

# Fact Sheet • MALI MAIZE SUBSECTOR STUDY

• FOOD SECURITY II COOPERATIVE AGREEMENT •  
between  
• U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT and MICHIGAN STATE UNIVERSITY •  
• IN-COUNTRY TIME PERIOD: JUNE 1992-JANUARY 1994<sup>1</sup>

## 1. Cooperating Institutions

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

## 2. Researchers Involved

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

## 3. Objectives of the Research

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

## 4. Research Approach

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

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<sup>1</sup> Version of Fact Sheet: November 1995

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

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

## **5. Outputs to Date**

### **5.1 Oral Presentations for African Researchers and Policy Makers**

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

- **Within Mali:**

Several presentations to researchers at IER headquarters in Bamako.

Informal briefing to USAID, Mali, January 1994.

PRMC Technical Committee, January 1994.

IER Commodity Subsector Economics Program Design Workshop, December 1993.

Informal briefing to USAID, Mali, December 1993.

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

Informal briefing to USAID, Mali, May 1993.

PRMC Technical Committee, January 1993.

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

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

PRMC Technical Committee, June 1992.

Informal briefing to USAID, Mali, January 1992.

- **Outside of Mali:**

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

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

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

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

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

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

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

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

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

## **5.2 Written Outputs**

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

Boughton, Duncan and Bruno Henry de Frahan. 1994. "Agricultural Research Impact Assessment: The Case of Maize Technology Adoption in Southern Mali." MSU International Development Working Paper No. 41. East Lansing: Michigan State University. PN-ABS-729.

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

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

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

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

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

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

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

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

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

Boughton, Duncan and Bino Témé. 1992. "Farming Systems and Markets-Combining Analytical Frameworks for the Development of Commodity Subsectors: The Case of Maize in

Southern Mali." Selected Paper, *12th Annual Farming Systems Symposium, The Association for Farming Systems Research/Extension and Agricultural Economics Staff Paper No. 92-67*. East Lansing: Michigan State University, September. PN-ABS-923.

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

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

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

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

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

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

Boughton, Duncan, Bino Témé, Ousmane Sanogo, John Staatz, Thomas Reardon, and Eric Crawford. (forthcoming). "Development Strategies for Maize in Mali: Using a Commodity Subsector Perspective to Increase the Impact of Agricultural Research and Development." *MSU International Development Working Paper*.

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

Boughton, Duncan, John M. Staatz, and James D. Shaffer. 1994a. "Analyzing the Impact of Structural Adjustment on Commodity Subsectors: Currency Devaluation and the Maize

- Subsector in Mali." Agricultural Economics Staff Paper No. 94-71. East Lansing: Michigan State University, October.
- Boughton, Duncan, John M. Staatz, and James D. Shaffer. 1994b. "From Pilot Study to Commodity Subsector Economics Program: Institutionalizing a Market-Oriented Approach to Agricultural Research in Mali." Agricultural Economics Staff Paper No. 94-74. East Lansing: Michigan State University, November.
- Dibley, David, Duncan Boughton, and Thomas Reardon. 1994. "Processing and Preparation Costs for Rice and Coarse Grains in Urban Mali: Subjecting an *Ipse Dixit* to Empirical Scrutiny." Agricultural Economics Staff Paper No. 94-34. East Lansing: Michigan State University, June. PN-ABS-879. Also published in Food Policy, Vol. 20, No. 1, (February 1995): pp. 41-50.
- Boughton, Duncan. 1993. "Applying Subsector Analysis: Maize in Mali." In *USAID Conference on Agricultural Marketing and Agribusiness in Africa: The Proceedings*. Washington, D.C.: USAID, Bureau for Africa, Office of Analysis, Research and Technical Support, Technical Paper No. 7, May, pp. 96-99.
- Staatz, John. 1993. "Subsector Development and the Role of Technology." In *USAID Conference on Agricultural Marketing and Agribusiness in Africa: The Proceedings*. Washington, D.C.: USAID, Bureau for Africa, Office of Analysis, Research and Technical Support, Technical Paper No. 7, May, pp. 91-96.
- Bernsten, Richard H. and John M. Staatz. 1992. "The Role of Subsector Analysis in Setting Research Priorities." Agricultural Economics Staff Paper No. 92-104 and Bean/Cowpea CRSP Socioeconomics Working Paper No. 92-4. East Lansing: Michigan State University, December. Paper presented at the USAID sponsored *Symposium on the Impact of Technology on Agricultural Transformation in Africa*, Washington D.C., October 14-16. PN-ABS-772.
- Staatz, John M. and Richard H. Bernsten. 1992. "Technology Development and Household Food Security." Agricultural Economics Staff Paper No. 92-39 and Bean/Cowpea CRSP Socioeconomics Working Paper No. 92-2. East Lansing: Michigan State University, June. Paper presented at the *Workshop on Social Science Research and the CRSPs*, University of Kentucky, Lexington, Kentucky, June 9-11. PN-ABQ-172.
- **Thesis by Research Team Member**

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

### **5.3 Short Term Training and Collaborative Research Activities in Mali**

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

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

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

### **5.4 Long Term Training**

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

### **5.5 MSU Backstop Trips in Support of Mali Team**

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

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

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

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

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

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

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

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

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

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

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

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

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

## **5.6 Examples of Impact of Project Findings/Information**

As part of its Long-Term Strategic Plan for Agricultural Research in Mali, in 1991 IER had proposed using the subsector approach as a tool for organizing its agricultural research program. However, prior to the maize study, IER had never carried out a subsector study. The project therefore provided a "hands-on" practical experience that served as the basis for the detailed design of the subsector economics subprogram developed by IER in 1993. Under this subprogram, IER will launch studies on the rice, groundnut, and livestock subsectors in 1994.

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

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

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

## **5.7 Surveys Undertaken in Mali**

Surveys undertaken during the study include:

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

A rapid reconnaissance of the fresh maize subsector.

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

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

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

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