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CLASSIFICATION  
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE N-Fixation Research and Training - NAS		2. PROJECT NUMBER 931-0247.11	3. MISSION/AID/W OFFICE DS/AGR/TSWM <span style="float:right">5p</span>
		4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY)	
		<input type="checkbox"/> REGULAR EVALUATION <input checked="" type="checkbox"/> SPECIAL EVALUATION	

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY <u>76</u>	B. Final Obligation Expected FY <u>76</u>	C. Final Input Delivery FY <u>79</u>	A. Total \$ <u>88,000</u> B. U.S. \$ <u>88,000</u>	From (month/yr.) <u>June 1976</u> To (month/yr.) <u>October 1978</u> Date of Evaluation Review <u>10/15/79</u>

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Extend grant without additional funding for 18 months (approximate)	Frederick-AID DOW - NAS	April 1, 1979

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input checked="" type="checkbox"/> Other (Specify) PAF
<input type="checkbox"/> Financial Plan	<input checked="" type="checkbox"/> PIO/T	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

A. <input checked="" type="checkbox"/> Continue Project Without Change
B. <input type="checkbox"/> Change Project Design and/or Change Implementation Plan
C. <input type="checkbox"/> Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

Initial RF Date 6 Mar 79  
 Dr. Lloyd R. Frederick  
 DS/AGR/TSWM  
 DS/AGR:M Mozynski hcm Date 7 Mar 79

Initial DFP Date 3/7/79  
 Dr. Dean F. Peterson  
 Director, DS/AGR

12. Mission/AID/W Office Director Approval

Signature Tony Babb  
 Typed Name Tony Babb DAA/FN/DSB  
 Date 3/6/79

17. OUTPUTS

<u>Type of exchange</u>	<u>Proposed</u>	<u>Achieved</u>
U.S. Advisory senior scientists	6 per/yr	6 per/2 yr
U.S. Senior Scientists-short term (4-8 week)	1 per/yr	3 per/2 1/3 yr
U.S. postdoctorals long term (6-12 months)	2 per/yr	1 per/ 2 1/3 yr
Brazilian scientists short term (1-8 weeks)	2 to 4 per/yr	6 per/ 2 1/3 yr

18. PURPOSE

To provide, support, develop and expand the Brazilian research program on nitrogen fixation and to assist in the establishment of a training program in modern research techniques in nitrogen fixation for Brazilian students.

To support the National Academy of Sciences (NAS) participation in a program of international cooperation in training and research on nitrogen fixation in the tropics to be conducted by the National Research Council's (NRC) Board on Science and Technology for International Development (BOSTID) in cooperation with the Brazilian National Research Council (CNPq). Purposes appear to be appropriate yet.

19. GOAL/SUBGOAL

Not pertinent at this time.

20. BENEFICIARIES

Brazilian scientists have improved techniques and equipment not previously available to conduct studies on biological nitrogen fixation in the tropics. These studies should lead to improved agricultural cropping systems for the farmer.

21. UNPLANNED EFFECTS

Not pertinent at this time.

22. LESSONS LEARNED

Not pertinent at this time. Also see attached comments by Black.

23. SPECIAL COMMENTS

Comments by Dr. Clanton G. Black

### 13. SUMMARY

The project is reasonably functional with the training program in Brazil going well, the exchange of Brazilian scientists is working, but the U.S. post-doctoral program is not operational and needs attention. Due to the slowdown in the post-doctoral program, NAS should continue the activities under an extension of the grant without additional funds.

### 14. EVALUATION METHODOLOGY

A team evaluation was held to assess progress, to identify problems and to advise on future actions. The team met with Dr. M.G.C. McDonald Dow at the Joseph Henry Bldg., Washington, D.C. on 16 October 1978. Materials provided the team included (1) Scope of Work, (2) Grant Document, (3) 76-77 annual report, (4) Example of travel request, (5) Brief and detailed reports and (6) Manuscript on research findings. Dr. Dow reported orally to the team and answered questions. The team members attending were:

1. Clanton C. Black, Prof. of Biochemistry, University of Georgia
2. Mr. Blair Allen, Agronomist, AID/LAC/DR/RD
3. Charles Sloger, biochemist/microbiologist, USDA/SEA/AR, Beltsville

Others who received the materials but were unable to attend the meeting were:

1. Dr. Ralph W.F. Hardy, Cen. Res. & Dev. Dept., E.I. DuPont de Nemours and Co., Wilmington, Del
2. Wm Rodgers, Chief, AID/DS/AGR/AB

The team evaluation report is contained in the attached letter from Dr. Black to Mr. Blair Allen.

### 15. EXTERNAL FACTORS

Two Brazilian regulations have had a negative impact on the project. One is the considerable difficulty experienced in obtaining a Brazilian visa. Also, U.S. post-doctorals can not bring Brazilian money (from their stipends paid by Brazil CNPq) out of Brazil, hence not able to use it to pay debts or expense at home.

### 16. INPUTS

Generally satisfactory, except that young post-doctorals are difficult to obtain due to Brazilian restrictions above, excellent job market in the U.S., and the relatively "high risk" that the research will pay off only in the longer term.

# THE UNIVERSITY OF GEORGIA

## Department of Biochemistry

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October 24, 1978

Mr. Blair Allen  
AID/LAC/DR/RD  
Department of State  
Washington, D.C. 20523

Subject: Review of "Nitrogen Fixation Research and Training" grant with Brazil.  
Grant No. AID/ta-G-1329.

Location and Date of Review: With Dr. M.G.C. McDonald Dow from National Acad. Sci.,  
Joseph Henry Building, Washington, D.C.  
October 16, 1978.

From our review I wish to make the following comments and evaluations.

- I. The program is designed to obtain complimentary help on problems in biological nitrogen fixation, identified by Brazilian scientists, by furnishing help from the U.S. and other countries.
- II. Two research problems have been identified.
  - a) is there  $N_2$ -fixation in grasses?
  - b) minor element problems exist in Brazilian soils for legume nitrogen fixation.
- III. Then a problem has been recognized in training research personnel so they can work on  $N_2$  fixation in tropical soils and plants.
- IV. (Regarding item IIa) Clearly this hypothesis has not been proven. They must do the  $^{15}N$  studies. Bacteria do associate with roots; but whether or not they fix nitrogen which finally is used by plants in a beneficial manner has not been proven.

(Regarding item IIb) This problem seems amenable to solution. Good technical agronomic research assistance will solve this problem. The Brazilians need to accept assistance from good field-experienced agronomists on this soil fertility problem in legume fertilization.
- V. (Regarding item III) The training program is operational and seems very worthwhile. This intensive course using outside instructors seems to be strong. Seemingly some valuable work and influence could come from this training outside of Brazil in that (by using Spanish as a common language) scientists from Central and other South American countries could participate without a serious language problem. We should recognize that setting up and operating this training course at Km 47 required much administrative work to insure that it was (is) successful

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- VI. The post doctoral program (young persons going to Brazil) is not operating satisfactorily. These problems seem to exist:
- a) It takes about 9 months to make a simple purchase of scientific supplies or equipment in Brazil.
  - b) Post doc. can not bring Brazilian money out nor use it to pay debts back home (out of their Brazilian salary).
  - c) The equipment is relatively poor at Km 47; but each post doc. can spend \$4,000 on new equipment in the U.S. and take it along as baggage and leave it in Brazil.
  - d) There is excess bureaucracy associated with obtaining a visa which should be reduced to a manageable level.
  - e) The Brazilian's should recognize that to a young post doc. in the U.S. a study of associative grass/N<sub>2</sub> fixation is very high risk research. The odds are the project will not work. A post doc. can not afford such high risk research without a payoff since they likely will want to find a job back in the U.S.
- VII. The question was raised; can we obtain a measure of the Brazilian contribution (in \$) to the exchange program as a measure of their good interest and support of the exchange program.
- VIII. At this time NAS seems to be the choice as a contractor; but if a renewal is contemplated in 1.5 years, an alternative may develop within the Title XII Program or the International Foundation.

In summary, I think the grant should be extended to cover about 1.5 more years from this date. The project is reasonably functional with the training program going well, the exchange of Brazilian scientists is working, but the post doctoral program is not operational and needs attention.

Sincerely,



Clanton C. Black  
Professor of Biochemistry

cc: Lloyd Frederick

CCB: ljr