

UNITED STATES

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INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

**AGENCY FOR INTERNATIONAL DEVELOPMENT
OUAGADOUGOU, BURKINA FASO**

UNITED STATES ADDRESS
OUAGADOUGOU (I.D.)
DEPARTMENT OF STATE
WASHINGTON D.C. 20520

INTERNATIONAL ADDRESS
U.S.A.I.D.
C/O AMERICAN EMBASSY
B.P. 35
OUAGADOUGOU BURKINA FASO

June 17, 1987

Dr. Traoré Alfred
Dept. of Chemistry, Biology and Microbiology
Institute of Rural Development
Ouagadougou

Subject: Grant No. 936-5542-G-SS-7017-00

Dear Dr. Traoré:

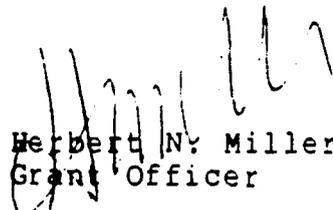
Pursuant to the authority contained in the Foreign Assistance Act of 1961, as amended, the Agency for International Development (hereinafter referred to as "A.I.D." or "Grantor") hereby grants to you, Dr. A. Traoré, (hereby referred to as "Grantee"), the sum of \$134,145 to provide support for the implementation of AID/SCI Proposal 6.041 entitled the "Influence of Interaction Between Sulfur Cycle Reducing Bacteria and Methanogenic Bacteria on Low Land Rice Production" as described in the Grant Schedule and the Attachment 2, entitled "Program Description".

The Grant is effective and obligation is made as of the date of this letter and shall apply to commitments made by the Grantee in furtherance of program objectives during the period beginning with the effective date and ending December 31, 1990.

The Grant is made to you on the condition that the funds will be administered in accordance with the terms and conditions as set forth in Attachment 1, the Schedule, Attachment 2, entitled "Program Description", and Attachment 3 entitled "Standard Provisions", which have been agreed to by your organization.

Please sign the original and seven (7) copies of this letter to acknowledge your receipt of the Grant, and return the original and six (6) copies to USAID.

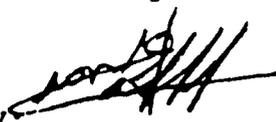
Sincerely,


Herbert N. Miller
Grant Officer

Attachments:

1. Schedule
2. Program Description
3. Standard Provisions

Acknowledged:

By: 

Dr. Alfred Traoré
Principal Collaborator


Fund Available: _____
Controller: John J. Muleja
Appropriation: 72-1171021.6
Budget Allotment: DDSA-87-10600-KG11
Project No. 936-5542 (6.041)
Total Estimated Amount: \$134,145
Total Obligated Amount: \$134,145
Obligation No.: 7361308

Attachment I

Schedule

A. Purpose of Grant

The purpose of the Grant is to provide support for the implementation of research proposal AID/SCI 6.041 entitled "Influence of Interaction Between Sulfur Cycle Reducing Bacteria and Methanogenic Bacteria on Low Land Rice Production", as more specifically described in Attachment 2 to this Grant entitled "Program Description".

B. Period of Grant

1. The effective date of the Grant is June 24, 1987. The expiration date of the Grant is December 31, 1990.

C. Amount of Grant and Payment

1. AID hereby obligates the amount of \$134,145 for the purposes of this Grant.

2. The Grantee contribution to the project will consist of support given on an "in-kind" basis in the form of salaries, equipment and supplies to be provided by the University of Ouagadougou.

3. Payment shall be made to the Grantee in accordance with procedures set forth in Attachment 3-Standard Provision No. 11, entitled "Payment - Periodic Advance".

D. Financial Plan

The following is the Financial Plan for the Grant, including local cost financing items. Revisions to this Plan shall be made in accordance with Standard Provision of the Grant, entitled "Revision of Financial Plans."

Grant Financial Plan

Cost Element	1st Year	2nd Year	3rd Year	Total
Salaries	\$2,000	\$ 2,000	\$2,000	\$6,000
Equipment	\$55,900	-	-	\$55,900
Materials and Supplies	\$11,500	\$7,000	\$7,000	\$25,500
Travel	\$7,000	\$7,000	\$7,000	\$21,000
Consulting and Training	\$5,500	\$4,000	\$4,000	\$13,500
Indirect Costs	\$12,195	-	-	\$12,195
TOTALS	\$94,145	\$20,000	\$20,000	\$134,145

E. Reporting and Evaluation

1. Progress Reports: Interim Progress Reports are required every six months except for the last six month period which will be pre-empted by a Final Report. Each report must be submitted to USAID/Burkina for distribution to AID/SCI, Room 720, SA-18; AID Reference Center, PPC/CDIE/DI, Room 105, SA-18; and the AID/W Technical Backstop Office, S&T/AGR. Interim Progress Reports are due within 30 days following each six month period. Interim Progress Reports may be submitted in French if accompanied by English summary.

2. Final Report: The Principal Collaborator should submit a Final Report to USAID/Burkina no later than the completion date of the research which is currently estimated as December 31, 1990. The Final Report distribution is: 3 copies to USAID/Burkina, 3 copies to AID/SCI, 3 copies to AID Reference Center and 1 copy to S&T/AGR. The Final Report should be sufficiently detailed to substantiate findings and to permit scientific evaluation of research.

3. Evaluation: Project Evaluation will be based on analysis of Final Report and other information deemed appropriate by the Project Manager. Final Evaluation should be completed within 90 days of Final Report submission.

F. Special Provisions

1. The following sections of the Optional Standard Provisions to this Grant do not apply:

- 3. Payment-Cost Reimbursement
- 8. Subagreements
- 10. Patent Rights
- 16. Voluntary Population Planning
- 17. Protection of the individual as a Research Subject
- 18. Care of Laboratory Animals
- 21. Title to and Care of Property (U.S. Government Title)
- 22. Title to and Care of Property (Cooperating Country Title).

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Program Description

OVERALL AIM AND SPECIFIC OBJECTIVES

The accumulation of sulfide produced by the sulfur cycle reducing bacteria and acetate by most of the sulfate reducers has been shown to be highly hindering to rice production. Localized in the same reduced layer, the methanogenic bacteria may be used to outcompete the sulfate and sulfur-reducing bacteria for hydrogen and to reduce acetate to methane. The overall aim of this proposal, therefore, is to improve low land rice fields using a microbiological control of sulfide and acetate accumulation. Specifically the research will:

- evaluate sulfide toxicity in low land rice fields using a microbiological test based on the interrelations between sulfur cycle reducing bacteria and methane producing bacteria.

- investigate the physiology and biochemistry of the interaction between these two types of bacteria in low land ecosystems.

- investigate the use of methanogens and/or sulfate reduction inhibitors to reduce sulfide production in rice fields and improve nitrogen fixation.

RELEVANCE TO DEVELOPMENT

The food situation is so dramatic in many developing countries that much more needs to be done to improve agriculture and to develop higher productivity to achieve food self-sufficiency.

Rice is a staple food for more than 1.5 billion persons around the world. In the Sahelian region of Africa, due to the drought, only low lands can be used for rice production. In these ecosystems, salts, organic and sulfur compounds carried and concentrated sustain a very active sulfur cycle producing and accumulating high amounts of sulfide which hamper considerably rice production by limiting germination and growth and requiring high amounts of fertilizers.

In Burkina Faso and Mali, low lands which are highly toxified have to be abandoned. The research aim is to prevent soil toxification by microbial sulfide by restoring toxified soils and improving nitrogen fixation.

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