

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT DATA SHEET	1. TRANSACTION CODE <input checked="" type="checkbox"/> A = Add <input type="checkbox"/> C = Change <input type="checkbox"/> D = Delete	Amendment Number 1	DOCUMENT CODE 3
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2. COUNTRY/ENTITY Interregional	3. PROJECT NUMBER 931-1311
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4. BUREAU/OFFICE S&T/AGR/RNR <input type="checkbox"/> 10	5. PROJECT TITLE (maximum 40 characters) <input type="checkbox"/> Soils Management (CRSP)
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5. PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY 09 29 86	7. ESTIMATED DATE OF OBLIGATION (Under "B." below, enter 1, 2, 3, or 4) A. Initial FY <input type="checkbox"/> 8 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 B. Quarter <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 C. Final FY <input type="checkbox"/> 8 <input checked="" type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9
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8. COSTS (\$000 OR EQUIVALENT \$1 =)						
A. FUNDING SOURCE	FIRST FY 81			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	675	75	750	10,350	2,500	12,850
(Grant)	(675)	(75)	(750)	(10,350)	(2,500)	(12,850)
(Loan)	(675)	()	()	()	()	()
Other U.S.			250	4,280		4,280
1.						
2.	250					
Host Country		100	100		1,000	4,000
Other Donor(s)						
TOTALS	675	175	1,100	14,630	6,500	21,130

9. SCHEDULE OF AID FUNDING (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) ARDN	141	963		750	-	0	-	12,850	-
(2)									
(3)									
(4)									
TOTALS				750	-	0	-	12,850	-

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each) 021 092 093 080	11. SECONDARY PURPOSE CODE 121
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12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)			
A. Code	R/AG	XII	
B. Amount	12,850	12,850	

13. PROJECT PURPOSE (maximum 480 characters)

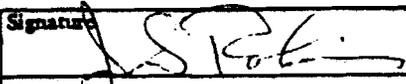
To conduct soil research in three agroecological zones, the humid tropics, semi-arid tropics and the tropical acid savannas, to increase the productivity of these marginal soils on an agronomically, economically and ecologically sound basis.

14. SCHEDULED EVALUATIONS Interim MM YY MM YY Final MM YY 1 1 8 4 1 1 8 6	15. SOURCE/ORIGIN OF GOODS AND SERVICES <input checked="" type="checkbox"/> 000 <input type="checkbox"/> 941 <input checked="" type="checkbox"/> Local <input type="checkbox"/> Other (Specify)
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16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a 2 page PP Amendment)

The purpose of the Soil Management CRSP is enlarged to include research on soils of tropical acid savannas as well as the humid tropics and semi-arid tropics.

BEST AVAILABLE COPY

17. APPROVED BY	Signature:  Title: S&T/FA, J.S. Robins	18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY
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PROJECT AUTHORIZATION

NAME OF COUNTRY: Interregional
NAME OF PROJECT: Soil Management Collaborative Research Support Program
NUMBER OF PROJECT: 931-1311

Section 2 of the original Project Authorization is hereby amended to include the acid savannas and will read as follows:

"2. The project will conduct soil research in three agro-ecological zones, the humid tropics, the semi-arid tropics and the acid savannas, to increase the productivity of these marginal soils on an agronomically, economically and ecologically sound basis."

This change will be accomplished by modifying or delaying proposed activities in the humid tropics. It will not require additional funds for the grant.

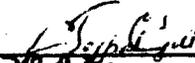
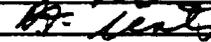

J. S. Robins

Agency Director
for Food and Agriculture
Bureau for Science and Technology
Date: 6/15/82

Attachments:

Action Memo Fiester to Robins
Letter Apple to Malcolm 11/2/81
PAF (Project No. 931-1311) signed 9/15/81
PAF (Project No. 931-1311) for signature
Revised Program Description for CRSP
Revised Budget

Clearances:

S&T/AGR/RNR, T. Gill		Date	<u>4/1/82</u>
S&T/AGR, M. Mozynski		date	<u>5/3/82</u>
S&T/PO, B. Chapnick		date	<u>6/11/82</u>
S&T/AGR, D. Fiester		date	<u>5/3/82</u>

S&T/AGR/RNR:JMalcolm:bb:235 1275:11/16/81:3/29/82:3/31/82

MAY 5 1982

ACTION MEMORANDUM FOR THE AGENCY DIRECTOR FOR FOOD AND AGRICULTURE, BUREAU FOR SCIENCE AND TECHNOLOGY

FROM: S&T/AGR, Donald R. Fiester



Problem: Authorization to include research on soils of the acid savannas has been requested by the Management Entity of the Soil Management CRSP.

Discussion: Dr. Apple of North Carolina State University, the Management Entity for the Soil Management CRSP, has requested that the Scope-of-work of the grant be amended to permit initiation of research on soils of the acid savannas in FY 1982. This action was at the request of the Board of Directors of the Soil Management CRSP after consultation with the Principal Investigators. A copy of the request is attached.

The extension of the program to the third priority zone was prompted by a notation by the A.I.D. Administrator requiring the feasibility of such an initiative by December 31, 1981. A copy of the PAF and supporting documentation is also attached.

The extension will be accomplished by reducing the intensity of the research on soils of the humid tropics in Peru. Cornell will become the lead university for the acid savanna zone with North Carolina playing a supporting role. The site of the research will be Planaltina, near Brasilia, Brazil. This is the only feasible site without an increase in the grant. The excellent support offered by EMBRAPA, the Brazilian agricultural research agency is the key factor. No investment in laboratory or shop and storage buildings will be required. EMBRAPA will have six units available for housing research assistants. All of the necessary farm machinery is already on site. Equipment purchases will be limited to transport and specialized instruments to measure the progress of the research. EMBRAPA also plans to finance some of the graduate student participants in the research program, perhaps even some third country nationals.

Cornell is already one of the CRSP grantee institutions. It has a long standing interest and established expertise in the soils of the acid savannas. It also has a firm and cordial working relationship with the Government of Brazil and EMBRAPA. The recognition accorded to and the growth of the Planaltina experiment station is largely attributable to the excellent work done there by Cornell and North Carolina in the mid-1970s.

The soil research to be undertaken in Brazil on the acid savannas is shown in the revised program description which is attached. Since earlier work established the need and value of lime and phosphorus in managing the oxisols of the acid savannas, the emphasis will be on improving efficiency, reducing costs and finding a better match between crops and soil nutrient status.

The major impact, other than some reduction in the level of effort, on the research in the humid tropics will be to cut out the work on perennials, since North Carolina will need to take over the nutrient status monitoring and the fertilizer management research that Cornell had proposed in Peru. There will be no change in CRSP activities in Indonesia.

The personnel Cornell had proposed to send to Peru will now go to Brazil and the campus efforts will be to backstop the work in the acid savannas rather than the humid tropics. This will amount to two and one half person years per year when the program is at full strength.

As stated, there will be no change in the overall budget for the CRSP. For the current funding period, through April 30, 1983, \$179,000 will be shifted from work in the humid tropics in Peru to work on the acid savannas in Brazil.

Recommendation: That you sign the attached PAF with the change in the Scope-of-Work of the Soil Management CRSP to include research on the soils of the acid savannas without an increase of funds.

Attachments:

Letter Apple to Malcolm 11/2/81
PAF (Project No. 931-1311) signed 9/15/81
PAF (Project No. 931-1311) for signature
Revised Program Description for CRSP
Revised Budget

Clearances:

S&T/AGR/RNR, T. Gill	<u>T. Gill</u>	Date 4/1/82
S&T/AGR, J. Walker	<u>J. Walker</u>	Date 9/10/82
S&T/PO, B. Chapnick	<u>B. Chapnick</u>	Date 6/11/82

S&T/AGR/RNR:JMalcolm:bb:Ext 235 1275:11/16/81:3/29/82:3/31/82



North Carolina State University

School of Agriculture and Life Sciences

International Programs
Box 5968, Raleigh 27650
(919)737-2665

November 2, 1981

MEMORANDUM

TO: Dr. John Malcolm

FROM: J. L. Apple 

SUBJECT: Report of Action Taken by the Technical Committee and the Board of Directors of the Soil Management CRSP

I wish to report to you a formal action taken by the Technical Committee and the Board of Directors of the Soil Management CRSP during its meeting in Raleigh on 28-29 October 1981. This action relates to a change in the plan of work for the Soil Management CRSP. The formal recommendation is as follows:

"The Technical Committee of the Soil Management CRSP recommends unanimously that the primary emphasis of the Cornell component of the Soil Management CRSP be shifted from the humid tropics, as specified in the grant document, to the acid savannas, with operational headquarters at the CEPAC Center, Brazilia, Brazil. This action is taken in view of the recommendation of AID/Washington that the Soil Management CRSP examine the feasibility of including acid savanna work under the project and also in view of a letter from EMBRAPA which pledges strong host-country support for a collaborative program in the acid savannas of Brazil."

This motion, which was passed by the Technical Committee on 28 October 1981, was reviewed and endorsed unanimously by the Soil Management CRSP Board of Directors on 29 October 1981. The Management Entity supports this recommendation.

The intent of this action is not to abrogate the support role of Cornell University in the humid tropics or that of N. C. State in the acid savannas as set forth in the approved Soil Management CRSP grant. Each university would pursue such supporting-role activities as appropriate and to the extent that financial resources are available.

We wish to stress the fact that this recommended action is in response to the directive included in the "Project Authorization" document signed by the Administrator of AID on 15 September 1981. This recommended change in

Dr. John Malcolm
Page 2
November 2, 1981

the plan of work is feasible within the scope of the present budget, but it should be pointed out that the work in the acid savannas of Brazil under this redirected activity would be at a lower level than that proposed in the original program proposal submitted to AID on 14 October 1980. Even though the acid savanna work in Brazil would be funded at a level below that originally recommended, it is still considered feasible and potentially of high productivity because of: (1) the previous work done there by Cornell University and NCSU and (2) the high level of host-country support which has been pledged through EMBRAPA (see attached letter).

In view of the unanimity in support of this recommendation and the budget constraints already imposed on the Soil Management CRSP, the Management Entity further requests that this action be considered as satisfying the Administrator's directive for calling together the External Panel to examine this question.

As Management Entity for the Soil Management CRSP, we shall take no action to issue a sub-grant to Cornell University until we have a response from AID/Washington on this proposal. We thank you for your consideration of this request, and we look forward to an early response.

jb

Enclosure

cc: Dr. C. B. McCants
Soil Management CRSP Board
Soil Management CRSP Technical Committee

EMBRAPA - CPAC

C.CIRC. 511/81.

Brasília, 30 de julho de 1981.

Dr. DOUGLAS LATHWELL
Agronomy Department
Cornell University
Ithaca N.Y. 14 853

Dear Dr. Lathwell,

Today I talked with Dale Ritchey, who conveyed your concern about the Title XII project. We certainly understand the problems which can come up in getting final approval and financing for such research ventures, and we remain hopeful for the opportunity of working out a cooperative program in one way or another.

In the recent meeting of our Technical Council, long-range goals for the period 1982-1985 were defined. The fertility aspect (in the broadest sense) of Cerrados research is one of the areas we wish to strengthen the most. Therefore, even in the event that the Title XII program does not materialize, we are certainly interested in the possibility of having agronomy graduate students from Cornell do their thesis work here at CPAC. With the move to our new buildings, we plan to have six living units available in our Training Center right here. Since we also have our own food service, living costs for a student from Cornell should be very low, since both rent and food can be partly subsidized by CPAC.

NOV 02 1981

If the students involved are from countries which have savannahs with agricultural potential, there is a further possibility for the development of a program of this type. Itamarati (the Brazilian Foreign Relation Service) has expressed interest in facilitating PhD study programs that would allow such students to do their thesis research at CPAC while studying at any university. With the backing of Itamaraty (or other Agency) obtaining visas should be greatly facilitated. They might even be able to provide maintenance support for the student while in Brazil. If Cornell could pay transportation costs for the student and his major professor, it should be possible to have an economically viable program that would be of benefit to all concerned.

Sincerely,



Elmar Wagner

Head

c.c. Dr. José M. P. Memória
Dr. Pedro Sanchez

EW/cas1.

PROJECT DATA SHEET

1. TRANSACTION CODE

A = Add
C = Change
D = Delete

Amendment Number

2. COUNTRY/ENTITY
Interregional

FILE

3. PROJECT NUMBER
931-1311

4. BUREAU/OFFICE

S&T

36

5. PROJECT TITLE (maximum 40 characters)

Soils Management - CRSP

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)

MM DD YY
06 15 86

7. ESTIMATED DATE OF OBLIGATION
(Under "B" below, enter 1, 2, 3, or 4)

A. Initial FY 81 B. Quarter 4 C. Fiscal FY 85

8. COSTS (\$000 OR EQUIVALENT \$1 =)

A. FUNDING SOURCE	FIRST FY 1981			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	675	75	750	10,350	2,500	12,850
(Grant)	(675)	(75)	(750)	(10,350)	(2,500)	(12,850)
(Loan)	()	()	()	()	()	()
Other U.S.						
1. Universities	250		250	4,280		4,280
2.						
Host Country		100			4,000	4,000
Other Donor(s)						
TOTALS	925	175	1,000	14,630	6,500	21,130

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROXIMATE RELATIONSHIP	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH CODE 1. Grant 2. Loan	D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
			1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) AFN	141	963			12,850		12,850	
(2)								
(3)								
(4)								
TOTALS					12,850		12,850	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

021 092 093 080

11. SECONDARY PURPOSE CODE

121

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code R/AG XII
B. Amount 12,850 12,850

13. PROJECT PURPOSE (maximum 480 characters)

14. SCHEDULED EVALUATIONS

Interim MM YY MM YY Final 1 1 B 6

15. SOURCE/ORIGIN OF GOODS AND SERVICES

000 941 Local Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment.)

17. APPROVED BY

Signature

Curtis Farrar

Title

Acting, SAA S&T, Curtis Farrar

Date Signed

MM DD YY

August 25, 1981

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY

Project Authorization

Name of Country: Interregional

Name of Project: Soil Management Collaborative Research Program

Number of Project: 931-1311

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the centrally-funded project entitled "Soil Management Collaborative Research Program" involving planned obligations of not to exceed \$12,850,000 in grant funds over a five-year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project.

2. The project will conduct research in two agro-ecological zones, the humid tropics and the semi-arid tropics, to increase the productivity of these marginal soils on an agronomically, economically and ecologically-sound basis.

3. The contract grant or other agreements which may be negotiated and executed by the officer(s) to whom such authority is delegated shall be subject to the following essential terms and covenants and major conditions together with such other terms and conditions as A.I.D. may deem appropriate.

- a. Each developing country where training, research or other assistance takes place shall be deemed to be a cooperating country for the purpose of permitting local cost financing.
- b. Goods and services, except for ocean shipping, financed by A.I.D. under the project shall have their source and origin in a cooperating country or in the United States except as A.I.D. may otherwise agree in writing.
- c. Ocean shipping financed by A.I.D. under the project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States.

- d. Upon signature of this grant by SER/CM, A.I.D. may disburse (grant) funds as reimbursement for eligible costs incurred on or after September 25, 1981 provided that evidence of such costs is furnished to A.I.D. in form and substance satisfactory to A.I.D.

WML 15 SEP 1981 **
M. Peter McPherson
Administrator

Clearance:

DAA/S&T, BChapnick (Acting) Bc Date: 8/26
S&T/PO, AKMorales 13 Date _____
S&T/AGR, JWalker J. Walker Date 26 VIII 81
GC, JBolton JCB Date 9/12/81
A-AA/PPC, LSmucker LS Date 9-10-81

**Ask the CRSP Management Entity, North Carolina State University, to ask its External Advisory Committee to explore the costs and benefits of inclusion of research on acid savanna soils beginning in FY 1982, and to report back to AID by December 31, 1981. The Committee should also re-examine at some point the merits of initiating research on steep lands soils.

11 SEP 1981

ACTION MEMORANDUM FOR THE ADMINISTRATOR

THRU: ES

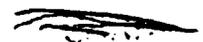
FROM: SAA/S&T, Curtis Farrar (Acting) 

Problem: Your approval is required to establish a Collaborative Research Support Program (CRSP) on Soil Management. In order to obligate FY 1981 funds for this CRSP, your signature on the attached PAF is required by September 4, 1981.

Background: The purpose of this research program is to develop techniques for soil management to increase the productive capacity of soils in the tropics and to foster the transfer of such knowledge throughout a network of institutions having similar interests. This CRSP is to focus upon the soil management problems of the humid and semi-arid tropics since these comprise some 75% (4,000 million hectares) of the soils in the tropics. The 200 million hectares of newly cleared land that the FAO estimates will be needed within the next 20 years to meet the food demands in the developing countries will be carved largely from the zones that are the target of this CRSP. Most of this land will be marginal land having serious soil-related crop production constraints. This CRSP will conduct the research necessary to develop the soil management technologies necessary to enhance the food production capacities of the soils in these two major tropical zones.

This soil management CRSP will be conducted jointly by four U. S. universities and four host country institutions located in Peru, Indonesia, Upper Volta and Niger. The research in the humid tropics will be conducted in the Amazon of Peru and the transmigration areas of Sumatra, Indonesia by North Carolina State University (NCSU), the University of Hawaii, Cornell University, Peru's Instituto Nacional de Investigación Agraria and three Indonesian institutions: The Soils Research Institute, the Central Research Institute for Agriculture and the Bogor Agricultural University. Work in the semi-arid tropics will be conducted by Texas A&M University in conjunction with ICRISAT's West Africa Program in Upper Volta and Niger. The work presently being done by NCSU at Yurimaguas in Peru will be continued under this CRSP.

The program will be administered by NCSU, the management entity, under the direction of a board of directors and with the assistance of a technical committee and an external review committee. The estimated AID contribution to this Soils Management CRSP is \$12,850,000 over the first five years. Of this amount, planned fiscal year obligations are as follows: FY 1981, \$750,000; FY 1982, \$2.1 million; FY 1983, \$3.0 million; FY 1984, \$3.5 million; FY 1985, \$3.5 million. The CRSP will be funded within the overall budget for CRSPS as ~~per~~ determined by you.


28300

The original Soil Management CRSP proposal recommended to the Agency by the JRC, BIFAD and the TPCA included, in addition to the two agro-ecological zones mentioned, the acid savanna zone with field work in Brazil by Cornell University and North Carolina State and field work in Colombia by the University of Puerto Rico and Cornell. It also included research in the management of tropical steepplands with field work in the Dominican Republic by the University of Kentucky. Because of budget constraints, however, S&T/AGR decided, as recommended by BIFAD, to limit the program to two priority agro-ecological zones. Accordingly, work in the acid savanna zone and in tropical steepplands has been deleted.

Justification to the Congress: The project appears on page 61 of the S&T Data Base submitted to Congress. A technical notification is required, however, and is being made, to inform the Congress that we intend to obligate \$750,000 in FY 1981 rather than \$600,000 as previously reported.

Clearances Obtained: JRC, BIFAD and the TPCA concurred in the targetting of the research by agro-ecological zones, the selection of the zones and the priority order in which they were ranked. The Regional Bureaus, SER, PPC and LEG cleared on the original CRSP proposal.

Recommendation: That you sign the attached PAF.

Attachment:
PAF (Project No. 931-1311)

Clearance:

DAA/S&T, Bernard Chapnick (Actg.)	<u>BC</u>	Date: <u>8/26</u>
S&T/PO, Ann K. Morales	<u>Be</u>	Date:
S&T/AGR, John Malcolm	<u>JM</u>	Date: <u>8/26/81</u>
S&T/AGR, James Walker	<u>J Walker</u>	Date: <u>26 VIII '81</u>
A-AA/PPC, Larry Smucker	<u>LS</u>	Date: <u>7-11-81</u>
GC, John Bolton	<u>KCB</u>	Date: <u>9-12-81</u>

CS

10 SEP 1987

ACTION MEMORANDUM FOR THE ADMINISTRATOR

THROUGH: ES

FROM: AA/PPC - Larry Smucker (Acting) *LS*

Problem: We have been requested to review the proposal for a CRSP on Soils Management and related documentation, and to recommend action you should take.

Background: We have closely reviewed the enclosed documentation and the evolution of the Soils Management CRSP proposal.

We recognize that the paring down of research areas, from four to two agro-ecological zones, owing to budget constraints, involved some very difficult judgments and decisions. We believe nonetheless that the CRSP should be approved as described in the current proposal. This would permit initiation of work on the two priority areas, humid tropics and semi-arid tropics, as well as maintain the research capacities at the respective cooperating universities.

However, we recommend that the Soils CRSP Management Entity, North Carolina State University, have its External Advisory Committee re-examine the costs and benefits of additional research on the third priority area, acid savanna soils, and the possibility of including it within the program beginning in FY 1982. From an agronomic point of view, we believe the food production potential of research on acid savanna soils could be quite substantial, even relatively greater than on tropics soils. Furthermore, significant AID-supported capacity to do research on acid savanna soils has been established in the U. S. and in Latin America (see below). Finally, based on discussions with BIFAD staff, we believe a meaningful start on acid savannas work could be made in FY 1982 within the current budget constraint of \$2.1 million. The External Advisory Committee should examine this question.

We also believe the External Advisory Committee might at some point re-examine the place of steep lands research (the fourth priority area) in the future soils research picture. While it would not be possible to initiate such research within current funding limits, we believe steep lands loom as a critically important consideration in the total soils picture. This is due to the severely depleted nature of their productivity, and because of the increasing importance of the soils management problems attendant upon these lands.

SOIL MANAGEMENT CRSP
REVISED PROGRAM DESCRIPTION

March 19, 1982

A. OBJECTIVE

The objective of this CRSP is to develop and adapt improved soil management technology which is agronomically, ecologically and economically sound for developing countries of the tropics.

B. SCOPE-OF-WORK

1. Each institution participating in this Soil Management CRSP must plan and conduct its research in the context of the farming systems and economic realities of the areas in which it is working. Validation of the technology in other locations within the agro-ecological zones must be in cooperation with host country institutions.

2. Research in the Humid Tropics - Peru

Investigations with field work in Peru by North Carolina State University, Cornell University and the host institution, the Instituto Nacional de Investigacion y Promocion de Agricultura will do the following:

- a. Develop lower input annual crop production systems, while maintaining ongoing systems at the experiment station in Yurimaguas.
- b. Screen cultivars of currently grown or potential useful crop plants for tolerance to aluminum, low phosphorus levels and efficiency of plant nutrient use.
- c. Develop productive and persistent grass/legume pasture systems in cooperation with CIAT - Centro Internacional de Agricultura Tropical.
- d. Utilize biological fixation to the maximum possible extent, with emphasis on legume/Rhizobium combinations.
- e. Develop alternative land clearing methods, monitor changes in soil physical properties and devise means to correct soil compaction problems.

- f. Determine the potential of managed fallows.
- g. Validate systems of continuous farming technology with farmers in the area, selecting farms which represent the broadest possible range of typical soils.
- h. Characterize soils of all experimental sites, on the experiment station and on cooperating farms, according to U. S. Soil Taxonomy and the North Carolina Fertility/Capability System.
- i. Determine the application, utilization, depletion and accumulation of plant nutrients to anticipate problems, minimize input cost and to obtain a true measure of the value as well as the cost of supplying fertilizer, lime, and manure or compost.
- j. Disseminate information about the results of the research to research and extension organizations through the humid tropics.

3. Research in the Humid Tropics - Indonesia

The University of Hawaii and North Carolina State University working with the Soil Research Institute, Bogor Agricultural University and the Central Research Institute for Agriculture with field work in Sumatra, Indonesia will do the following:

- a. Characterize the soil of experimental sites in the vicinity of Rimbo Butang and Siciung II near the border between West Sumatra and Jambi provinces.
- b. Test the most promising methods of land clearing and select one or more appropriate for existing conditions.
- c. Monitor the effects of clearing methods on soil physical properties and identify or devise means for correcting undesirable effects.

- d. Determine the amounts of fertilizer and lime needed periodically to produce satisfactory crops and to sustain yields at levels profitable for the farmers. This research should include monitoring nutrient status of farmers' fields, input costs and returns from sales plus value of household food consumption.
- e. Evaluate the potential of grass/legume pasture mixtures in the farming system.
- f. Apply and assess the efficacy of soil conservation measures to typical areas.
- g. Find management systems which minimize energy needs to the extent possible given local limitations on land, horsepower and markets.
- h. Assess the likes, dislikes, needs and resources of farmers of the area to guide research in lines likely to be beneficial because the results will be adopted.
- i. Disseminate the results of the research to other areas in the humid tropics.

4. Research in the Semi-arid Tropics - Niger and Upper Volta

Investigations by Texas A & M University in cooperation with the International Crop Research Institute for Semi-arid Tropics and ministries of agriculture of the host countries will do the following:

- a. Characterize the soil at experimental and cooperative sites according to U.S. Soil Taxonomy and the Fertilizer/Capability Classification system.
- b. Devise and test methods to prevent or diminish soil crusting.
- c. Test and select the most practical means of soil erosion control, measuring losses to water and wind to the extent possible.
- d. Develop low input soil management systems to maximize the use of soil moisture.

e. Evaluate crops and Rhizobia for tolerance to high temperatures, drought, low phosphorus and acidity/soluble aluminum or manganese.

f. Determine how to monitor and adjust plant nutrient balances to sustain yields on a profitable basis.

g. Investigate alternatives to the system of shifting cultivation commonly practiced in the semi-arid tropics.

h. Conduct cooperative trials with farmers to obtain assessment of current and modified technology under normal management capability, obtain cost and return data as well as land and labor requirements from the farmers and, finally determine actual income in either cash or food over a period of years to obtain a realistic evaluation of current and new soil management systems which are introduced.

i. Disseminate results of research to other areas in the Semi-arid tropics

5. Research in the Acid Savannas - Brazil

Cornell University will work with Empresa Brasileira de Pesquisa Agropecuaria - EMBRAPA to carry out the following:

a. Seek less expensive sources of phosphate fertilizer and more effective ways to use new and conventional sources.

b. Screen cultivars and crops for efficiency in phosphorus uptake.

c. Examine ways to increase calcium movement into the subsoil increasing root depth and volume for more efficient nutrient absorption and greater soil water utilization.

d. Test rotations which hold promise for achieving the research goals outlined above in a less costly and more effective manner.

AID FUNDS
REVISED BUDGET - SUMMARY

PROJECT TITLE : CRSP - Soils Management
PROJECT NUMBER : 931-1311
GRANT NUMBER : DAN-1311-G-SS-1083-00

Funding Revised			
Program Components	FM: 9/25/81	FM: 1/25/82	
Universities	TO: 1/24/82	TO: 4/30/83	Total To Date
<u>Humid Tropics</u>			
University of Hawaii -			
Indonesia	\$ 150,000	\$ 514,000	\$ 664,000
North Carolina State Univ. -			
Indonesia	25,000	175,000	200,000
Peru	<u>275,000</u>	<u>982,000</u>	<u>1,257,000</u>
Sub Total	\$ 450,000	\$1,671,000	\$2,121,000
<u>Semi-Arid Tropics</u>			
Texas A & M Univ. -			
Niger	150,000	553,000	703,000
<u>Acid Savannas</u>			
Cornell University -			
Brazil	50,000	129,000	179,000
<u>Management Entity</u>			
	<u>100,000</u>	<u>347,000</u>	<u>447,000</u>
Total	\$ 750,000	\$2,700,000	\$3,450,000