technical Committee, January 1993.

PRMC Technical Committee, January 1994.

IER Commodity Subsector Economics Program Design Workshop, December 1993.

Several informal briefings to USAID, Mali, including January 1992; May 1993; December 1993; and January 1994.

- **Outside of Mali:**

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

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

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

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

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.

5.2. Written Outputs

• Working Papers for Malian Agencies and Policy Makers

Boughton, Duncan H. 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 Témé Bino. 1992. "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". *MSU Agricultural Economics Staff Paper* no. 92-67. PN-ABS-923

Boughton, Duncan H., and Bruno Henry de Frahan. 1992. "Agricultural Research Impact Assessment: The Case of Maize Technology Adoption in Southern Mali." East Lansing: MSU Dept. of Agricultural Economics. Report for USAID (AFR/ARTS/FARA). PN-ABS-729

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, and Ousmane Sanogo. 1994. Etude filière maïs: analyse de la consommation céréalière à Bamako: effets eventuels de la dévaluation du FCFA. Note d'Information No. 5. Bamako: 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." IER/DPAER. PN-ABS-891

Boughton, Duncan, Ousmane Sanogo, Bino Témé, and Ibrahim Goita. 1993b. "Etude filière maïs." Note d'Information No. 2. IER/DPAER Bamako.

IER/DPAER. 1992. "Etude sur la filière-maïs: Requête de financement au PRMC pour couvrir le volet consommation/transformation." Bamako.

- 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 93/2, (December). PN-ABS-918
- Sanogo, Ousmane et al. 1993c. "Etude filière maïs: Composante technologie alimentaire et perspectives sur la transformation des céréales sèches." Note d'Information No. 3. Bamako. PN-ABS-889
- Sanogo, Ousmane, Ibrahim Coita, and Niama Nango Dembélé. 1993d. "Etude Filière Maïs: Composante Technologie Alimentaire et l'Extension des Enquêtes de Consommation des Céréales Sèches à Bamako. Note d'Information No. 4. Bamako: October. ER/DPAER. PN-ABS-890.
- Témé, Bino, et al. 1992. "Etude sur la Filière-Maïs: Reconnaissance Rapide et Matrice de Plannification des Recherches Approfondies." Serie Recherches Collaborative. Document de Travail No. 1. Bamako. IER/DPAER, and INSAH/PRISAS. PN-ABS-917
- Témé, Bino, and Duncan Boughton. 1992. "Etude sur la 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 Testes de Produits à Base de Maïs." Note d'Information No. 1. IER/DPAER Bamako. PN-ABS-887
- Témé, Bino, and Duncan Boughton. 1992a. "Preliminary Analysis of the Maize Subsector and Principal Questions." PN-ABI-277. French Version: "Analyse préliminaire sur la filière-maïs et principales interrogations." PN-ABS-929. Ministère de l'Agriculture, de l'Elevage et de l'Environnement, Institut d'Economie Rurale, Department Planification Agricole et Economie Rurale. Comité Technique du Programme Système de Production et Economie Rurale. Bamako: (April).
- Témé, Bino, and Duncan Boughton. 1992b. "Approche Système et Approche Filière: Quelle Complémentarité pour Dynamiser la Recherche Agronomique?" Paper presented at the Farming Systems Seminar, Sikasso, Mali. (November 17-21).
- Témé, Bino, and Duncan Boughton. 1993. "Caractéristiques des Unités Alimentaires du District de Bamako et Place du Maïs dans les Habitudes de Consommation." Bamako: IER/DPAER, Ministère du Developpement Rurale et de l'Environnement.

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

- Bernsten, Richard H., and John M. Staatz. 1992. "The Role of Subsector Analysis in Setting Research Priorities." East Lansing: *MSU Agricultural Economics Staff Paper* no. 92-104 and *Bean/Cowpea CRSP Working Paper* no. 92-4. December. PN-ABS-772

- Boughton, Duncan, and John M. Staatz. 1994. "Using the Commodity Subsector Approach to Design Agricultural Research: The Case of Maize in Mali." Paper submitted to the selected paper competition for the 1994 meetings of the International Association of Agricultural Economists in Harare, Zimbabwe. PN-ABS-947
- Dibley, D., D. Boughton, and T. Reardon. 1994. "Processing and Preparation Costs for Rice and Coarse Grains in Urban Mali: Subjecting an Ipse Dixit to Empirical Scrutiny." *MSU Agricultural Economics Staff Paper* no. 94-34. PN-ABS-879
- 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: 91-99.
- Staatz, John M., and Richard Bernsten. 1992. "Technology Development and Household Food Security." In *Proceedings of the Workshop on Social Science Research and the CRSPs*, June 9-11, 1992, Carnahan Conference Center, University of Kentucky, Lexington, Kentucky, pp. 21-46. PN-ABQ-172

• **Thesis by Research Team Member**

- Boughton, Duncan. "The Relevance of 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, 1994.

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 will serve 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.)
- 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.
- July 1991, trip by Boughton and Henry de Frahan. Collected secondary data on maize research and made initial contacts with IER field researchers.
- 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.
- 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.
- January 1992. Boughton arrives in Mali for long-term assignment with IER.
- 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.
- 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.
- November 1992, trip by Staatz and Reardon. Help in design of on-going Bamako consumption study; review and discussion of rapid-reconnaissance study results.
- February-March 1993, trip by Reardon. Work on detailed design of consumption questionnaires and analysis of preliminary results from consumption surveys.

- 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.
- July 1993. Boughton leaves Bamako for return to East Lansing.
- January 1994, trip by Boughton to work with colleagues at IER on further analysis and brief USAID/Mali and PRMC on preliminary research results.

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)
Agency for International Development, Mali Mission (USAID/Bamako)
Agency for International Development, Global Bureau, Economic Growth Center, Office of Economic and Institutional Development, Resource Access and Development Division (AID/G/EG/EID/RAD)
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, Mamadou Niane.
PRMC: Abdramane Traoré
MSU In-Country Researchers: Niama Nango Dembélé, 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. 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 in the following meetings:

- **Within Mali:**

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

1. National Cereals Policy Conference (Bamako, June 1988)
2. National Market Information System Workshop (Bamako, December 1988)
3. National SIM Seminar (Bamako, 1989)
4. National Rice Subsector Conference (Ségou, February 1990)
5. National Cereals Policy Conference (Bamako, June 1993)
6. 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**

Nango Dembélé made a presentation to the National Seminar on Price Collection and Usage in Mauritania (February, 1990). 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.

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.

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 Céréaliier en République du Mali* is widely read in donor, government, and PVO offices in Mali.

- **Working Papers**

Aldridge, Kimberly M., and John M. Staatz. 1993a. "A Framework for Analyzing the Evolution of the Cereals Market Information System in Mali." *MSU Agricultural Economics Staff Paper* no. 93-55. East Lansing: Michigan State University. 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." *MSU Agricultural Economics Staff Paper* no. 93-55F. East Lansing: Michigan State University. 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

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

Dembélé, Niama Nango, and John M. Staatz. 1989. "Transparence des marchés céréaliiers 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. *MSU Agricultural Economics Staff Paper* no. 89-83. East Lansing: Michigan State University. PN-ABS-759. English Version: "Market Transparency and the Role of the State: The Establishment of a Market Information System in Mali." *MSU Agricultural Economics Staff Paper* no. 89-83-E. East Lansing: Michigan State University. PN-ABS-760

- Dembélé, Niama N., 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 Malian Experience." PN-ABS-941
- 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, Projet Sécurité Alimentaire MSU-CESA-USAID. Bamako: March.
- Gabre-Madhin, Eleni Z. and Salifou B. Diarra. 1990. "La Commercialisation des Céréales Exportées du Mali: Situation - Structure - Performance." 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; *Document de Travail* No. 1-90, August.
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- **Theses Written by Project Researchers and Collaborators**

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

Dembélé, Niama Nango. "Traders' Response to Market Reform in Mali." Ph.D. dissertation, Dept. of Agricultural Economics, Michigan State University. Completion expected in 1994. (Staatz is supervisor.)

Diarra, Salifou. "The Role of Small Rice Mills in the Rice Subsector in the Office du Niger, Mali." Masters Thesis, Dept. of Agricultural Economics, Michigan State University, 1994. (Staatz is supervisor.)

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

- **Journal Articles about the Malian SIM**

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

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

5.3. Short Term Training and Collaborative Research Activities in Mali

- MSU in-country researchers have provided on-going 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 (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.

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

- 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.
- January-February 1989, trip by Staatz. Work on design of on-going 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.
- 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.
- August 1989, trip by Scott Loveridge. Training of SIM staff in SPSS/PC+. Help in organizing computer files.
- 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.
- 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.
- April 1990, Eleni Gabre-Madhin arrives for 5-month collaborative study with SIM on Malian grain exports.
- 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.
- 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.
- December 1990, Dembélé returns to MSU for Ph.D. study (funded by Rockefeller Foundation).
- 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.

- June 1991, departure of Salifou Diarra and Moulaye Ely Diarra from SIM for long-term training in the U.S.
- July 1991, Tefft arrives to begin long-term assignment with SIM.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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 on-going research to this body.
- 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.

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 - JUNE 30, 1994 ◀

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
Economic and Institutional Development, Resource Access and Development Division
(AID/G/EG/EID/RAD)
Department of Agricultural Economics, Michigan State University (MSU)

2. Researchers Involved

Ministry of Agriculture: Julio Massinga
MSU In-Country Researchers: Raul Jorge Varela, Rui Manuel dos Santos Benfica, Higino
Francisco De Murrule, Ana Paula Manuel Santos, and Matias Isaac Mugabe
MSU Campus Backstop: David Tschirley, 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
Jan		X	X	X
Feb		X	X	X
Mar		X	X	X
Apr		X	X	X
May		X	X	X
Jun	X	X	X	
Jul	X	X	X	
Aug	X	X	X	
Sep	X	X	X	
Oct	X	X	X	
Nov	X	X	X	
Dec	X	X	X	

- Boletim Anual de Informacao do Mercado, Maio 1992.

- **Working Papers (in chronological order)**

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.)

- Dias, Leopoldina et al. "Informing the Process of Agricultural Market Reform in Mozambique: A Progress Report." Working Paper No. 1, October 1990. Ministry of Agriculture/Mozambique. PN-ABS-734
- Zucula, Paulo, et al. "A Pilot Agricultural Market Information and Analysis System in Mozambique: Concepts and Methods." Ministry of Agriculture/Mozambique. PN-ABS-735
- Zucula, Paulo, et al. "Inquérito ao Sector Familiar da Província de Nampula: Observações Metodológicas." Working Paper No. 3, November 1991. Ministry of Agriculture/Mozambique. PN-ABS-736
- Zucula, Paulo, et al. "A Socio-Economic Survey of the Smallholder Sector in the Province of Nampula: Research Methods." (Translated from Portuguese). Working Paper No. 3E, January 1992. Ministry of Agriculture/Mozambique. PN-ABS-737
- Zucula, Paulo, et al. "Inquérito ao Sector Familiar da Província de Nampula: Comercialização Agrícola." Working Paper No. 4, January 1992. Ministry of Agriculture/Mozambique. PN-ABS-738
- Zucula, Paulo, et al. "A Socio-Economic Survey in the Province of Nampula: Agricultural Marketing in the Smallholder Sector." (Translated from Portuguese). Working Paper No. 4E, January 1992. Ministry of Agriculture/Mozambique. PN-ABS-739
- Zuculo, Paulo, et al. "Inquérito ao Sector Familiar da Província de Nampula: O Algodão na Economia Camponesa." Working Paper No. 5, November 1991. Ministry of Agriculture/Mozambique. PN-ABS-741
- Zuculo, Paulo, et al. "A Socio-Economic Survey in the Province of Nampula: Cotton in the Smallholder Economy." (Translated from Portuguese). Working Paper No. 5E, January 1992. Ministry of Agriculture/Mozambique. PN-ABS-740
- 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
- Massinga, Julio, et al. "The Maputo Market Study: Research Methods." Working Paper No. 9, March 1993. Ministry of Agriculture/Mozambique. PN-ABP-638
- Zucula, Paulo F., et al. "The Organization, Behavior, and Performance of the Informal Food Marketing System." Working Paper No. 10, May 1993. Ministry of Agriculture/Mozambique. PN-ABR-411
- Massinga, Julio, et al. "O Estudo do Mercado de Maputo: Observações Metodológicas." (Translated from English.) Working Paper No. 9P, June 1993. Ministry of Agriculture/Mozambique. PN-ABS-744

- Massinga, Julio, et al. "Mini-SIMA e análises específicas: Um ensaio aplicado aos mercados de Maputo." Working Paper No. 15, July 1993. Ministry of Agriculture/Mozambique. PN-ABS-748
- Massinga, Julio, et al. "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. Ministry of Agriculture/Mozambique. PN-ABS-742
- Massinga, Julio, et al. "Determinantes do Rendimento e Consumo Familiar nas Zonas Rurais da Província de Nampula: Implicações para a Segurança Alimentar e as Reformas de Política Agrária". (Translated from English.) Working Paper No. 6P, August 1993. Ministry of Agriculture/Mozambique. PN-ABS-743
- Massinga, Julio, et al. "The Pricing and Distribution of Yellow Maize Food Aid in Mozambique: An Analysis of Alternatives." Working Paper No. 12, October 1993. Ministry of Agriculture/Mozambique. PN-ABS-745
- Liedholm, Carl, and Donald Mead. "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," in *Economic Impact: A Quarterly Review of World Economics*, no. 63 (**Reprint, translated from English**). Working Paper No.14P. PN-ABS-747
- Zucula, Paulo, et al. "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. Ministry of Agriculture/Mozambique. PN-ABS-371
- Massinga, Julio, et al. "Padroes de distribuicao de terras no sector familiar em Mocambique: a similaridade entre duas pesquisas distintas e as implicacoes para a definicao de politicas." Oct. 1994. Ministry of Agriculture/Mozambique. PN-ABS-749
- Ministry of Agriculture/Mozambique. "Food Price Behavior in the Maputo Informal Sector." (**forthcoming**)
- Ministry of Agriculture/Mozambique. "The Maputo Market Study: Synthesis of Research Findings and Policy Implications." (**forthcoming**)
- Ministry of Agriculture/Mozambique. "A Socio-Economic Survey in the Province of Nampula: Smallholder Land Access and Utilization." (**forthcoming**)

- **Thesis**

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 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**

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.

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.

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.

- **Research Presentations**

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.

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

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

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

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

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

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.

Drs. Tschirley and Weber 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.

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

The in-country research team presented a seminar on the food aid pricing and distribution policy in Mozambique, December 1993.

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.

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, 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.

5.3. Short Term Training and Collaborative Research Activities

- 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.

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

5.4. Long Term Training

- 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

- October/November 1990: Tschirley, Weber, Finan (UA) trip to begin planning field research activities and pilot market information system (SIMA)
- January 1991: Weber trip to continue development of SIMA
- January/February 1991: Langworthy (UA) trip to continue development of SIMA
- March/April 1991: Tschirley, Finan (UA) trip to a) continue development of SIMA and b) further plan the rural data collection efforts
- 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
- 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
- April 1992: Tschirley trip to plan Maputo Market Study
- June 1992: Tschirley trip to launch Maputo Market Study

- June-August 1992: Trip by graduate students Cynthia Donovan and Paul Strasberg to continue Maputo Market Study
- July 1992: Weber trip to backstop Donovan and Strasberg in Maputo Market Study
- September 1992: Tschirley trip to finalize Maputo Market Study
- 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
- June-July 1993: Donovan trip to begin study of food aid pricing and distribution
- July 1993: Weber trip to backstop Donovan in food aid study
- August 1993: Strasberg trip to conduct rural household and rural market rapid appraisal, in preparation for launching renewed research program in late 1993
- 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
- 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.
- March 1994: Strasberg trip to begin assisting local team in start-up of new farm level research activities in Nampula Province.
- 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.

5.6. Examples of Impact of Project Findings/Information

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

- On-going weekly SIMA surveys (price and qualitative assessments of supply) in 19 locations of eight provinces
- Nampula Family Sector Household Survey, July/August 1991. 343 rural households in 15 villages of three districts of Nampula province
- Maputo Market Survey, July/August 1992. A series of data collection activities involving the informal food marketing sector in Maputo
- Rapid Appraisal in Monapo District of Nampula Province, September 1993.
- Maize Preferences Survey, a random sample of consumers in the City of Maputo, March and April 1994
- Survey of Maize Milling Establishments in SIMA market collection locations throughout Mozambique, May 1994.
- Village and Household Surveys in Nampula and Cabo Delgado Provinces. Fieldwork began in May 1994.

6. General Research Activities

- Research activities to date have 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 has

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 highlight 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 has 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 have been analyzed. Key findings are that the informal food marketing system is efficient in the sense that margins are generally in line with costs and profits are low. The sector is growing rapidly, and it is increasingly integrating the southern portion of the country into a single food market. However, the system is extremely small scale, rapid entry and exit of traders inhibit the accumulation of knowledge for improving the system, and prices are highly volatile.
- The food aid research is currently analyzing how the programming, pricing and distribution of commercial food aid, and the programming and distribution of emergency food aid, have 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 are being proposed.
- Future research will integrate the rural and urban work through a subsector research approach. It will shed new light on smallholder land access, on the role of cotton in the smallholder economy, on the degree and effects of market failure in rural areas, and on the evolving articulation between the rural and urban marketing systems. The research will develop general insights as well as analyze specific policy options for promoting the development of the rural/urban food marketing system.
- The project will continue to backstop the SIMA and utilize its information wherever possible.

7. Outputs Anticipated

• Working Papers

"A Comparison of Household Land Access Empirical Findings: 1991 PSA/MSU and 1993 DEA/ASDI Studies." A paper for the Ministry of Agriculture/University of Wisconsin Land Conference, May 1994.

"Food Price Behavior in the Maputo Informal Sector." Early 1994.

"The Maputo Market Study: Synthesis of Research Findings and Policy Implications." Mid-1994.

"Consumer Behavior, Maize Meals and Pricing Policy in Maputo: Synthesis of Findings and Policy Implications." August 1994.

"A Study of Small Scale Maize Milling in Mozambique: Findings and Policy Implications."
October 1994.

A series of working papers based on the new research activities discussed in section 6. These will begin to be published in late 1994.

• **Journal Articles**

"Food Aid, Food Markets, and Food Security: Lessons from Mozambique." Submitted to *Food Policy* in May 1994.

A series of journal articles based on the new research activities discussed in section 6. These will begin to be published sometime in late 1994.

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
Economic and Institutional Development, Resource Access and Development Division
(AID/G/EG/EID/RAD)
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 Pam Riley

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

* Version of Fact Sheet: May 1994

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 (chronological order per section):

5.1. Written Outputs

• Statistical Reports

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

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

• **Research Reports**

- Rwalinda, P., et D. Tardif-Douglin, avec L. Uwamariya. 1992 (November). "Aspects de la Caféculture au Rwanda: Résultats de l'Enquête sur la Sensibilité-Motivation des Caféculteurs Rwandais." DSA/MINAGRI, DSA publication no. 25.
- Ngirumwami, J.L. 1993 (iMay). "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.
- 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 N°26.
- Habimfura, V. et P. Riley. 1993 (November). "Le Vin de Banane dans l'Economie Rurale au Rwanda: Contraintes et Stratégies de Développement." DSA/MINAGRI, DSA publication: draft.

• **Working Papers**

- 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.
- Clay, D. C. (1993) April. "Structure de la Propriété Foncière et la Dégradation des Sois au Rwanda." Draft DSA Working Paper.
- 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., 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.
- 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.

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.

Byiringiro, F. 1993 (September). "Estimation of a Production Function of Rwandan Agriculture." Draft working paper. MSU.

• **Briefing Papers**

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

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

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."

• **Theses**

Riley, P. "The Role of Banana Wine in Household Income Diversification in Rwanda" (tentative title), in progress for M.S. at MSU (Reardon is thesis supervisor).

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

Byiringiro, F. "Agricultural Productivity in Rwanda" (tentative title), in progress for M.S. in agricultural economics at MSU (Reardon is thesis advisor).

• **Journal Articles/International Professional Outreach**

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

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

5.2. Oral Presentations

• Progress/Intentions/Methods/Research Design Meetings

- 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).
- 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)
- 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)

• Focused Research Presentations/Workshops/Seminars/Research Briefings

- October 1992. Focused seminar. "Coffee Production and Constraints to Production: Special
Emphasis on Productivity effects on Policy Disallowing Abandonment of Coffee Trees." At
World Bank/Kigali. (by P. Rwalinda and 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.
- April 1993. Research briefing. Estimates of war losses. To USAID. (Clay, D. Tardif-Douglin)
- 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. 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. Focused seminar. "Sweet Potatoes" (by Rwalinda) and "Cassava" (by Tardif-Douglin).
At IPV/CTA (Intensification de la Production Vivrière/Coopération Technique Allemande),
Ngororero.
- 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).

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

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

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

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

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

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

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

5.3. Short Term Training and Collaborative Research Activities

- DSA analyst Laurence Uwamariya visit to MSU. Six weeks in July - August 1993 to study land and labor productivity and to learn more SPSS.
- 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 programmer Bosco visit to MSU seven weeks in December 1993, January 1994 to work on SPSS and income/expenditure data programming and organization.

5.4. Long Term Training

- Independent study (summer semester, May 15 - August 15, 1993), Fidèle Byiringiro, MS student at MSU. Reardon as supervisor, subject: agricultural productivity in Rwanda.
- Non-degree training in agricultural economics, Pierre Rwalinda, July 1993-June 1994
- Special training in survey methods, Jean-Bosco Sibomana, at International Statistical Program Center (ISPC), Washington, D.C. July 1993-June 1994

5.5. MSU Backstop Trips to In-country Team

- 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
- 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)
- May/June 1993, 2 weeks. Reardon trip to work on agricultural productivity and income/linkages studies, as well as general backstopping.
- June 1993, 2 weeks. Shaffer trip to work on coffee policy research.
- June/August 1993, 7 weeks. Trip by M.S. student Pam Riley to conduct rapid appraisal of banana wine subsector.
- August 1993 (arrival; for at least one year). Ph.D. student Jaakko Kangasniemi outposted to begin study of land use in Rwandan agriculture.
- October 1993, 2 weeks. Shaffer trip to work on coffee policy research.
- November 1993, 3 weeks. Reardon trip to work on agricultural productivity, soil conservation, and income diversification research, as well as general backstopping.

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

- On-going 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 on-going 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 on-going 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 • INSAH/PRISAS

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 - DECEMBER 1994 ◀

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 Sahel West Africa

Agency for International Development, Global Bureau, Economic Growth Center, Office of
Economic and Institutional Development, Resource Access and Development Division
(G/EG/EID/RAD)

Department of Agricultural Economics, Michigan State University (MSU)

2. Researchers Involved

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

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

MSU Campus Backstop: John Staatz, Eric Crawford, A. Allan Schmid, Thomas Reardon,
Michael Weber, and Aliou Diagne

3. Objectives of the Research and Policy Outreach Activities

The add-on enables collaborative research and outreach by MSU and INSAH's PRISAS program. These 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.

* Version of Fact Sheet: May 1994

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.

5. Outputs to Date

5.1. PRISAS-Sponsored Regional Food Security Seminars and Workshops

- Food Security in the Sahel: Review of Studies and Priorities for Future Policy Research and Dialogue. Bamako, May 1991.
- Workshop on Designing Food-Security Policy-Relevant Research in the Sahel. Bamako, November 1991.
- Institutional and Legal Environment of Agricultural Input and Commodity Markets in the Sahel. Bamako, March 1992.
- Income Diversification, Informal Non-Agricultural Activities and Food Security. Bamako, November 1992.
- Technology Development and Transfer in a Rapidly Changing Environment: Implications for Agricultural Research in the Sahel. Bamako, September 1993.

5.2. Oral Presentations by INSAH/PRISAS Affiliated Researchers

— To African Researchers and Policy Makers

- 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).
- 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.
- September 1990. Dakar, Senegal. Institut Sénégalais de Recherches Agricoles. Economists' Group. Presentation on Food Security Research in the Sahel (Dioné and Staatz).
- 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).
- 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).
- 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.
- 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).
- August 1991. France. Joint Programming Meeting of CILSS and Club du Sahel 1992 Activities; Paris, France; 20-24 August 1991.
- 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).

- 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.
- October 1992. Côte d'Ivoire: WAEA/ESAEA. Seminar presentation: "Is Income Diversification 'Agriculture-Led' in the WASAT? Survey Evidence and Development Strategy Implications." (Reardon)
- 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).
- 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).
- 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).
- 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, Mali, June 1993. (Dioné as invited expert).
- 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."
- 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).

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

- 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).

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

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

- July 1990. Finland. International Conference on "Hunger and Public Action;" sponsored by WIDER, Helsinki, Finland; 11-13 July 1990. (Dioné as invited discussant.)
- 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 1992. England: Institute for Development Studies, University of Sussex, England. Invited presentation: "Income Diversification in the West African Semi-Arid Tropics." (Reardon)
- September 1992. Germany, University of Hohenheim. Seminar presentations on structural adjustment impacts in Sahel: see paper titles above), 29th Seminar of European Association of Agricultural Economics. (Reardon)
- September 1992. Montpellier, France. CIRAD Seminar on Institutional Economics and Agriculture. Presentation "Institutionalist Perspectives on Agricultural Policy Reforms in West Africa." (Staatz)

- 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)

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.

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. Josué 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 is allowing him to complete his Ph.D. studies at MSU.

5.5. Support of Other African Research Initiatives

PRISAS-affiliated staff support other on-going 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)

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.

- May-June 1989, trip by Staatz. Initial contacts made with INSAH officials about possible collaborative regional food security project.
- 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.
- October 1989, trip by Staatz. Finalize administrative arrangements with INSAH for PRISAS, which began in November, 1989.
- 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).
- December 1989. Dioné arrives in Bamako for long-term assignment with INSAH.
- 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 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.
- 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.
- 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).

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

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. 1991 (June). "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/PRISAS. Bamako: PRISAS, Institut du Sahel. PN-ABS-874

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

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

CILSS. 1992. "Coopération Régionale et Politique Agricole." *Project Paper*.

Dioné, Josué. 1991a. "Contexte macroéconomique 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/PRISAS. PN-ABS-882

Dioné, Josué. 1991b (April). "Socio-Economic Development Challenges in the Sahel: Implications for Agriculture and Agricultural Research." *Working Paper* No. 91-02/PRISAS, April 1991. Draft Contribution for the INSAH/SPAAR Framework of Action for Revitalizing Agricultural Research in the Sahel. Bamako: PRISAS, Institut du Sahel. PN-ABS-884.
French version: "Défis du Développement Economique 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. INSAH/DRMA/PRISAS - 06/90.

Institut du Sahel. 1990b. "Cadre Conceptuel d'Intégration du Programme Quinquennal (1990-1994) en Matière de Socio-Economie." *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'INSAH." *Concept Paper* for a USAID Support Project to INSAH's Five-Year (1990-1994) Program. INSAH/ DRMA/ PRISAS - 11/90.

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, March.

INSAH/SPAAR. 1991. *Revitalizing Agricultural Research in the Sahel: A Framework for Action*. Washington, D.C.: SPAAR. (Represents collaborative work between INSAH and SPAAR.)

- **PRISAS Policy Conference Reports**

PRISAS. 1991 (May). "Regional Workshop on Food Security in the Sahel: Review of Past Studies and Priorities for Future Policy Research and Dialogue." French Title: "Atelier Régional: Sécurité Alimentaire au Sahel: Bilan des Etudes et Priorités des Recherches sur les Politiques: Compte Rendu." *Conference Paper* No. 91-01/PRISAS, May 1991. Bamako: PRISAS, Institut du Sahel.

PRISAS. 1992 (March). "Atelier Régional du PRISAS: Environnement Institutionnel et Juridique des Marchés des Intrants et des Produits Agricoles au Sahel: Compte Rendu." Bamako, Mali 23-28 Mars 1992. *Conference Paper* No. DC 92-10. Bamako: PRISAS, Institut du Sahel.

Dioné, Josué, et Teija Kallio. eds. 1994. "Séminaire Régional: Diversification des Revenus, Activités Informelles Non Agricoles et Sécurité Alimentaire au Sahel: Présentations et Articles, Bamako, Mali, 25-27, Novembre 1992." (English Title: "Income Diversification, Informal Non-Agricultural Activities and Food Security in the Sahel.") *Conference Paper* No. DC 11/92. Bamako: PRISAS, Institut du Sahel.

PRISAS. 1993. "Regional Seminar—Agricultural Research Policy in the Sahel: Technology Development and Transfer in a Rapidly Changing Environment—Synthesis Report." Bamako (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 Conference Papers**

Ba, Moussa Bathily. 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 (September). PN-ABS-949

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

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 (September). PN-ABT-291

Reardon, Thomas. 1993. "Sustainability Challenges for Agricultural Researchers in the Sahel." PN-ABT-294. French version: "Défis dans le domaine de la soutenabilité pour les chercheurs agricoles au Sahel." PN-ABT-295. Presentation to PRISAS Regional Seminar on Technology Development and Transfer in a Rapidly Changing Environment: Implications for Agricultural Research in the Sahel." Bamako (September).

Schmid, A. Allan. 1992. "Legal Foundations of the Market: Implications for Africa." PN-ABS-763. French version: "Fondations Juridique du Marché: Conséquences pour l'Afrique." PN-ABS-764. Invited Paper for the Regional Workshop of PRISAS on "The Institutional and Legal Environment of Agricultural Input and Product Markets in the Sahel." *MSU Agricultural Economics Staff Paper* No. 92-82, April.

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

Delgado, C., and T. Reardon. 1992 (May). "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 1992. (Represents collaborative work with IFPRI). PN-ABT-270

Dioné, Josué. 1989a (September). "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 (October). "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

Hopkins, J., and T. Reardon. 1992 (December). "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 "Regional integration of agricultural markets in West Africa: Issues for the Sahelian countries", Senegal, Dec. 2-4, 1992. (Represents collaborative work with IFPRI). PN-ABT-286

Reardon, T., and M. Mercado Peters. 1991 (March). "Self-Financing of Rural Household Cash Expenditures in Burkina Faso: The Case of Net Cereal Buyers." In Benoit-Cattin, Cuevas, and Griffon (eds.), *Finance and Development in West Africa*, proceedings of an international conference sponsored by CIRAD, Ohio State University, and University of Ouagadougou, held in Ouagadougou, October 21-25, 1991, revised March 1992; forthcoming as CIRAD publication, Montpellier, France. (Represents collaborative work with IFPRI). PN-ABT-318

Reardon, T., J. Hopkins, and V. Kelly. 1992 (September). "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 Economics, 'Food and Agricultural Policies Under Structural Adjustment', Sept. 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." Paper presented at CIRAD Seminar on Institutional Economics and Agriculture, Montpellier, France, 7-9 September 1992. *MSU Agricultural Economics Staff Paper* no.92-61. PN-ABS-765

Kelly, Valerie, Thomas Reardon, Bocar Diagana, and Amadou Abdoulaye Fall. 1994. "Impacts of Devaluation on Senegalese Households: Policy Implications." *MSU Agricultural Economics Staff Paper* no. 94-20, March. PN-ABS-779

- **Research Reports**

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

Dioné, Josué. 1990 (October). "Sécurité Alimentaire au Sahel: Point sur les Etudes et Projet d'Agenda de Recherche." PN-ABS-871. 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. *Research Paper* No. RP 90-02/PRISAS. Bamako: PRISAS, Institut du Sahel.

Kanté, Bakary. 1990 (December). "Opération Triangulaire d'Aide Alimentaire au Sahel. Etude de Case: USA-Mali-Niger: Synthèse Provisoire." *Research Paper* No. DR 90-03/PRISAS. Bamako: PRISAS, Institut du Sahel.

- **PRISAS Working Papers**

Dioné, Josué. 1990a (April). "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." Paper prepared for the Regional Seminar on "Cereals Market Information Systems in the Sahel," sponsored by CILSS and Club du Sahel, Bamako, Mali, 23-25 April 1990. *Working Paper* No. DT 90-01/PRISAS. PN-ABS-880

Dioné, Josué. 1990b. "Libéralisation des economies et des echanges et sécurité alimentaire au Sahel." Invited paper at the International Colloquim 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. *Working Paper* No. DT 90-02/PRISAS. PN-ABS-881

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

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

Dioné, Josué. 1994. "Décalage entre la Production et la Consommation des Céréales au Sahel." 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, 10-14 January 1994. *Working Paper* No. DT 94-01/PRISAS.

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

Kanté, Bakary. 1993. "Aperçu de la recherche sur le technologies agricoles au Sahel: résultats et contraintes." *Working Paper* No. DT 93-01/PRISAS, 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 03, 1993. PN-ABS-893

Kanté, Bakary. 1994. "Du Monopole à la Libéralisation de la Transformation du Paddy à l'Office du Niger: Implications pour la Nouvelle Société des Rizeries." *Working Paper* No. DT 94-02/PRISAS. PN-ABS-916

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

D'Agostino, Victoire C., and John M. Staatz. 1989 (November). "Food Security and Economic Growth in the Sahel: Summary of the September 1989 Sahel Cereals Workshop." *MSU International Development Working Paper* no. 34. East Lansing: Michigan State University, Dept. of Agricultural Economics. PN-ABD-956. Reprinted in both English and French by CILSS and the Club du Sahel for the CILSS/Club du Sahel Lomé Conference on Regional Trade in West Africa (November, 1989). French title: "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 préparé pour le CILSS/Club du Sahel Séminaire sur les Espaces Céréaliers Régionaux en Afrique de l'Quest: Dynamiques Actuelles et Enjeux pour l'Avenir. Lomé, Togo, 6-10 Novembre 1989. East Lansing, *MSU Agricultural Economics Staff Paper* 89-93, 1989. PN-ABT-265. English Version: "The Commercial Behavior of Farmers and Regional Cereal Trade in West Africa." PN-ABT-264

- **Theses**

Diagne, Aliou. "An Evaluation of the Impacts of Macroeconomic Policies on the Consumption/Production Decisions and Welfare of the Agricultural Household in Senegal." Ph.D. dissertation, Dept. of Agricultural Economics and Dept. of Economics, MSU. Completion expected in 1994 (Eric Crawford and John Strauss are dissertation supervisors).

Diarra, Daouda. "Analyse Economique de l'Intégration Spatiale des Marchés Céréaliers et de l'Impact du Crédit PRMC sur le Revenu des Producteurs Agricoles au Mali." Thesis for Doctorat 3ème Cycle in Agricultural Economics, University of Abidjan, 1993. Degree awarded with honors. (Dioné was thesis supervisor).

Maïga, Younoussa. "Analyse des Déterminants de la Demande des Céréales en Milieu Urbain au Mali: Cas de la Ville de Bamako." Thesis for Doctorat 3ème Cycle in Agricultural Economics, University of Abidjan. Completion expected in 1994. (Dione is thesis supervisor).

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

Delgado, C., and T. Reardon. 1992. "Do the Poor Pay More for Cereal: Results from Burkina." submitted to *Economic Development and Cultural Change*, June 1992; requested to revise and resubmit November 1992. (Represents collaborative work with IFPRI).

Dioné, Josué. 1990. "Libéralisation interne et sécurité alimentaire." *Supplement la lettre de Sologral - Strategies Alimentaires* n° 34. Septembre/Octobre 1990. PN-ABT-266

Haddad, L., and T. Reardon. 1993. "Gender Bias in the Allocation of Resources within Households in Burkina Faso: A Disaggregated Outlay Equivalent Analysis", *Journal of Development Studies*, January 1993. (Represents collaborative work with IFPRI). PN-ABT-287

Kennedy, E., and T. Reardon. 1994. "Shift to Non-traditional Grains in the Diets of East and West Africa: Role of Women's Opportunity Cost of Time." Forthcoming *Food Policy*, February. (Represents joint work with IFPRI.) PN-ABT-299

Reardon, T. "Sustainability Challenge for Agricultural Researchers in the Sahel." Submitted to *Agricultural Systems*, October 1993. PN-ABT-294

Reardon, T., C. Delgado, and P. Matlon. 1992. "Determinants and Effects of Income Diversification amongst Farm Households in Burkina Faso", *Journal of Development Studies*, January. (Represents joint work with IFPRI.) PN-ABS-957

Reardon, T., C. Delgado, T. 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, T. 1993. "Cereals Demand in the Sahel and Potential Impacts of Regional Cereals Protection", *World Development* January 1993. (Represents collaborative work with IFPRI). PN-ABS-928

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

Reardon, T., and P. 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", *Afrique-Asie: Performances Agricoles Comparées*. Edited by Etienne, Griffon and Guillaumont. Revue Française d'Economie, Paris, June. PN-ACT-289

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

Savadogo, K., T. Reardon, and K. Pietola. 1994 (forthcoming). "Farm Productivity in Burkina Faso: Effects of Animal Traction and Nonfarm Income." *American Journal of Agricultural Economics* (August). PN-ABS-954

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

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* 72, no. 5 (December): 1311-17. PN-ABS-925

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

- **Book Chapters**

Reardon, T., A. A. Fall, V. Kelly, C. Delgado, P. Matlon, J. Hopkins, and O. 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, manuscript October 1993. (Represents joint work with IFPRI.) PN-ABT-296

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. 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.

6. General Research Activities

1. Multi-country design of study of contractual arrangements and transaction costs in food markets.
2. Promotion of country and regional-level studies of commodity subsectors and comparative advantages.

7. Outputs Anticipated: Working Papers/Journal Articles

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

Fact Sheet · AGRICULTURAL PRODUCTIVITY SYNTHESIS STUDIES

▶ FOOD SECURITY II COOPERATIVE AGREEMENT ◀
between
▶ U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT and MICHIGAN STATE UNIVERSITY ◀
▶ TIME PERIOD: OCTOBER 1992 - DECEMBER 31, 1995 ◀

1. Cooperating Institutions

Agency for International Development, Africa Bureau, Office of Analysis, Research and Technical Support, Division of Food, Agriculture and Resource Analysis, Food Security and Productivity Unit (AFR/ARTS/FARA/FSP)

Agency for International Development, Global Bureau, Economic Growth Center, Office of Economic and Institutional Development, Resource Access and Development Division (G/EG/EID/RAD)

Department of Agricultural Economics, Michigan State University (MSU)

2. Researchers Involved

AFR/ARTS/FARA/FSP: Tom Olson, Brian D'Silva, and George Gardner.

G/EG/EID/RAD: Gloria Steele.

African Collaborators: Bocar Diagana (Institut Senegalais de Recherches Agricoles (ISRA), Senegal), Abdoulaye Fall (ISRA, 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), Tobias Takavarasha (Ministry of Lands, Agriculture, and Rural Resettlement, Government of Zimbabwe), Laurence Uwamariya (Ministry of Agriculture, Rwanda), and other African collaborators to be identified.

PARTS African Fellows: Hosted Mr. Okuku (Uganda) June-July 1993; hosting Mr. Diagana (Senegal) June-July 1994; to host Mr. Ezedinma (Nigeria) September-October 1994.

MSU Researchers: Eric Crawford, Daniel Clay, Thomas Jayne, Valerie Kelly, Thomas Reardon, David Tardif-Douglin, Fidele Byiringiro, Tracey Boyle, Josue Dioné, John Duncan, Jaakko Kangasniemi, Mattias Lundberg, Kyösti Pietola, Takeshi Sakurzi, and other MSU researchers to be identified.

Other Collaborators: Ousmane Badiane (IFPRI), Peter Hazell (IFPRI), Eileen Kennedy (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), and Jane Hopkins (IFPRI).

3. Objective 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 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 productivity 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. Oral Presentations to African Researchers and Policy Makers

T. Reardon, at Ministry of Agriculture, Rwanda, Division of Agricultural Statistics, (Invited presentation at seminar, methods for agricultural productivity research), June 5, 1993

T. Reardon, at National University of Rwanda, Faculty of Agronomy (Invited presentation at seminar, methods for agricultural productivity research), June 7, 1993

Laurence Uwamariya (Ministry of Ag, Rwanda), Jaakko Kangasniemi, and Thomas Reardon, seminar on results of productivity work to the Ministry of Agriculture, Kigali, Rwanda, November 19, 1993.

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

International mini-symposium: 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 productivity work on non-farm income diversification's effect on productivity and farm capital expenditures.

Clay, C. and T. Reardon. "Determinants of Farm-Level Conservation Investments in Rwanda." Contributed Paper presentation at IAAE 22nd Congress (International association of agricultural economists) August 1994 in Harare to international audience among which many African researchers.

Kangasniemi, J. and T. Reardon. "Demographic Pressure and the Sustainability of Land Use in Rwanda." Contributed Paper presentation at IAAE 22nd Congress (International association of agricultural economists) August 1994 in Harare to international audience among which many African researchers. PN-ABS-955

Khatri, Y., T. Jayne, and C. Thirtle, "A Profit Function Approach to the Efficiency Aspects of Land Reform in Zimbabwe." Contributed Paper presentation at IAAE 22nd Congress (International association of agricultural economists) August 1994 in Harare to international audience among which many African researchers.

Diagana, Kelly, and M. Gaye (ISRA/Kaolack), August 3-4, 1994, presentations at ISRA (Senegal). Diagana: A household typology approach to understanding links between nonfarm income and crop productivity in the cereal sector; Kelly: Links among nonfarm income, credit, and cropping productivity in the peanut sector. Kelly/Gaye: Changing patterns of peanut seeding densities: Implications for policies to maintain soil and seed quality.

Jayne, T., Tobias Takavarasha, E.A. Attwood, and Bernard Kupfuma. Poster presentation "Postscript to Zimbabwe's Maize Revolution: Policy Lessons for Eastern and Southern Africa" at IAAE 22nd Congress (International Association of Agricultural Economists) August 1994 in Harare to international audience among which many African researchers.

5.2. Oral Presentations to AID/Washington and USAIDs

T. Reardon at Food Security and Productivity Unit, A.I.D. Africa Bureau, 'Premier Food Security and Productivity Collaborators Round Table', Oct. 22-23, 1992, talk on Agricultural Productivity Project of FS II.

Seminar at ARTS/FARA/FSP for presentation by MSU researchers of synthesis of first year results of productivity studies, February 15, 1993. Washington.

T. Reardon, at A.I.D. Africa Bureau, ARTS/FARA, "Round Table on Productivity of Agriculture in Africa.' April 22, 1993, "Labor Use and Productivity in African Households."

- T. Reardon, D. Clay, D. Tardif-Douglin, presentation to USAID/Rwanda of research results on farm-level productivity in Rwanda, November 24, 1993.
- A.I.D. Africa Bureau, ARTS/FARA, 'Round Table on Food Security and Productivity Research.' Dec. 6-8, 1993, presentation on productivity research results under Food Security II project.
- Reardon, Jayne, Kelly, and Weber, "Agricultural Productivity Research for ARTS/FARA/FSP: Emerging Research Findings and Policy Implications." presentation at AID/W Feb. 17, 1994.
- Kimsey Savadogo, "Results and Policy Implications of Farm Productivity Research in Burkina Faso," to the economists of USAID mission, May 15, 1994.
- Kelly, "Senegal Case Study of Growth Multipliers: Implications of Openness," presentation to AFR/ARTS/FARA/FSP; May 26, 1994 workshop on agricultural growth linkages in Sub-Saharan Africa.
- Reardon and Kelly, planned presentation to USAID/Mali concerning agricultural productivity research in Burkina and Senegal, July 1994.
- Diagana and Kelly, July 1994, presentations at AID/W - ARTS/FARA; Diagana: "Income Diversification and Cereal Productivity in the Senegalese Peanut Basin." Kelly: "Links among Nonfarm Income, Credit, and Cropping Productivity in the Peanut Sector."
- Diagana and Kelly, August 1994, presentations at USAID/Senegal, "Recent Evidence on Crop Productivity in the Peanut Basin: Implications for Natural Resource, Input Marketing, and Credit Policies."

5.3. Oral Presentations to Other Food Security Research and Policy Groups

- T. Reardon, October 19, World Food Day presentation, sponsored by FAPRI at U. of Missouri-Columbia: "Sustainable Increases in Agricultural Productivity and Food Security – Issues and Tradeoffs."
- T. Reardon, November 1-4, Roskilde University, Denmark, Conference on natural resource management in fragile lands of Africa. Two talks: "Alternate Income Sources 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."
- T. Reardon, seminar for Burkinabe and Senegal case study collaborators, May 7, 1993, Review of literature on methods for agricultural productivity research, Michigan State University.

T. Reardon, at Institute of International Agriculture, University of Florida (sponsored by Florida and Cornell), "Reconciling Sustainability with Productivity Growth." May 19-21, 1993, rapporteur and panelist.

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." Paper presented at the 1993 AAEA Pre-Conference Workshop at Orlando, Florida, July 30-31, "Post-Green Revolution Agricultural Development Strategies in the Third World: What Next?"

T. Reardon, Michigan State University, Dept. of Agricultural Economics, Departmental Seminar Series, December 9, 1993, "Farm-Level Productivity in Burkina Faso."

Kelly, August 1994, Presentation to committee of donor economists based in Sahara. "Peanuts & Rural Development in Senegal: Past, Present, and Future."

Diagana and Kelly, August 1994, presentation to ISRA on:

- (1) Links among nonfarm income, credit and cropping productivity in the peanut sectors.
- (2) Changing patterns of peanut seeding densities.

1994 Winter AAEA Meetings Invited Paper Session, organized by Thomas Reardon and Thomas Jayne (at Allied Social Science Association meetings in Boston, January 3-5). "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.

1994 Annual AAEA Meetings Principal Paper Session, organized by Peter Hazell (IFPRI) and Thomas Reardon, on behalf of the International Committee of the AAEA (for August AAEA meetings in San Diego); Title of Session: "Promoting Farm - Nonfarm Growth Synergies in Rural Africa"; 3 papers will be presented:

- (a) Reardon, Savadogo (University of Ouagadougou), Kelly, and Crawford, "On-Farm Linkages between Agriculture and Non-Agriculture in Africa: Growth and Risk Management Considerations." This paper is outreach for the PARTS productivity work relating to the relations between nonfarm income and farm productivity/capital formation.

- (b) Hazell and Delgado (IFPRI), "Promoting Intersectoral Growth Linkages through Agricultural Technology and Policy Reform in Africa."
- (c) Liedholm (MSU) and Chuta (Nigeria), "Rural Microenterprise Employment Growth in Africa: Is There a Missing Agricultural Link?"

5.4. Collaborative Research Activities with African and Other Researchers

Research under the Agricultural Productivity set of activities has facilitated collaboration with:

- Dr. Kimsey Savadogo (Professor, Faculty of Economics, University of Ouagadougou, Burkina Faso) spent 3 months at MSU April-July 1993, working 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 will come to MSU to collaborate in ongoing productivity and food access (income diversification) work.

- Dr. Colin Thirtle (Professor, University of Reading, England) was visited by Thomas Jayne and Tom Reardon in Washington DC in April 1993 to plan productivity work, and then came to MSU end April to work out details of collaboration. 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 and Kelly.
- 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, that will be published by DSA.

In 1994, Ms. Uwamariya continues 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.

- 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 1988-1992 (working with Senegalese Agricultural Research Institute, ISRA), and then in Washington 1992-3. She came to MSU for 2 weeks in May 1993 to work with Drs. Savadogo and Reardon on planning Senegal case study.
- 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.
- Mr. Bocar Diagana (researcher, Senegalese agricultural research institute) comes to MSU for 6 weeks in June-July 1994 as a PARTS African Intern, working with Kelly, Crawford, and Reardon, working on productivity and food access (income diversification) issues.
- Mr. Ezedinma (professor, Nigeria) comes to MSU for 6 weeks in September-October 1994 as a PARTS African Intern, working on productivity issues.
- 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.
- 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. She begins dissertation fieldwork in August 1994.

5.5. MSU Backstop Trips to African Research Sites

- June 1993: T. Reardon, part of three weeks to Rwanda.
- August-September 1993: stop-over visit by T.S. Jayne to Zimbabwe.
- September 1993: T.S. Jayne to University of Reading, England.
- November 1993: T.S. Jayne to University of Reading, England.
- November 1993: T. Reardon, part of three weeks in Rwanda.
- November-December 1993: T. Reardon, one week in Burkina Faso.

- July 1994: Reardon to Mali, part of a week.
- July 1994: Kelly to Senegal, one week.

5.6. African Field Surveys Used in Productivity Analysis

- 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.
- Burkina: case studies are based on additional analysis of data already available from an ICRISAT data from a survey of 150 households in three zones 1981-1985.
- Senegal: case studies are based on additional analysis of data already available from an ISRA/IFPRI data from a survey of 360 rural and 70 urban households in three zones 1988-1990.
- Zimbabwe: case studies are based on secondary district-level data compiled by Colin Thirtle and Zimbabwean researchers, as well as by Thom Jayne and Bernard Kupfuma.

5.7. Written Outputs on Agricultural Productivity Topics

• Reports for Host Country Agencies, USAIDs and AID/Washington

Uwamariya, L., J. Kangasniemi, and T. Reardon. "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." DSA/MSU working paper, draft, August 1993.

Byiringiro, Fidele. "Identification and Analysis of Production Functions." First draft presented to ARTS/FARA/FSP in October 1993. Revisions in process.

Pietola, K. "Deriving a Multioutput-Input Model for Farming Households' Production Technologies in Burkina Faso." Submitted to ARTS/FARA/FSP in October 1993. Revisions in process.

Byiringiro, Fidele. (Ministry of Ag, Rwanda, and MSU), "Estimation of Production Functions for Rwandan Agriculture." Submitted to ARTS/FARA/FSP in October 1993. Revisions in process.

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, and submitted to USAID/Kigali November 1993, and AID/ARTS/FARA/FSP December 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 and submitted to USAID/Kigali November 1993, and AID/ARTS/FARA/FSP December 1993. PN-ABS-955
- Khatri, Y., C. Thirtle, and T. Jayne. "A Profit Function Approach to the Efficiency Aspects of Land Reform in Zimbabwe." Manuscript, November 1993.
- 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.
- Diagana, B. "Developing a Rural Household Typology for Agricultural Policy Analysis in Senegal: the Dioly Case." Working paper, December 1993.
- Jayne, T., Y. Khatri, C. Thirtle, B. Kupfuma, and T. Reardon. "Agricultural Productivity Change and Food Security: The Zimbabwean Experience." MSU Agricultural Economics Staff Paper, February 1994.
- Byiringiro, F., and T. Reardon. "Farm Productivity in Rwanda: Effects of Land Constraints and Land Quality." MSU Agricultural Economics Staff Paper, February 1994.
- Reardon, T., T. Jayne, V. Kelly, and M. Weber. "Synthesis Note on Agricultural Productivity Research for ARTS/FARA/FSP: Emerging Research Findings and Policy Implications." February 1994 to AID/W.

• **Outreach Documents for Food Security Research and Policy Community**

- Reardon, T., E. Crawford, R. Bernsten, C. Eicher, T. Jayne, J. Oelmke, 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.
- Reardon, T., and S. Vosti. "Effects of Policy on Productivity and Conservation Investments at the Household Level in Developing Countries: Channels of Impact and Research Issues." In Vosti and Reardon (eds.) *Sustainable Agriculture, Growth, and Poverty Alleviation: Issues and Policies*. Forthcoming, Johns Hopkins University Press.
- Savadogo, K., T. Reardon, and K. Pietola. "Farm Productivity in Burkina Faso: Effects of Animal Traction and Nonfarm Income." Forthcoming *American Journal of Agricultural Economics*, August, 1994. PN-ABS-954

- Jayne, T., Y. Khatri, C. Thirtle, and T. Reardon. "Determinants of Productivity Change Using a Profit Function Approach: Smallholder Agriculture in Zimbabwe." Forthcoming *American Journal of Agricultural Economics*, August 1994. PN-ABS-953
- Reardon, T. "Alternate 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), forthcoming 1994.
- Reardon T., K. Savadogo, V. Kelly, and E. Crawford. "On-Farm Linkages between Agriculture and Non-Agriculture in Africa: Growth and Risk Management Considerations." *American Journal of Agricultural Economics*, December 1994 (forthcoming).
- 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. PN-ABS-956
- 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. PN-ABS-955
- 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.
- Hopkins, J. V. Kelly, and C. Delgado. "Farm-Nonfarm Linkages in the West African Semi-Arid Tropics: New Evidence from Niger and Senegal." Selected paper for August 1994 AAEA meetings, San Diego.

5.8. Long Term Training-Agricultural Productivity Topics

- Mr. Fidele Byiringiro (MS candidate 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 will do his MS thesis on agricultural productivity 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. Kyösti Pietola (MS candidate at MSU, is doing his Master's thesis on Burkina productivity)
- Mr. Jaakko Kangasniemi (Ph.D. candidate at MSU, is doing his thesis on land use and productivity/sustainability issues in Rwanda, resident in Rwanda).

6. Overview of On-Going Research Activities

- Activities to date have included:
 - (a) further policy analyses of large primary and secondary data bases,
 - (b) involves African collaborators in the planning, analysis, write-up, and dissemination of the results,
 - (c) further leverages Food Security buy-in field work (in Rwanda),
 - (d) creates situations where a number of collaborators from various African countries are interacting with each other and with MSU researchers on methods and issues,
 - (e) disseminates 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) on-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).

7. Written Outputs Anticipated in 1994

Diagana, B. and V. Kelly, "Income Diversification in Agricultural Resource Use at the Household Level in Rural Senegal." (July 1994)

Kelly, V., J. Duncan, and T. Reardon. "Links between Household Liquidity and Peanut Productivity in the Senegalese Peanut Basin: Implications for Design of Credit and Nonfarm Income Policies."

Kelly, V., and T. Reardon. "Factors that Differentiate High and Low Productivity Farmers in the Senegalese Peanut Basin: Implications for Policy."

Kelly, V., T. Reardon, and M. Gaye. "Changing Patterns of Peanut Seeding Densities: Implications for Maintaining Soil and Seed Quality."

Kelly, V., and E. Crawford. "Average and Marginal Products of Land, Labor, and Variable Inputs in Senegalese Rainfed Agriculture — Implications for Agricultural Policy." Planned for summer 1994.

Diagne, A., and V. Kelly. "Income Productivity, Transactions, and Consumption Patterns in the Peanut Basin and Senegal Oriental." Handbook of Descriptive Statistics for Policy Analysts.

Savadogo K., T. Reardon, and K. Pietola. "Farm-Level Patterns and Determinants of Productivity in Burkina Faso." MSU International Development Paper, projected June 1994. This will also be published by University of Ouagadougou in French.

Uwamariya, L., J. Kangasniemi, and T. Reardon. "La Productivité Agricole au Rwanda, 1989-1990." DSA publication, projected April 1994. This will also be published as an international development paper in English by MSU.

Clay, D., and T. Reardon. "Conservation and Fertility Investments by Farm Households in Rwanda." To be submitted to *Economic Development and Cultural Change*, August 1994.

Savadogo, K., T. Reardon, and K. Pietola. "Agricultural Productivity in Burkina Faso." To be submitted to *Agricultural Economics* (IAAE journal), August 1994.

Jayne, T.S., Y. Khatri, C. Thirtle, B. Kupfuma, and T. Reardon, "Agricultural Productivity in Zimbabwe." Forthcoming MSU International Development Paper.

Jayne, T.S., Y. Khatri, C. Thirtle, B. Kupfuma, and T. Reardon. "Agricultural Productivity in Zimbabwe." To be submitted to *Agricultural Economics* (IAAE journal), fall 1994.

Byiringiro, F., and T. Reardon. "Agricultural productivity in Rwanda." To be submitted to *Agricultural Economics* (IAAE journal), August 1994.

Reardon and other researchers involved in the productivity work, will do a synthesis of the cross-country results in summer 1994 for publication and for synopsis and wide distribution to USAID missions in Africa, and presentation at African research and policy fora.

Fact Sheet · FOOD ACCESS SYNTHESIS STUDIES

▶ FOOD SECURITY II COOPERATIVE AGREEMENT ◀
between
▶ U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT and MICHIGAN STATE UNIVERSITY ◀
▶ TIME PERIOD: OCTOBER 1992 - DECEMBER 31, 1995 ◀

1. Cooperating Institutions

Agency for International Development, Africa Bureau, Office of Analysis, Research and Technical Support, Division of Food, Agriculture and Resource Analysis, Food Security and Productivity Unit (AFR/ARTS/FARA/FSP)

Agency for International Development, Global Bureau, Economic Growth Center, Office of Economic and Institutional Development, Resource Access and Development Division (G/EG/EID/RAD)

Department of Agricultural Economics, Michigan State University (MSU)

2. Researchers Involved

AFR/ARTS/FARA/FSP: Tom Olson, Brian D'Silva, and George Gardner.

G/EG/EID/RAD: Gloria Steele.

African Collaborators: Munhamo Chisvo (University of Zimbabwe, Zimbabwe), Mulinge Mukumbu (Egerton University, Kenya), Anastase Murekezi, Jean-Leonard Ngirumwami and Pierre Rwalinda (Division of Agricultural Statistics (DSA), Ministry of Agriculture, Rwanda), Tobias Takavarasha (Ministry of Lands, Agriculture, and Rural Resettlement, Government of Zimbabwe), and other African collaborators to be identified.

MSU Researchers: Thomas Jayne, Valerie Kelly, Thomas Reardon, James Shaffer, John Staatz, David Tschirley, Michael Weber; Tracey Boyle, Josue Dioné, Patrick Diskin, Cynthia Donovan, Mattias Lundberg, Cynthia Phillips, Larry Rubey, Paul Strasberg and other MSU researchers to be identified.

Other Collaborators: Christopher Delgado (IFPRI).

3. Objective of the Research

Development Fund For Africa (DFA) Target 3.4 calls for evaluating strategies to enhance food security among vulnerable groups in Africa. The FS II Cooperative Agreement has a related priority applied research theme of studying ways to improve food access, especially through actions which stimulate income growth. To help inform DFA and FS II objectives, the cross-country synthesis research on (1) enhancing food access by the poor through market-oriented strategies; (2) promoting access to food in rural areas through market reform strategies 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; and (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 analysis 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

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, Cote d'Ivoire, 11-16 October 1992. Collaboration with ISRA (Senegal) IFPRI, and WARDA.

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).

Policy recommendations from research in Zimbabwe (partially funded by ARTS/FARA/FSP) were discussed during 3-day policy retreat attended by senior officials of Government of Zimbabwe, May 1993. Several important policy recommendations were adopted by the GOZ in June 1993.

T. Reardon. "Income Diversification in the WASAT, and Implications for Food Security and Natural Resource Management." (Kindly presented by Josue 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.

Presentation of food access findings and policy implications at the Cornell/USAID-sponsored Conference on Food and Nutrition Policy in Accra, Ghana, March 1994.

A condensed version of the Zimbabwe research partially funded by ART/FARA/FSP will be presented at the Cornell-sponsored Conference on Food and Nutrition Policy in Sub-Saharan Africa, Accra Ghana, March 1994, and has been submitted for presentation at the International Conference of Agricultural Economists, August 1994, Harare, Zimbabwe.

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.

Proposal submitted to present food access findings and policy implications at the Second Biennial International Conference on African Economic Issues, Arusha Tanzania, October 11-14, 1994.

"Consumer Preferences and Self-Targeting Opportunities to Promote Access to Food Among Vulnerable Groups in Zimbabwe." (Lawrence Rubey). Ongoing. Results to be presented in various policy fora in Zimbabwe, 1994.

5.2. Oral Presentations to AID/Washington and USAIDs

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.

April 1993: Collaborators workshop at USAID/Washington. Presentations made by Weber, Jayne, and Tschirley on ongoing food access research and findings.

June 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.

December 1993: Collaborators workshop at USAID/Washington. Presentations made by Weber, Jayne, and Tschirley on ongoing food access research and findings.

5.3. Oral Presentations to Other Food Security Research and Policy Groups

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

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)

OECD/Development Center, France (Invited presentation by Thomas Reardon, income diversification in West Africa), Feb 1993; Food Access Activity

T. Reardon 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."

Staatz, J., T. Jayne, D. Tschirley, J. Shaffer, J. Dione, 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, "Post-Green Revolution Agricultural Development Strategies in the Third World: What Next?"

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.

T. Reardon, "Income Diversification and Food Security in the Sahel." Invited presentation at FEWS/Tulane in New Orleans, March 4, 1994.

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.

5.4. Collaborative Research Activities with African Researchers

- 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.
- 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.

- 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.
- 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.

5.5. MSU Backstop Trips to African Research Sites

- 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.
- 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.
- 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.
- 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.
- January 1994, Patrick Diskin: two weeks in Lusaka, Zambia working with researchers from 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.

5.6. Supplemental Field Surveys Undertaken in Africa

- Kenya: household survey of urban consumers to assess the potential for market-based reforms to promote food access by vulnerable groups in Kenya, conducted October 1993.
- Zambia: household survey of urban consumers to assess the potential for market-based reforms to promote food access by vulnerable groups in Zambia, conducted January 1994.
- These 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

- "Maize Marketing and Pricing in Zimbabwe: Implications for Food Security," T.S. Jayne, J. Shaffer, M. Weber, Munhamo Chisvo, and L. Rubey, forthcoming. An earlier version of this report was included in the Government of Zimbabwe's "Proposals for the Liberalization of Agricultural Pricing and Marketing and the Development of Efficient and Competitive Marketing Boards," May 1993.
- "The Pricing and Distribution of Yellow Maize Food Aid in Mozambique: An Analysis of Alternatives," David Tschirley, Cynthia Donovan, Rui Benfica, Michael Weber, and Paul Strasberg, MSU Department of Agricultural Economics Staff Paper 93-69, September 1993.
- "Improving Household Access to Food in Sub-Saharan Africa: Issues and Strategies," T.S. Jayne, David Tschirley, John Staatz, Jim Shaffer and Michael T. Weber. First draft sent to ARTS/FARA/FSP in October 1993. Outside reviews completed and second draft underway in February, 1994.
- "Targeting Assistance to the Food Insecure," Mattias Lundberg and Patrick Diskin. First draft sent to ARTS/FARA/FSP in October 1993. Outside reviews completed and second draft underway in February, 1994. PN-ABS-733
- "Linkages among Food Availability, Access, Consumption and Nutrition: Implications for Food Security Research and Policy," Patrick Diskin. First draft sent to ARTS/FARA/FSP in October 1993. Outside reviews completed and second draft under way in February 1994.
- "Consumer Maize Meal Preferences in Zimbabwe: Survey Results and Policy Implications," Lawrence Rubey. A Final Report prepared for Ministry of Lands, Agriculture and Water Development, and USAID/Harare. December 1993. PN-ABS-944
- "Consumer Preferences and Self-Targeting Opportunities to Promote Access to Food Among Vulnerable Groups in Zimbabwe," Lawrence Rubey. Ongoing.
- "Nutrition-Relevant Actions in Zimbabwe: 1980-92," Julia Tagwireyi, T.S. Jayne, and Mungai Lenneiy. United Nations Report, Administrative Committee on Coordination — Subcommittee on Nutrition, Geneva, prepared in collaboration with the International Food Policy Research Institute, forthcoming, 1994.

• **Outreach Documents for Food Security Research and Policy Community**

- 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. PN-ABT-290
- Jayne, T.S., and E. Nuppenau. "Maize Market Reform in Zimbabwe." *Food Policy*, Vol. 18, No. 4 (August 1993): 308-315. PN-ABT-293
- 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. PN-ABT-292
- Reardon, T., A. Fall, V. Kelly, C. Delgado, P. Matlon, 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. PN-ABT-296
- 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. PN-ABT-297.
- 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. PN-ABT-298
- 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. PN-ABT-299
- 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. PN-ABS-780
- Staatz, J., T. Jayne, D. Tschirley, J. Shaffer, J. Dione, 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, Johns Hopkins University Press. PN-ABS-774
- Jayne, T.S., M. Chisvo and M. Rukuni. "Zimbabwe's Food Insecurity Paradox." In Carl Eicher and Mandivamba Rukuni (eds), in *Beneath the Surface of Zimbabwe's Maize Revolution*, University of Zimbabwe Press, forthcoming, 1994.
- Jayne, T.S., and M. Rukuni. "Managing Zimbabwe's Food Economy in the 1990s." In Carl Eicher and Mandivamba Rukuni (eds), in *Beneath the Surface of Zimbabwe's Maize Revolution*, University of Zimbabwe Press, forthcoming, 1994.

Tschirley, D., C. Donovan, and M. Weber. "Food Aid, Food Markets, and Food Security: Lessons from Mozambique." Submitted to *Food Policy*, 1994.

6. Overview of On-Going 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, 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), 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 for the Rwanda case, and effort will be made to do cross-country comparison with other evidence in Eastern Africa.

7. Written Outputs Anticipated in 1994

Report on "Trends and Determinants of Real Food Price Changes in Africa," based on parallel case studies of six African countries. This report represents collaborative research between IFPRI and MSU.

"Graduated Maize Pricing in Zimbabwe," Cynthia Phillips, Robert Myers and T.S. Jayne.
Proposal submitted for presentation at the Second Biennial International Conference on African Economic Issues, Arusha Tanzania, October 11-14, 1994.

- "Consumer Preferences and Self-Targeting Opportunities to Promote Access to Food Among Vulnerable Groups in Zimbabwe," Lawrence Rubey. Ongoing. Results to be presented in various policy fora in Zimbabwe, 1994.
- "The Importance and Determinants of Women's Non-Agricultural Income Strategies in Rural Burkina Faso," E.Z. Gabre-Madhin (Stanford FRI Ph.D. candidate), C. Donovan (MSU Ag Econ Ph.D. candidate), and T. Reardon. Manuscript under preparation for Food Security II Food Access work. Planned draft May 1994.
- "Early Warning Indicators to Promote Timely Responses to Food Availability Crises, Using FEWS Data," Cynthia Phillips and John Staatz.
- "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." Pat Diskin, D.T. Tschirley, T. Jayne, and Michael Weber. Ongoing.
- "Maize Market Reform and the Potential for Self-Targeting of Vulnerable Groups through the Market: A Case Study of Kenya," Mulinge Mukumbu and T.S. Jayne. Ongoing. Several reports will be prepared during Mulinge Mukumbu's mini-sabbatical at MSU during March 1994. Results will be presented at various policy fora in Kenya.
- "Consumer Preferences and the Design of Food Market Reform Policies: Lessons from East and Southern Africa," T.S. Jayne, Lawrence Rubey, Mulinge Mukumbu, David Tschirley and Munhamo Chisvo.
- "Determinants of Nutritional Status under Structural Adjustment: a Health Production Function Approach," Munhamo Chisvo and T. Jayne. The report will be prepared during Chisvo's mini-sabbatical scheduled for February-March 1994.

Fact Sheet • STRATEGIC PLANNING STUDIES

► FOOD SECURITY II COOPERATIVE AGREEMENT—DEPARTMENT OF AGRICULTURAL ECONOMICS, MSU ◄
► ACTIVITY TIME PERIOD: OCTOBER 1, 1992- SEPTEMBER 31, 1995 ◄

1. Cooperating Institutions

Agency for International Development, Africa Bureau, Office of Analysis, Research and Technical Support, Division of Food, Agriculture and Resource Analysis, Technology Development and Transfer Unit (AID/AFR/ARTS/FARA/TDT)

Agency for International Development, Global Bureau, Economic Growth Center, Office of Economic and Institutional Development, Resource Access and Development Division (AID/G/EG/EID/RAD)

Southern African Center for Cooperation in Agricultural Research and Training (SACCAR)
Institut du Sahel-PRISAS Project.

Department of Agricultural Economics, Michigan State University (MSU)

USAID Missions and Host Country Collaborating Institutions:

- USAID/Nairobi
 - Kenya Agricultural Research Institute (KARI)
- USAID/Bamako
 - *Institut d'Economie Rurale, Département de Planification et Economie Rurale* (IER/DPAER)
 - Strengthening Research Planning and Research on Commodities Project (SPARC)
- USAID/Kigali
 - Ministry of Agriculture of Rwanda

2. Researchers Involved

ARTS/FARA/TDT: Jeff Hill

G/EG/EID/RAD: Gloria Steele

Host Country and MSU In-Country Researchers:

Kenya: A.N. Mbabu, Leader Socio-Economics unit at KARI

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

Rwanda: Anastase Murekezi and other researchers of the Ministry of Agriculture; Dan Clay, David Tardif-Douglin (MSU In-Country Researchers)

Sahel: Josué Dioné, (PRISAS-INSAH) and researchers of the Sahel region participating in PRISAS programs

MSU Campus Backstop: Jim Oehmke, Jim Shaffer, John Staatz, Duncan Boughton, and Michael Weber

3. Objectives of the Research

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 present at the national, regional and international level with the potential for a broad-based and sustainable impact on 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.

4. Research 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; (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

- **Working Papers**

Boughton, Duncan, and Shaffer, James. "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 Staatz, John. "Using the Commodity Subsector Approach to Design Agricultural Research: The Case of Maize in Mali." Submission to the Contributed Papers Session at the 1994 meetings of the International Association of Agricultural Economists, Harare. Department of Agricultural Economics, Michigan State University, November 1993. PN-ABS-947

Boughton, Duncan, and Témé, Bino. "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

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

5.2. Oral Presentations—Strategic Planning/Subsector Analysis Topics

- Shaffer presentation in October 1993, to DSA officials/researchers on the ARTS/FARA/TDT strategic planning/subsector research project.
- Boughton and Staatz presentations on subsector approach at PRISAS workshop in Bamako, Mali, November 1993.
- Shaffer and Boughton presentations to IER researchers during Subsector Economics Workshop in Mali in December 1993.
- 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.

5.3. Short-Term Training/Collaborative Research—Strategic Planning Topics

- IER analysts working in the Commodity Subsector Economics Program and MSU researcher (Shaffer and Boughton) planned and implemented a workshop for IER commodity specialists on strategic planning in a subsector framework.

5.4. Long Term Training

- Duncan Boughton is expected to complete a PhD 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.

5.5. MSU Backstop Trips Strategic Planning/Subsector Analysis Topics

Kenya: April 1994 (Shaffer and Weber)
Rwanda: April 1994 (Shaffer and Weber)
Rwanda: October 1993 (Shaffer)
Mali: December 1993 (Shaffer and Boughton)
Mali: January 1994 (Boughton)
Cote d'Ivoire: November 1993 (Oehmke)
Ghana: November 1993 (Oehmke)
Kenya: November 1993 (Oehmke)
Uganda: November 1993 (Oehmke)
Zambia: November 1993 (Oehmke)

5.6. Examples of Impact of Project Findings—Strategic Planning Topics

- IER scientists who participated in the 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 subsector in Mali. More effective cooperation among scientists to diagnose and research priority problems in commodity subsectors is expected to yield a high payoff.
- 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/SPAR 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.

6.1 On-Going Research Activities

- In November and December of 1993, work began at MSU and in Mali on the first country study of using the commodity subsector framework as a strategic planning tool. Collaborative research and in-service training assistance to IER in the first 6-12 months of its new subsector economics program is described below in the anticipated output section.

- Preliminary planning and discussions with USAID Mission and host country research management officials were begun in selected East and Southern Africa TDY missions by FS II staff Shaffer Crawford, Oehmke and Jayne. A preliminary agreement has been reached for selected activities in Rwanda and expected activities are described below.
- In the first 3 months of 1994, one or more additional proposals will be developed for presentation to host country NARS and to USAID missions.
- In December 1993 plans were begun with officials of the Institute of the Sahel (PRISAS) for participating in a Sahel Regional workshop (November 1994) for researchers and administrators of NARS of the Sahel.

7. Outputs Anticipated

- Mali-Support of Commodity Subsector Economics Program. A technical assistance proposal has been worked out with IER in Mali. The proposal is for three years of backstop assistance in the planning and conduct of research of the Commodity Subsector Economics program. An agreement with SPARC, IER and MSU is expected to be worked out in March of 1994. The IER plan calls for conducting at least one major commodity subsector study each of the first three years. The strategic planning project will prepare materials to assist IER in the conduct of these studies as well as providing hands on participation in the planning and conduct of the studies. The lessons learned from participation will be included in materials developed for broader dissemination.
- Sahel-Regional Workshop and Follow-up. A workshop is planned for November of 1994 in cooperation with PRISAS. Those invited to the workshop will include researchers and administrators from the NARS of the Sahel and some representatives of marketing and policy agencies of the region. The program will be designed: to contribute to an improved understanding of the uses of subsector analysis in strategic planning for food systems development; 2. to explore the possibilities for doing subsector analysis and strategic planning on a multi-country basis within the Sahel region; 3. to identify potential for mutually beneficial cooperation and exchanges between researchers and research agencies in conducting commodity research and initiating technological and institutional innovations; and 4. to identify policy, technological and marketing barriers to improved performance of regional commodity sectors.

Consistent with the strategy of the agreement, research leaders from Mali will report on their commodity subsector economics program and reports from commodity studies from other countries will be included in the workshop. The MSU group will prepare materials specifically designed to contribute to the objectives of this workshop.

- Rwanda-Support of Commodity Studies. MSU was providing technical assistance to the Ministry of Agriculture's agricultural statistics and policy unit (DSA) which was supported by AID/Kigali. The DSA plan of work includes initiating and continuing work on at least 5 commodity studies. It has been agreed in principle to add resources to expand the scope of work consistent with the

Strategic Planning agreement. This is to include a workshop and other activities designed to promote greater cooperation among technical agricultural researchers and economic and policy analysts of the Ministry in promoting improved performance of commodity systems. (Activity on hold due to evacuation of USAID status in Rwanda.)

- East African Country Project. A proposal will be developed with a country AID mission and Government organizations for a country project consistent with the objectives of the strategic planning agreement. Emphasis will be placed upon capacity building through participation in planning, analysis and outreach designed to improve performance of individual commodity sectors and the food system. Initial discussions have been held with officials in 5 countries.
- Multicountry-Regional Maize Subsector Study Proposal. A proposal will be developed to undertake a multicountry maize subsector study. Maize is the major food crop in many African countries. Considerable research on national maize systems has been done. Maize seed is an important commodity traded within Africa. There are many problems common to country maize subsectors and most importantly the systems are interdependent. There appears to be potential for significant improvement in performance of the regional maize subsector through cooperation in technical research, more uniformity in marketing and trade regulations, compatibility in policy and the like. The proposal will seek funding to support maize subsector studies in specific countries and for integration across countries.
- Regional Workshop Presentations. Participation in regional meetings of agricultural research administrators, leaders and policy officials will be undertaken to promote discussion and understanding of the objectives, approach, potential benefits and institutional options in adopting subsector analysis and strategic planning. Results from studies will be reported. Initially presentations will be in combination with material dealing with technology impact assessment, as in the case of two presentations planned for workshops with SACCAR in Southern Africa scheduled for March 1994.
- Papers and Professional Presentations Anticipated

Reports from specific commodity studies.

Papers for workshop presentations.

A paper describing the scope and method of the strategic planning -commodity subsector program.

Two papers for the meetings of the International Association of Agricultural Economists in Aug. 1994 as part of a program on economic transformation in agriculture. These papers will deal with Africa.

At least two additional papers dealing with subsector analysis and strategic planning topics for professional meetings in Africa.

***Strategic Planning
Studies***

A summary paper with conclusions useful in considering investments in research, support for research organizations and food and agricultural development policy.

Fact Sheet · TECHNOLOGY ASSESSMENT STUDIES

▶ FOOD SECURITY II COOPERATIVE AGREEMENT—DEPARTMENT OF AGRICULTURAL ECONOMICS, MSU ◀
▶ ACTIVITY TIME PERIOD: OCTOBER 1, 1992- SEPTEMBER 31, 1995 ◀

1. Cooperating Institutions

Agency for International Development, Africa Bureau, Office of Analysis, Research and Technical Support, Division of Food, Agriculture and Resource Analysis, Technology Development and Transfer Unit (AID/AFR/ARTS/FARA/TDT)

Agency for International Development, Global Bureau, Economic Growth Center, Office of Economic and Institutional Development, Resource Access and Development Division (AID/G/EG/EID/RAD)

International Service for National Agricultural Research (ISNAR)

Southern African Center for Cooperation in Agricultural Research and Training (SACCAR)

Department of Agricultural Economics, Michigan State University (MSU)

USAID Missions and Host Country Collaborating Institutions:

- USAID/Yaoundé
 - *Institut de Recherches Agronomiques* (IRA)
 - National Cereal Research and Extension Project (NCRE)
 - Purdue University Bean/Cowpea CRSP Team
 - Bean/Cowpea CRSP Management Office at Michigan State University
- USAID/Nairobi
 - Kenya Agricultural Research Institute (KARI)
 - University of Nairobi, *Institute for Development Studies* (IDS)
- USAID/Lilongwe
- USAID/Bamako
 - *Institut d'Economie Rurale, Département de Planification et Economie Rurale* (IER/DPAER)
- USAID/Niamey
 - *Institut National de la Recherche Agronomique du Niger* (INRAN)
- USAID/Kampala
 - Makerere University, Faculty of Agriculture and Forestry (MUFAF)
 - Ministry of Agriculture, Animal Industries and Fisheries (MOAAIF)
 - Manpower for Agricultural Development Project (MFAD)
- USAID/Lusaka
 - Ministry of Agriculture, Food and Fisheries (MOAFF)
 - Rural Development Studies Bureau (RDSB), University of Zambia

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 Frañan (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

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

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

_____. "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

_____. "The Potential Returns to Oilseeds Research in Uganda: The Case of Groundnuts and Sesame." East Lansing, MI: Department of Agricultural Economics, Michigan State University. 1993.

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.

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). PN-ABQ-056. East Lansing, MI: Department of Agricultural Economics, Michigan State University. 1993.

Sterns, J.A., and R. Bernsten. "Assessing the Impact of Cowpea and Sorghum Research and Extension in Northern Cameroon." PN-ABS-731. Department of Agricultural Economics, Michigan State University, East Lansing, MI. 1993.

• Working Papers

General:

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

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

_____. "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

Crawford, Eric W. "Constraints to the Development and Use of Improved Technology." MSU Staff Paper No. 93-64. Department of Agricultural Economics, MSU. 1993.

_____. "Assessment of the Economic Impact of Agricultural Research: Summary of Studies Conducted by Michigan State University." MSU Staff Paper No. 93-66. PN-ABS-777. (Also available in French. PN-ABS-778.) Department of Agricultural Economics, MSU. 1993.

Daniels, Lisa, et al. "Assessment of Agricultural Research: Ex-Post, Ex-Ante, and Needed Methodologies." Paper presented at A.I.D./Washington Africa Bureau (TR/ARD) sponsored workshop on returns to investment in agricultural research, April 24-25, 1990, Washington, DC.

_____. "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

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

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.D., October 14-16, 1992. PN-ABT-274

Oehmke, James F., and James A. Sterns. "Assessing Returns to Research: Implications for Sub-Saharan Africa." MSU Staff Paper No. 92-43.

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 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

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.

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. 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:

Balirwa, Elizabeth. "Maize Research and Production in Uganda." July 1992.

Bashaasha, Bernard. "Soybean Research in Uganda." June 1992. PN-ABT-271

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.

_____. "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

_____. "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

Turiho-Habwe, Godfrey. "The Accomplishments and Constraints of Sunflower Research in Uganda." July 1992. PN-ABT-275

Zambia:

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

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

• **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

_____. "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

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).

Presented results of literature review at USAID-sponsored workshop on returns to agricultural research, Washington, D.C., April 24-25, 1990.

Conducted workshop on issues and methods of assessing the impact of agricultural research, Department of Agricultural Economics, MSU, June 1991.

Presented Bernsten/Staatz paper on "The Role of Subsector Analysis in Setting Research Priorities," at 1992 ADO Conference.

Organized, with AID/ARTS/FARA, the Symposium on the Impact of Technology on Agricultural Transformation, Washington, D.C., October 14-16, 1992.

Presentation of the draft symposium synthesis report to AID/ARTS/FARA by James Oehmke, Washington, D.C., November 24, 1992.

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.

Presented paper on constraints to development and use of improved technology, at AID/TDT Collaborators Workshop, Washington, D.C., seminar, June 28-30, 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 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 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.

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

- David Makanda completed a PhD 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.
- 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.)
- Rita Laker-Ojok completed a PhD 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.
- Julie Howard is expected to complete a PhD 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.
- Lydia Neema Kimenye completed a PhD 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.
- Duncan Boughton is expected to complete a PhD 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.

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. On-Going Research Activities

- Editing and publishing of final ROR reports, and proceedings of October 1992 Symposium.
- 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.

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.

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MSU INTERNATIONAL DEVELOPMENT PAPERS

- IDP 1. *Research on Agricultural Development in Sub-Saharan Africa: A Critical Survey* by Carl K. Eicher and Doyle C. Baker. 1982. 346 pp. (CDIE reference PN-AAL-692)
- IDP 1F. *Etude Critique de la Recherche sur la Developpement Agricole en Afrique Subsaharienne* par Carl K. Eicher et Doyle C. Baker. 1982. 345 pp. (CDIE reference PN-ABA-840)
- IDP 2. *A Simulation Study of Constraints on Traditional Farming Systems in Northern Nigeria* by Eric W. Crawford. 1982. 136 pp. (CDIE reference PN-AAP-677)
- IDP 3. *Farming Systems Research in Eastern Africa: The Experience of CIMMYT and Some National Agricultural Research Services, 1976-81* by M.P. Collinson. 1982. 67 pp. (CDIE reference PN-AAM-826)
- IDP 4. *Animal Traction in Eastern Upper Volta: A Technical, Economic and Institutional Analysis* by Vincent Barrett, Gregory Lassiter, David Wilcock, Doyle Baker, and Eric Crawford. 1982. 132 pp. (CDIE reference PN-AAN-262)
- IDP 5. *Socio-Economic Determinants of Food Consumption and Production in Rural Sierra Leone: Application of an Agricultural Household Model with Several Commodities* by John Strauss. 1983. 91 pp. (CDIE reference PN-AAM-031)
- IDP 6. *Applications of Decision Theory and the Measurement of Attitudes Towards Risk in Farm Management Research in Industrialized and Third World Settings* by Beverly Fleisher and Lindon J. Robison. 1985. 106 pp. (CDIE reference PN-AAU-740)
- IDP 7. *Private Decisions and Public Policy: The Price Dilemma in Food Systems in Developing Countries* by G. Peter Timmer. 1986. 58 pp. (CDIE reference PN-AAZ-091)
- IDP 8. *Rice Marketing in Senegal River Valley: Research Findings and Policy Reform Options* by Michael L. Morris. 1987. 89 pp. (CDIE reference PN-AAZ-092)
- IDP 9. *Small Scale Industries in Developing Countries: Empirical Evidence and Policy Implications* by Carl Liedholm and Donald Mead. 1987. 141 pp. (CDIE reference PN-AAX-734)
- IDP 10. *Maintaining the Momentum in Post-Green Revolution Agriculture: A Micro-Level Perspective from Asia* by Derek Byerlee. 1987. 57 pp. (CDIE reference PN-AAZ-093)
- IDP 11. *The Economics of Smallholder Maize Production in Zimbabwe: Implications for Food Security* by David D. Rohrbach. 1989. 100 pp. (CDIE reference PN-ABD-549)

WORKING PAPERS

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- IDWP 2. *Credit Agricole et Credit Informel dans la Region Orientale de Haute-Volta: Analyse Economique, Performance Institutionnelle et Implications en Matiere de Politique de Developpement Agricole* by Edouard K. Tapsoba. 1982. 125 pp. (CDIE reference PN-AAZ-527)
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