

PD-ABF-929
82451 PDFCW433

Agency for International Development
Washington, D.C. 20523

SEP 20 1991

Mr. P. Roger Rowe
Deputy Director For Research
International Maize and Wheat Improvement Center
P. O. Box 6-641
06600 Mexico City, D.F.
Mexico

Subject: Grant No. DAN-4200-G-00-1065-00

Dear Mr. Rowe:

Pursuant to the authority contained in the Foreign Assistance Act of 1961 and the Federal Grant and Cooperative Agreement Act of 1982, as amended, the Agency for International Development (hereinafter referred to as "A.I.D.") hereby provides to International Maize and Wheat Improvement Center (hereinafter referred to as "CIMMYT" or "Grantee") the sum set forth in Section 1C.2. of Attachment 1 of this Grant to provide financial support for the program described in Attachment 2 of this Grant entitled "Program Description."

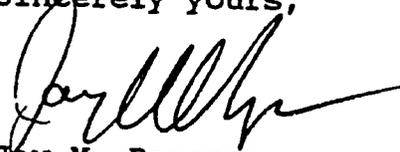
This Grant is effective as of the date of this letter and funds obligated hereunder shall be used to reimburse the Grantee for allowable program expenditures for the period set forth in Section 1B. of Attachment 1 of this Grant.

This Grant is made to the Grantee on the condition that the funds will be administered in accordance with the terms and conditions as set forth in the attachments listed under my signature below, which together constitute the entire Grant document and have been agreed to by your organization.

Please acknowledge receipt and acceptance of this Grant by signing all copies of this Cover Letter, retaining one copy for your files, and returning the remaining copies to the undersigned.

11

Sincerely yours,



Jay M. Bergman
Grant Officer
Chief, Food and Agriculture Branch
A.I.D./W Projects Division
Office of Procurement

Attachments:

1. Schedule
2. Program Description
3. Standard Provisions
4. Special Provision entitled "Restrictions on Lobbying"

ACKNOWLEDGED:

International Maize and Wheat Improvement Center

BY: 

TYPED NAME Dr. P. Roger Rowe

TITLE: _____ Deputy Director General for Research

DATE: 28 Nov 1991

FISCAL DATA

A. GENERAL

- A.1. Total Estimated A.I.D. Amount: \$319,754
- A.2. Total Obligated A.I.D. Amount: \$319,754
- A.3. Cost-Sharing Amount (Non-Federal): \$273,000
- A.4. Project No.: 936-4200
- A.5. A.I.D. Project Office: S&T/AGR/AP, J. Cohen
- A.6. Funding Source: A.I.D./W
- A.7. DUNS No.: 99-153-8802

B. SPECIFIC

- B.1.(a) PIO/T No.: 936-4200-13611458
- B.1.(b) Appropriation: 72-1111021.3
- B.1.(c) Allotment: 143-36-099-00-20-11
- B.1.(d) BPC: DDNA-91-13600-KG11
- B.1.(e) Amount: \$319,754

ATTACHMENT 1

SCHEDULE

1A. PURPOSE OF GRANT

The purpose of this Grant is to provide financial support for the program described in Attachment 2 of this Grant entitled "Program Description."

1B. PERIOD OF GRANT

The effective date of this Grant is the date of the Cover Letter and the estimated completion date is September 30, 1994. Funds obligated hereunder (see Section 1C.2. below) shall be used to reimburse the Grantee for allowable program expenditures incurred by the Grantee in pursuit of program objectives during such period. Funds obligated hereunder are anticipated to be sufficient for completion by the Grantee of the program described in Attachment 2 of this Grant by the estimated completion date.

1C. AMOUNT OF GRANT AND PAYMENT

1C.1. The total estimated amount of this Grant for its full period, as set forth in Section 1B. above, is \$319,754.

1C.2. A.I.D. hereby obligates the amount of \$319,754 for the purposes of this Grant during the indicated period set forth in Section 1B. above, thereby fulfilling A.I.D.'s funding requirements. A.I.D. shall not be liable for reimbursing the Grantee for any costs in excess of the obligated amount, except as specified in paragraph (f) of the Standard Provision of this Grant entitled "Revision of Grant Budget."

1C.3. Payment shall be made to the Grantee in accordance with procedures set forth in the Standard Provision of this Grant entitled "Payment - Periodic Advance," as shown in Attachment 3.

1C.4. The total estimated amount of the program described in Attachment 2 of this Grant is \$592,754, of which A.I.D. may provide the amount specified in Section 1C.1. above, and the Grantee will provide \$273,000 in accordance with Section 1L. below.

1D. GRANT BUDGET

1D.1. The following is the Budget for the total estimated amount of this Grant (see Section 1C.1. above) for its full period (see Section 1B. above). The Grantee may not exceed the total estimated amount or the obligated amount of this Grant, whichever is less (see Sections 1C.1. and 1C.2., respectively, above). Except as specified in the Standard Provision of this Grant entitled "Revision of Grant Budget," as shown in Attachment 3, the Grantee may adjust line item amounts as may be reasonably necessary for the attainment of program objectives.

Revisions to the budget shall be in accordance with Section 1C. above and the Standard Provisions entitled "Revision of Grant Budget" and "Cost Sharing (Matching)."

1D.2. Budget

<u>Cost Element</u>	<u>A.I.D.</u>	<u>Grantee/ Others (Non-Fed)</u>	<u>Total</u>
Salaries and Fringe	\$9,450	\$ 12,427	\$21,877
Travel, Transportation and Per Diem			
Staff	27,050	35,573	62,623
Technical Advisory Committee	13,500	-0-	13,500
Field Operations Support	156,025	133,325	289,350
Regeneration Supplies	103,375	19,625	123,000
Other Direct Costs	10,540	-0-	10,540
Indirect costs	<u>-0-</u>	<u>72,050</u>	<u>72,050</u>
TOTAL	319,754	273,000	592,754

5

1D.3. Inclusion of any cost in the budget of this Grant does not obviate the requirement for prior approval by the Grant Officer of cost items designated as requiring prior approval by the applicable cost principles (see the Standard Provision of this Grant set forth in Attachment 3 entitled "Allowable Costs") and other terms and conditions of this Grant, unless specifically stated in Section 1I. below.

1E. REPORTING

1E.1. Financial Reporting

1E.1.(a) Financial reporting requirements shall be in accordance with the Standard Provision of this Grant entitled "Payment - Periodic Advance," as shown in Attachment 3.

1E.1.(b) All financial reports shall be submitted to A.I.D., Office of Financial Management, PFM/FM/CMPD/DCB, Room 700 SA-2, Washington, D.C. 20523-0209. In addition, three copies of all financial reports shall be submitted to the A.I.D. Project Office specified in the Cover Letter of this Grant, concurrently with submission of the Quarterly Technical Reports (See Section 1E.2. below).

1E.1.(c) The frequency of financial reporting and the due dates of reports shall be as specified in the Standard Provision of this Grant referred to in Section 1E.1.(a) above.

1E.1.(d) The Grantee's financial reports shall include expenditures of A.I.D. Grant funds provided hereunder, as well as non-federal matching funds and any other contributions in accordance with Section 1L. below.

1E.2. Program Performance Planning and Reporting

1E.2.(a) Project Implementation Plan

Not later than sixty (60) days from the effective date of this Grant (see Section 1B. above), the Grantee shall prepare and submit to the A.I.D. Project Officer specified in the Cover Letter of this Grant three (3) copies of a project implementation plan, with critical path indicators (as described in Appendix A of A.I.D. Handbook 3), for the full term of this Grant.

1E.2.(b) Annual Workplans

1E.2.(b)(1) Not later than sixty (60) days following the effective date of this Grant (see Section 1B. above), the Grantee shall prepare and submit to the A.I.D. Project Officer specified in the cover letter of this Grant three (3) copies of a draft workplan which outlines the schedule of activities under the first year of this Grant. Thereafter, the Grantee shall submit three (3) copies of a draft annual workplan covering each successive year of this Grant not later than sixty (60) days prior to the start of the second and each subsequent year. Based on collaborative review, a final annual workplan will be approved by the A.I.D. Project Officer within thirty (30) days of the submission of the draft annual workplan.

1E.2.(b)(2) The annual workplan shall include the following information:

1E.2.(b)(2)(A) A list of activities to be undertaken during the workplan period, including testing at the various locations.

1E.2.(b)(2)(B) A statement of how the activities relate to the outputs and research priorities.

1E.2.(b)(2)(C) A projected beginning timeframe for the activities to begin.

1E.2.(b)(2)(D) A project ending timeframe for the completion of the activity.

1E.2.(b)(2)(E) A projected expenditure of person-months of input for each activity.

1E.2.(b)(2)(F) The projected stage of research or the projected outputs at the end of the annual workplan.

1E.2.(b)(2)(G) A statement indicating the provisions for complying with all relevant regulations dealing with biotechnology and genetically engineered biological products.

1E.2.(c) Quarterly Reports

The Grantee shall submit three (3) copies of brief quarterly program performance reports, which coincide with the financial reporting periods described in Section 1E.1. above, to the A.I.D. Project Office specified in the Cover Letter of this Grant. In addition, two copies shall be submitted to A.I.D., PPC/CDIE/DI, Washington, DC 20523-1802. These reports shall be submitted within 30 days following the end of the reporting period, and shall briefly present the following information:

1E.2.(c) (1) A comparison of actual accomplishments with the goals established for the period, the findings of the investigator, or both. If the output of programs can be readily quantified, such quantitative data should be related to cost data for computation of unit costs.

1E.2.(c) (2) Reasons why established goals were not met, if applicable.

1E.2.(c) (3) Other pertinent information including the status of finances and expenditures and, when appropriate, analysis and explanation of cost overruns or high unit costs.

1E.2.(d) Special Reports

Between the required program performance reporting dates, events may occur that have significant impact upon the program. In such instances, the Grantee shall inform the A.I.D. Project Officer as soon as the following types of conditions become known:

1E.2.(d) (1) Problems, delays, or adverse conditions that will materially affect the ability to attain program objectives, prevent the meeting of time schedules and goals, or preclude the attainment of work units by established time periods. This disclosure shall be accompanied by a statement of the action taken, or contemplated, and any A.I.D. assistance needed to resolve the situation.

1E.2.(d) (2) Favorable developments or events that enable time schedules to be met sooner than anticipated or more work units to be produced than originally projected.

1E.2.(d) (3) If any performance review conducted by the Grantee discloses the need for change in the budget estimates in accordance with the criteria established in the Standard Provision of this Grant entitled "Revision of Grant Budget," the Grantee shall submit a request for budget revision to the Grant Officer and the A.I.D. Project Officer specified in the Cover Letter of this Grant.

1E.2.(e) Annual Activity Reports

Within thirty (30) days following the annual anniversary date of this Grant, the Grantee shall submit to the A.I.D. Project Office specified in the cover letter of this Grant three (3) copies of an annual technical progress report which will be a description of the past year's activities, including technical, scientific, managerial, and fiscal information. The report shall include, both for each field site or subcontractor/subrecipient individually and for project activities as a whole, a review of program and problems to date, and a discussion of technical and managerial issues significant to the success or failure of this Grant. The report will also address regulatory issues related to the project. Although principally a technical document, it nevertheless must include pertinent statistics or quantitative information regarding the project and its activities. The Annual Activity Report shall also include an annual expenditure report corresponding to each annual workplan (see Section 1E.2.[b] above). These expenditure reports will cover A.I.D. and, if applicable, cost-sharing amounts by budget line item (see Section 1D.2. above) and by estimated distribution amongst project components, e.g., research, training, technical assistance, technology transfer, information dissemination, or networking.

1E.2.(f) Technical and Research Reports and Publications

The Grantee shall summarize technical and research activities of the project in reports, and distribute such reports to the appropriate USAID Missions, LDCs, and host country and international institutions in order to encourage use of the technology developed. Such reports will be completed within 60 days after completion of the activity. Journal articles and other publications are encouraged. See also Section 1I. of this Grant pertaining to publications.

1E.2.(g) Environmental Impact

If it appears that outputs of this project will result in an adverse environmental impact, the Grantee shall notify the A.I.D. Project Officer prior to implementation, in order to allow for orderly preparation of an environmental impact statement. The Grantee shall assure that appropriate U.S. Government and/or host country procedures are followed.

1E.2.(h) Trip Reports

Within 30 days following the completion of each international trip, the Grantee shall submit 3 copies of a trip report summarizing the accomplishments of the trip to the A.I.D. Project Officer specified in the cover letter of this Grant. If several individuals are travelling together to one site, a single report representing the group will suffice. The report shall include the purpose of the trip, technical observations, suggestions and recommendations, overall impressions of the site situation (if appropriate), and a list of persons visited with their title and organization affiliation.

1E.2.(i) Training Reports

1E.2.(i)(1) If the Standard Provision entitled "Participant Training" applies to this Grant (see Section 1K. for applicability), the Grantee shall comply with reporting and information requirements of the Standard Provision of this Grant entitled "Participant Training," as well as Chapters 5 and 24 of A.I.D. Handbook 10.

1E.2.(i)(2) The Grantee shall also provide five (5) copies of quarterly training reports to the A.I.D. Project Officer, covering this Grant. The report shall include the following information:

- Total number of new trainees during the period: and
- The following information for each LDC trainee:
 - name
 - citizenship
 - gender
 - training site
 - beginning and ending dates of training
 - purpose of training
 - type of training activities
 - source of funding

1E.2.(i)(3) The Grantee shall provide ten (10) copies of all training manuals produced under this Grant to the A.I.D. Project Officer.

1E.2.(j) Care of Laboratory Animals

If the Standard Provision entitled "Care of Laboratory Animals" applies to this Grant (see Section 1K. for applicability), the Grantee shall include the certificate required by paragraph (c) of said Standard Provision in all of its reports which pertain to the use of laboratory animals.

1E.2.(k) Research Involving Recombinant DNA

If any research involving recombinant DNA is being funded hereunder, the Grantee shall comply with the reporting requirements set forth in Section 1E.2.(d) of this Grant.

1E.2.(l) Final Report

Within 90 days following the estimated completion date of this Grant (see Section 1B. above), the Grantee shall submit five (5) copies of a final report to the A.I.D. Project Office specified in the cover letter of this Grant. In addition, two copies shall be submitted to A.I.D., PPC/CDIE/DI, Washington, DC 20523-1802. It will cover the entire period of the Grant and include all information shown in Sections 1E.2.(b) through 1E.2.(f) above.

1F. TITLE TO PROPERTY

Title to property acquired hereunder shall vest in the Grantee, subject to the requirements of the Standard Provision of this Grant entitled "Title To and Use of Property (Grantee Title)" regarding use, accountability, and disposition of such property, except to the extent that disposition of property may be specified in Section 1I. below.

1G. PROCUREMENT AND (SUB)CONTRACTING

1G.1. Applicability

This Section 1G. applies to the procurement of goods and services by the Grantee (i.e., contracts, purchase orders, etc.) from a supplier of goods and services (see the Standard Provisions of this Grant entitled "Procurement of Goods and Services" and "AID Eligibility Rules for Goods and Services"), and not to assistance provided by the Grantee (i.e., a subgrant or [sub]agreement) to a subrecipient (see the Standard Provision of this Grant entitled "Subagreements").

1G.2. Requirements

In addition to other applicable provisions of this Grant, the Grantee shall comply with paragraph (b)(1) of the Standard Provision of this Grant entitled "AID Eligibility Rules for Goods and Services," concerning total procurement value of less than \$250,000 under this Grant. If, under the order of preference set forth in paragraph (b)(1)(i) of said Standard Provision, the Grantee procures goods or services from cooperating country sources, the Standard Provision of this Grant entitled "Local Cost Financing" shall also apply. However, paragraph (b)(1) of the Standard Provision entitled "AID Eligibility Rules for Goods and Services" does not apply to: the restricted goods listed in paragraph (a)(3) of said Standard Provision and paragraph (e) of the Standard Provision entitled "Local Cost Financing," which must be specifically approved by the Grant Officer in all cases, except to the extent that such approval may be provided in Section 1I. below; or to paragraph (d) of said Standard Provision pertaining to air and ocean transportation, to which the Standard Provisions entitled "Air Travel and Transportation" and "Ocean Shipment of Goods" apply, respectively. Paragraph (b)(2) of the Standard Provision entitled "AID Eligibility Rules for Goods and Services" does not apply.

1G.3. Approvals

Inclusion of costs in the budget of this Grant for the purchase of nonexpendable equipment obviates neither the requirement of Section J.13. of OMB Circular A-21 (for educational institutions) or Section 13 of Attachment B of OMB Circular A-122 (for nonprofit organizations other than educational institutions) for prior approval of such purchases by the Grant Officer, nor any other terms and conditions of this Grant, unless specifically stated in Section 1I. below.

1G.4. Title to Property

See Section 1F. above.

1H. INDIRECT COST RATES

1H.1. No indirect costs will be charged to this Grant. The Grantee understands and agrees that indirect costs attributable to this Grant will be absorbed by the Grantee and considered cost sharing.

11. SPECIAL PROVISIONS

11.1. Limitations on Reimbursement of Costs of Compensation for Personal Services and Professional Service Costs

11.1.(a) Employee Salaries

Except as the Grant Officer may otherwise agree in writing, A.I.D. shall not be liable for reimbursing the Grantee for any costs allocable to the salary portion of direct compensation paid by the Grantee to its employees for personal services which exceed the highest salary level for a Foreign Service Officer, Class 1 (FS-1), as periodically amended.

11.1.(b) Consultant Fees

Compensation for consultants retained by the Grantee hereunder shall not exceed, without specific approval of the rate by the Grant Officer: either the highest rate of annual compensation received by the consultant during any full year of the immediately preceding three years; or the maximum rate of a Foreign Service Officer, Class 1 (FS-1) (as periodically amended), whichever is less. A daily rate is derived by dividing the annual compensation by 2,087 and multiplying the result by 8.

11.2. Compliance With Federal Guidelines and Regulatory Procedures Pertaining to Recombinant DNA

11.2.(a) The Grantee shall implement any research activities under this Grant which involve recombinant DNA in accordance with:

11.2.(a)(1) The National Institutes of Health Guidelines for Research Involving Recombinant DNA Molecules;

11.2.(a)(2) Procedures issued by the U.S. Department of Agriculture (USDA), the Environmental Protection Agency (EPA), or other appropriate Federal agency;

11.2.(a)(3) A.I.D.'s environmental procedures; and

11.2.(a)(4) Such other Federal guidelines and procedures as may apply during the course of research.

11.2.(b) The Grantee cannot commence testing in any foreign location until written approval for such testing is obtained from the A.I.D. Project Officer and the government of the country where testing is planned. Testing shall be conducted in accordance with all applicable regulations of that country.

11.2.(c) In addition, and prior to commencement of any such testing, the Grantee shall make a judgement and communicate same to the A.I.D. Project Officer as to whether the regulations, procedures, or facilities of the country in question are adequate to ensure testing in an environmentally sound manner. In the event such judgement is that they are not, the Grantee and the A.I.D. Project Officer will consult and agree on the conditions to be applied to the testing which will have such environmental effect.

11.2.(d) Reports submitted to A.I.D. under this Grant will address regulatory issues as noted above related to the activity.

11.3. Publications

11.3.(a) The Grantee agrees to provide one copy of the manuscript of any proposed publication to the A.I.D. Project Officer not later than submission to the publisher, and to give serious consideration to any comments received from the A.I.D. Project Officer.

11.3.(b) In the case of publication of any of the reports described in Section 1E.2. of this Grant, A.I.D. reserves the right to disclaim endorsement of the opinions expressed. For other publications, A.I.D. reserves the right to dissociate itself from sponsorship or publication. In both cases, the Grantee will consult with the A.I.D. Project Officer as to the nature and extent of any A.I.D. disclaimer of endorsement or dissociation from sponsorship or publication.

11.3.(c) If A.I.D. does not choose to disclaim endorsement or dissociate itself from sponsorship or publication, the Grantee shall, in accordance with the Standard Provision of this Grant entitled "Publications," acknowledge A.I.D. support as follows:

"This publication was made possible through support provided by the Office of Agriculture, Bureau for Science and Technology, U.S. Agency for International Development, under Grant No. DAN-4200-G-00-1065-00."

11.3.(d) In addition to providing one copy of all published works and lists of other written work produced under this Grant to the A.I.D. Project Officer, as required by paragraph (b) of the Standard Provision of this Grant entitled "Publications," the Grantee shall also provide two copies of such publications and lists to A.I.D., PPC/CDIE/DI, Washington, D.C. 20523-1802.

- 14

1I.4. Equipment Purchases

1I.4.(a) Requirement for Prior Approval

Pursuant to Sections 1D.3. and 1G.3. above and the Standard Provisions of this Grant entitled "Allowable Costs" and "Revision of Grant Budget," and by extension, Section 13 of Attachment B of OMB Circular A-122, the Grantee must obtain A.I.D. Grant Officer approval for purchases of the following:

1I.4.(a)(1) General Purpose Equipment, which is defined as an article of nonexpendable tangible personal property which is usable for other than research, medical, scientific or technical activities, whether or not special modifications are needed to make them suitable for a particular purpose (e.g., office equipment and furnishings, air conditioning equipment, reproduction and printing equipment, motor vehicles, and automatic data processing equipment), having a useful life of more than two years and an acquisition cost of \$500 or more per unit); and

1I.4.(a)(2) Special Purpose Equipment, which is defined as an article of nonexpendable tangible personal property, which is used only for research, medical, scientific, or technical activities (e.g., microscopes, x-ray machines, surgical instruments, and spectrometers), and which has a useful life of more than two years and an acquisition cost of \$1,000 or more per unit).

1I.4.(b) Approvals

In furtherance of the foregoing, the Grant Officer does hereby provide approval for the following purchases, which shall not be construed as authorization to exceed the total estimated amount or the obligated amount of this Grant, whichever is less (see Section 1C. above):

N/A

1I.4.(c) Exception for Automation Equipment

Any approval for the purchase of automation equipment which may be provided in Section 1I.4.(b) above or subsequently provided by the Grant Officer is not valid if the total cost of purchases of automation equipment (e.g., computers, word processors, etc.), software, or related services made hereunder will exceed \$100,000. The Grantee must, under such circumstances, obtain the approval of the Grant Officer for the total planned system of any automation equipment, software, or related services.

1I.4.(d) Compliance with A.I.D. Eligibility Rules

Any approvals provided in Section 1I.4.(b) above or subsequently provided by the Grant Officer shall not serve to waive the A.I.D. eligibility rules described in Section 1G. of this Grant, unless specifically stated.

1I.5. Restricted Goods

Pursuant to Section 1G. above, paragraph (a)(3) of the Standard Provisions of this Grant entitled "AID Eligibility Rules for Goods and Services," and, if applicable (see Section 1K. below for applicability), paragraph (e) of the Standard Provision of this Grant entitled "Local Cost Financing," the Grant Officer's approval is required for purchase of the restricted goods described therein. In furtherance thereof, the Grant Officer does hereby provide such approval to the extent set forth below. The Grant Officer's approval is required for purchases of such restricted goods if all of the conditions set forth below are not met by the Grantee. Any approval provided below or subsequently provided by the Grant Officer shall not serve to waive any terms and conditions of this Grant unless specifically stated.

1I.5.(a) Agricultural Commodities

Agricultural commodities may be purchased provided that they are of U.S. source (generally, the country from which the commodities are shipped) and origin (generally, the country in which the commodities are mined, grown, or produced) and purchased from a U.S. supplier, except that wheat, rice, corn, soybeans, sorghums, flour, meal, beans, peas, tobacco, hides and skins, cotton, vegetable oils, and animal fats and oils cannot be purchased under any circumstances without the prior written approval of the Grant Officer.

1I.5.(b) Motor Vehicles

Motor vehicles, if approved for purchase under Section 1I.4.(b) above or subsequently approved by the Grant Officer, must be of U.S. manufacture and must be of at least 51% U.S. componentry. The source of the motor vehicles, and the nationality of the supplier of the vehicles, must be in accordance with Section 1G.2. above. Motor vehicles are defined as self-propelled vehicles with passenger carriage capacity, such as highway trucks, passenger cars and busses, motorcycles, scooters, motorized bicycles, and utility vehicles. Excluded from this definition are industrial vehicles for materials handling and earthmoving, such as lift trucks, tractors, graders, scrapers, and off-the-highway trucks.

1I.5.(c) Pharmaceuticals

Pharmaceuticals may be purchased provided that all of the following conditions are met: (1) the pharmaceuticals must be safe and efficacious; (2) the pharmaceuticals must be of U.S. source and origin (see Section 1G. above); (3) the pharmaceuticals must be of at least 51% U.S. componentry (see Section 1G. above); (4) the pharmaceuticals must be purchased from a supplier whose nationality is in the U.S. (see Section 1G. above); (5) the pharmaceuticals must be in compliance with U.S. Food and Drug Administration (FDA) (or other controlling U.S. authority) regulations governing United States interstate shipment of pharmaceuticals; (6) the manufacturer of the pharmaceuticals must not infringe on U.S. patents; and (7) the pharmaceuticals must be competitively procured in accordance with the procurement policies and procedures of the Grantee and the Standard Provision of this Grant entitled "Procurement of Goods and Services."

1I.5.(d) Pesticides

Pesticides may only be purchased if the purchase and/or use of such pesticides is for research or limited field evaluation by or under the supervision of project personnel. Pesticides are defined as substances or mixtures of substances: intended for preventing destroying, repelling, or mitigating any unwanted insects, rodents, nematodes, fungi, weeds, and other forms of plant or animal life or viruses, bacteria, or other micro-organisms (except viruses, bacteria, or other micro-organisms on or living in man or other living animals); or intended for use as a plant regulator, defoliant, or dessicant.

1I.5.(e) Rubber Compounding Chemicals and Plasticizers

Rubber compounding chemicals and plasticizers may only be purchased with the prior written approval of the Grant Officer.

1I.5.(f) Used Equipment

Used equipment may only be purchased with the prior written approval of the Grant Officer.

1I.5.(g) Fertilizer

Fertilizer may be purchased if it is either purchased in the U.S. and used in the U.S., or if it is purchased in the cooperating country with local currency for use in the cooperating country. Any fertilizer purchases which do not comply with these limitations must be approved in advance by the Grant Officer.

11.6. Limitation on Use of Funds

11.6.(a) The Grantee shall not utilize funds provided by A.I.D. for any testing or breeding feasibility study, variety improvement or introduction, consultancy, publication, conference or training in connection with the growth or production in countries other than the United States of an agricultural commodity for export which would compete with a similar commodity grown or produced in the United States.

11.6.(b) The reports described in Section 1E.2. shall contain a statement indicating the projects or activities to which United States funds have been attributed, together with a brief description of the activities adequate to show that United States funds have not been used for the purpose in Section 11.6.(a) above.

11.6.(c) The Grantee agrees to refund to A.I.D. upon request an amount equal to any United States funds used for the purposes prohibited by Section 11.6.(a) above.

11.6.(d) No funds provided by A.I.D. under this Grant shall be used to provide assistance, either directly or indirectly, to any country ineligible to receive assistance pursuant to the Foreign Assistance Act as amended, related appropriations acts, or other statutes and Executive Orders of the United States (also see the Standard Provision of this Grant entitled "Ineligible Countries").

11.7. Care of Laboratory Animals Outside the U.S.

It is understood and agreed that the Grantee shall comply with the Standard Provision of this Grant entitled "Care of Laboratory Animals" for activities outside the U.S. to the maximum practical extent. To the extent that the Grantee is unable to comply with said Standard Provision for activities outside the U.S., it is understood and agreed that the Grantee shall comply with the following principles for the utilization, care, and transportation of vertebrate animals used in testing, research, and training:

11.7.(a) The transportation, care, and use of animals should be in accordance with the Animal Welfare Act (7 U.S.C. 2131 et seq.) and other applicable Federal laws, guidelines, and policies (for guidance throughout these principles, the Grantee is referred to the Guide for the Care and Use of Laboratory Animals prepared by the Institute of Laboratory Animals Resources, National Research Council).

11.7.(b) Procedures involving animals shall be designed and performed with due consideration of their relevance to human or animal health, the advancement of knowledge, or the good of society.

11.7.(c) The animals selected for a procedure should be an appropriate species and quality and the minimum number required to obtain valid results. Methods such as mathematical models, computer simulation, and in vitro biological systems must be considered.

11.7.(d) Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices is imperative. Unless the contrary is established, investigators shall consider that procedures which cause pain or distress in human beings may cause pain and distress in other animals.

11.7.(e) Procedures with animals that may cause more than momentary or slight pain or distress shall be performed with appropriate sedation, analgesia, or anesthesia. Surgical or other painful procedures shall not be performed on unanesthetized animals paralyzed by chemical agents.

11.7.(f) Animals that would otherwise suffer severe or chronic pain or distress that cannot be relieved shall be painlessly killed at the end of the procedure, or, if appropriate, during the procedure.

11.7.(g) The living conditions of animals shall be appropriate for their species and contribute to their health and comfort. Normally, the housing, feeding, and care of all animals used for biomedical purposes must be directed by a veterinarian or other scientist trained and experienced in the proper care, handling, and use of the species being maintained or studied. In any case, veterinary care shall be provided as indicated.

11.7.(h) Investigators and other personnel shall be appropriately qualified and experienced for conducting procedures on living animals. Adequate arrangements shall be made for their in-service training, including the proper and humane care and use of laboratory animals.

11.7.(i) Where exceptions are required from these principles, the decisions shall not rest with the investigators directly concerned, but shall be made, with due regard to Section 11.9.(b) above, by an appropriate review group such as an institutional animal research committee. Such exception shall not be made solely for the purpose of teaching or demonstration.

1J. RESOLUTION OF CONFLICTS

Conflicts between any of the Attachments of this Grant shall be resolved by applying the following descending order of precedence:

- Attachment 1 - Schedule
- Attachment 3 - Standard Provisions
- Attachment 4 - Special Provision entitled "Restrictions on Lobbying"
- Attachment 2 - Program Description

1K. STANDARD PROVISIONS

The Standard Provisions set forth as Attachment 3 of this Grant consist of the following Standard Provisions denoted by an "X" which are attached hereto and made a part of this Grant:

1K.1. Mandatory Standard Provisions For Non-U.S., Nongovernmental Grantees

- (X) Allowable Costs (May 1986)
- (X) Accounting, Audit, and Records (May 1991)
- (X) Refunds (September 1990)
- (X) Revision of Grant Budget (May 1986)
- (X) Termination and Suspension (May 1986)
- (X) Disputes (November 1989)
- (X) Ineligible Countries (May 1986)
- (X) Debarment, Suspension, and Other Responsibility Matters (March 1989)
- (X) U.S. Officials Not to Benefit (November 1985)
- (X) Nonliability (November 1985)
- (X) Amendment (November 1985)
- (X) Notices (November 1985)

1K.2. Required as Applicable Standard Provisions For Non-U.S., Nongovernmental Grantees

- (X) Payment - Periodic Advance (November 1985)
- () Payment - Cost Reimbursement (May 1986)
- (X) Air Travel and Transportation (May 1986)
- (X) Ocean Shipment of Goods (May 1986)
- (X) Procurement of Goods and Services (May 1986)
- (X) AID Eligibility Rules for Goods and Services (May 1986)
- (X) Subagreements (May 1986)
- (X) Local Cost Financing (November 1988)
- () Patent Rights (May 1986)
- (X) Publications (May 1986)

- (X) Nondiscrimination in Federally Assisted Programs (May 1986)
- (X) Regulations Governing Employees (May 1986)
- () Participant Training (May 1986)
- () Voluntary Population Planning (August 1986)
- () Protection of the Individual as a Research Subject (November 1984)
- () Negotiated Indirect Cost Rates - Provisional (November 1984)
- () Government Furnished Excess Personal Property (November 1984)
- (X) Title To and Use of Property (Grantee Title) (May 1986)
- () Title To and Care of Property (U.S. Government Title) (May 1986)
- () Title To and Care of Property (Cooperating Country Title) (November 1984)
- (X) Cost Sharing (Matching) (May 1986)

1L. COST SHARING AND OTHER CONTRIBUTIONS

1L.1. The Grantee agrees to expend an amount not less than (a) the amount shown in the budget of this Grant for financing by the Recipient and/or others from non-federal funds (see Sections 1D. and/or 1H.), and (b) the amount shown in the budget of this Grant for financing by the Recipient and/or others from other federal funds.

1L.2. The Standard Provision of this Grant entitled "Cost Sharing (Matching)" makes reference to project costs. "Project Costs" are defined in Attachment E of OMB Circular A-110 as all allowable costs (as set forth in the applicable cost principles [see the Standard Provision of this Grant entitled "Allowable Costs"]) incurred by a Grantee and the value of in-kind contributions made by the Grantee or third parties in accomplishing the objectives of this Grant during the program period.

1L.3. The restrictions on the use of A.I.D. funds provided hereunder, as set forth in this Grant, do not apply to cost-sharing (matching) or other contributions unless such restrictions are stated in the applicable federal cost principles and/or imposed by the source of such cost-sharing (matching) funds or other contributions.

ATTACHMENT 2

PROGRAM DESCRIPTION

The Grantee's proposal entitled "A Project to Regenerate Maize Accessions Stored in National Germplasm Banks in Latin America and the Caribbean" is attached hereto as the Program Description (Attachment 2) and is made a part of this Grant.

**A Proposal for a Project to Regenerate Maize
Accessions Stored in National Germplasm Banks
in Latin America and the Caribbean**

**Submitted to the
U.S. Agency for International Development (USAID)**

**by the
International Maize and Wheat Improvement Center (CIMMYT)**

April 1991



**P.R. Rowe, Deputy Director
for Research, CIMMYT**

6 May 1991
Date

I. Project Title

Regeneration of Maize Accessions Stored in National Germplasm Banks in Latin America and the Caribbean

II. Investigators

Senior principal investigator:

Dr. Suketoshi Taba
Head, CIMMYT Maize Germplasm Bank

Supportive investigators:

To be appointed

National program Investigators:

Ing. Marcelo Ferrer
National Institute of Agricultural Technology
Argentina

Dr. Gonzalo Avila
Pairumani Center for Ecology and Genetics Research
Bolivia

Dr. Ramiro Vilela de Andrade
National Center for Maize and Sorghum Improvement
Brazil

Ing. Orlando Paratori
National Institute for Agricultural Research
Chile

Dr. Carlos Díaz
Colombian Agricultural Institute
Colombia

Ing. Abdenango Brenes
School of Agricultural Sciences, the National University
Costa Rica

Ing. Marco Torres
Maize Program of the L. Dimitrova Institute
Cuba

Ing. Mario Cavedes
National Institute for Agricultural Research
Ecuador

Ing. Rene Pérez
National Center for Agricultural Technology
El Salvador

Ing. Neri Soto
Institute for Agricultural Science and Technology
Guatemala

Dr. Francisco Cardenas
National Institute for Forestry, Agricultural, and Livestock Research
Mexico

Ing. Ricardo Sevilla
La Molina National Agricultural University
Peru

Ing. Victor Segovia
National Center for Agricultural Research
Venezuela

III. Background and Justification

Various groups working with maize germplasm in the Latin America and Caribbean region are concerned about the poor status of many accessions stored in national and regional* banks. Without doubt, the researchers responsible for preserving these materials are among the most concerned. But by and large they lack resources for keeping the seed under appropriate storage conditions and for properly regenerating the numerous accessions whose germination percentages and/or seed supplies have reached perilously low levels.

* These are national banks (principally in Colombia and Mexico) with significant holdings of maize accessions from other countries in the Latin American and Caribbean region.

There is wide agreement that some accessions are already gone. The losses have been especially heavy among materials collected throughout Latin America under the auspices of the Rockefeller Foundation and deposited in national banks during the 1940s to 1960s. In Peru, for example, of the 3690 collections made and stored in the country during that period, 575 of these could not be regenerated during the 1980s. Likewise, in Colombia efforts made since 1986 to regenerate about 2100 accessions from the national collection have revealed that seed of some 80 of these is no longer viable. Mexico reports that it no longer has viable seed for 500 accessions out of 9369.

The managers of national banks in Latin America report that many other accessions are now in danger of being irretrievably lost. Finding a way to prevent this outcome was the subject of a planning meeting held by AID officials and other concerned parties on 31 October 1990 during International Centers Week. CIMMYT was represented by Dr. P.R. Rowe, deputy director general of research, and Dr. Don Duvick, a member of the Center's Board of Trustees. Two points that came out strongly in this meeting were: 1) Active participation of national programs will be essential for successful regeneration of the maize germplasm, and 2) CIMMYT is uniquely placed to assume a coordinating role in this effort.

To work out the details of a maize regeneration project, it was suggested that a planning workshop be held at CIMMYT headquarters in Mexico. This idea was endorsed by AID representatives from the Latin American and Caribbean Bureau, who expressed an interest not only in supporting the planning workshop but in providing future bilateral assistance for ex situ conservation of maize and its wild relatives. AID officials reinforced the relevance of maize regeneration to recent Congressional legislation, referred to as the Noah Initiative, calling for efforts to preserve the genetic diversity of important crops through ex situ conservation.

The idea of holding a planning workshop to organize the regeneration project received the full support of CIMMYT management. Apart from sharing AID's immediate concern about rescuing endangered germplasm, the Center saw this as an opportunity to begin establishing a global maize germplasm network. This aim was first proposed during a workshop held at CIMMYT in 1988 and attended by representatives from the International Board for Plant Genetic Resources (IBPGR) and some 25 national maize germplasm banks. The purpose of the network will be to provide a framework for future cooperation in the whole range of activities relating to germplasm conservation and utilization. We hope that, in addition to achieving its immediate aims, the regeneration project will help establish some of the prerequisites for an effective network (such as the beginnings of a common system for handling information about maize

germplasm) and provide experience that will be instructive both to CIMMYT and AID in planning future cooperative projects.

The planning workshop was held at CIMMYT on 6-7 March 1991 and attended by representatives from 13 national maize germplasm banks in Latin America and the Caribbean as well as from USAID, NSSL, and IBPGR, along with several CIMMYT staff. The participants discussed and compiled information on the following topics:

- The number of accessions that urgently need to be regenerated
- Steps for ensuring that regeneration is properly done
- Documentation of the regenerated accessions and dissemination of this information
- Arrangements for safe, long term storage of seed of the regenerated accessions

In addition, participants briefly reviewed the status of teosinte and *Tripsacum* collections.

The conclusions and recommendations of the workshop participants on these items have been incorporated into the discussion of project details given below. CIMMYT staff were very pleased with the outcome of this event in general and were particularly impressed with the input of national bank representatives and their commitment to making the maize regeneration initiative a success.

IV. Project Purpose

The immediate aim of the project is to better preserve Latin American and Caribbean maize germplasm for utilization in crop improvement and related research. In carrying out this task, we hope to lay the groundwork for future international cooperation in activities related to the conservation and utilization of maize germplasm

V. Project Objectives and Specific Research Strategies

1. Effective regeneration of the germplasm

Information compiled by participants in the planning workshop underscores the scope and complexity of the task they are about to undertake. Fortunately, some of them have already gained considerable experience in large scale regeneration

of maize germplasm through other cooperative arrangements. Under a project financed by the USDA's Agricultural Research Service, for example, the banks in Colombia, Mexico, and Peru, with assistance from North Carolina State University, have been regenerating about 1000 accessions annually in recent years. Many additional materials have been increased through the Latin American Maize Project (LAMP). Though LAMP is funded primarily by Pioneer Hi-Bred, participants have also received financial assistance from IBPGR to cover some of the costs of regeneration.

Clearly, although much remains to be done, a lot has already been accomplished in regenerating maize germplasm, as is evident from Table 1. Moreover, the national programs have shown themselves to be willing and able partners in cooperative efforts to better guarantee the safety of their germplasm collections.

In this project the national programs will regenerate the accessions considered to be most endangered, which participants in the planning workshop estimated at 10,178. A large proportion of these are stored in the two major regional banks—in Colombia and Mexico. Their endangered accessions include many original collections deposited in these countries through maize germplasm conservation projects sponsored by the US National Research Council (NRC) and the Rockefeller Foundation. Some collections have not been regenerated since then and must certainly be in critical condition.

Workshop participants also dealt in some detail with the issue of regeneration procedures and standards. They decided that 250 plants are adequate to represent an accession undergoing regeneration and that these should be pollinated by means of plant-to-plant crosses. For some accessions a lower number of plants will be established because of small quantities of seed available and/or low germination in the field. In those cases a second planting will be necessary. Because of the small number of plants sampled in the first planting, there will be some risk of losing alleles (referred to as the bottleneck effect). Nonetheless, having a second planting is the only way of preventing further loss of genetic diversity in some accessions.

For the purposes of long term storage (according to arrangements discussed below), balanced composites from each newly regenerated accession will be made, when possible, by bulking equal numbers of seed from each of 100 or more ears. For example, if 100 ears are available, a bulk of 45 seeds from each ear will be collected, giving a total sample size of 4500 seeds or 1.5 kg. Regenerated seed will be handled with sufficient care to prevent contamination and loss of seed viability. At the time of regeneration, characterization data will be taken on each accession according to guidelines provided by CIMMYT.

Staff at Center headquarters, with assistance from maize specialists in CIMMYT's regional programs in Latin America, will coordinate the regeneration process. In the course of monitoring progress, Center staff will provide training in the use of the Accession Editor, in germplasm characterization, and in other procedures related to regeneration. To assist CIMMYT in monitoring progress, participating national programs will submit to Center headquarters, prior to each crop cycle, a list of the accessions they plan to regenerate.

2. Complete and consistent germplasm documentation

For several reasons it is essential that complete passport data be compiled on all the materials to be regenerated. One immediate use of this information will be to identify duplication both among those materials and between them and the accessions stored at the international banks that plan to assume key storage responsibilities, as explained below. In addition, having the passport data readily available will better enable researchers to identify accessions for evaluation and possible use in breeding programs.

Obviously, the exchange of information about regenerated accessions will be much easier if they are documented according to a common system. For that purpose CIMMYT has provided its new Accession Editor software to all the national bank representatives who took part in the planning workshop. Designed for use on PCs, this program offers an efficient means of recording passport and other data. As each bank finishes documenting the accessions it has regenerated (either through this project or other efforts), CIMMYT staff will load the information into another PC program, called the Query System, which will enable national program researchers to search the data according to multiple criteria. Eventually, all of the information available can be compiled in a single database for use by cooperators in the emerging global maize germplasm network.

3. Proper seed processing

After harvest seed will be dried to 13-15% moisture content and then shelled using conventional methods. The balanced composites for long term storage will be shipped to CIMMYT and NSSL for further drying to 4-7% moisture content and then sealed in aluminum bags.

4. Safe storage of the regenerated germplasm

Although germplasm regeneration is unquestionably the first priority of this project, storage is a close second. Unless the accessions are placed under appropriate conditions immediately after regeneration, the current crisis in maize

germplasm conservation will undoubtedly occur again within a relatively short time.

The inadequacy of seed processing facilities and storage conditions in most national banks was quite apparent from their reports in the planning workshop. Only a few have seed driers; most use sun drying. Consequently, moisture content of the seed in storage is high (possibly 10 to 13%). Storage temperatures vary from 5° to 20°C, well above the desirable range. Ten of the 13 cooperating banks have cold rooms, but none has the means of controlling humidity. Since all of these banks, except Mexico's, are located in the humid tropics, humidity in storage averages 60 to 70%. The cumulative effect of these conditions is to rapidly reduce seed viability.

The chances are good that storage conditions in some banks will be improved in the near future. Chile, Brazil, El Salvador, and Mexico have either built new long term storage facilities recently or have definite plans and funding to do so. Other, relatively inexpensive measures will be taken under the regeneration project to further assist the national banks, especially those with no immediate prospects for substantial improvements in their facilities. One step is to help cooperatives develop appropriate seed driers. Another is to provide aluminum foil bags and sealing equipment.

Ex situ germplasm conservation is an important national responsibility and one in which this project will provide concrete support. Nonetheless, since the loss of germplasm can have dire consequences far beyond the boundaries of a given country, the burden of preventing this outcome through proper seed storage should be borne by others as well.

Participants in the planning workshop strongly endorsed this principle and recommended that the following arrangements be made to store accessions regenerated through the project. First, 1.5-kg seed samples that have been properly regenerated according to the standards indicated above will be placed in the long term base collection of NSSL, where conditions are such that seed will remain viable for 50 to 100 years. CIMMYT will also store, in both its active and base collections (1.5 kg per accession in each), those accessions that have been properly regenerated and are not already represented in the Center's maize bank. CIMMYT will assume all the management responsibilities that base and active storage implies. For example, from its active collection the Center will handle international distribution of seed for utilization, a service that few national banks can afford to provide. The degree to which CIMMYT will be able to fulfill these responsibilities, however, will be contingent on the Center's success in obtaining funds to expand its storage facilities. The North Central Regional Plant

Introduction Station at Ames, Iowa, has also expressed an interest in placing accessions in its active collection and would distribute them internationally.

VI. Project Rationale, Budget, and Annual Workplan

A. Project Rationale

Unless action is taken soon to prevent the loss of endangered maize germplasm, researchers will be deprived of some portion of the crop's genetic variation and, as a result, of potentially valuable opportunities to develop better products for ~~maize producers and consumers.~~

B. Budget

It was agreed in the planning workshop that, at least through 1992, \$3940 is a reasonable estimate of the average cost of regenerating a single accession. Based on this figure and assuming an inflation rate of 5%, the cost of regenerating the total number of endangered accessions (10,178) will be just over \$490,000, plus expenditures that CIMMYT will incur in coordinating the efforts of the national programs.

NSSL has indicated its willingness to cover the costs of shipping seed by air to the USA and is also interested in supporting the development of seed driers for national programs and possibly in defraying some portion of the regeneration costs. A memorandum of understanding that specifies these contributions more precisely will be signed by NSSL and CIMMYT. As suggested in the background section of this document, AID's Latin American and Caribbean Bureau is another potential source of funds for enhancing the ex situ conservation capabilities of various countries in the region.

It appears then that, just as the main activities of this project will require strong international cooperation, so will the arrangements for its funding. Apart from the commitment of human and other resources by 13 national programs, the project can count on support from CIMMYT, NSSL, possibly IBPGR (though in ways that have not yet been spelled out), and perhaps other sources as well.

Mainly for that reason, we are requesting ^{319,754} \$300,000 from AID for a three-year period and intend to seek from other donors the additional funds required to complete all project activities within four years. AID's contribution will be used to cover the items listed in Table 2. We would ask that AID provide funds as soon as possible, so that project can get underway in 1991.

C. Annual Workplan

A four-year schedule, indicating the number of accessions that each country

proposes to regenerate each year, is given in Table 2. Details of the various activities are given on pages 4-8.

Each year the principal investigator will make two trips to participating countries north of the equator and the same number to those south of the equator to coordinate project activities and provide training.

VII. Innovative Aspects of the Project

The regeneration, documentation, and storage of maize germplasm are not in themselves unique. On the contrary, they are generally quite routine activities, for which there are reasonably well established standards and procedures. What is unique about this project is that it proposes to accomplish those tasks through fairly complex cooperative arrangements, involving national institutions in the developing and industrialized world as well as international centers. This will not, of course, be the first time that national programs in Latin America have received international assistance in germplasm regeneration, but it will be the first time that the assistance has been provided in such a comprehensive and coordinated manner.

CIMMYT is the logical candidate to coordinate this work, because it:

- 1. Holds the world's oldest and largest international collection of maize seed.**
- 2. Has significantly upgraded its storage capabilities during recent years and embarked on ambitious programs in bank management and germplasm documentation and evaluation.**
- 3. Is located at the center of diversity of maize in Mexico and is thus well placed to assist in a regional effort to preserve the Latin American and Caribbean germplasm.**
- 4. Maintains maize research networks in the region and has many years of experience in working with all of the national programs that plan to participate in this project.**
- 5. Is uniquely qualified to handle international distribution of seed of maize bank accessions and to utilize this material effectively in its own breeding program, whose products are freely available to maize researchers worldwide.**

The maize germplasm project proposed here will contribute quite directly to ~~indirect components of USAID's mandate for carrying out the Neoh Initiative.~~

First, it will involve the establishment by 13 developing countries of ex situ action plans that integrate the regeneration, storage, and database documentation of vital crop germplasm. Second, it will provide an excellent opportunity to test the viability of those plans. Third, it will give developing country researchers an opportunity to receive training. And fourth, it will contribute to the establishment of a mechanism for global sharing of information on the ex situ conservation of maize germplasm.

VIII. Expected Outputs

The primary outputs of the project will be as follows:

1. Sufficient quantities of seed of some 70 to 75% of the 10,178 maize germplasm accessions considered to be endangered. USAID funds should cover the costs of regenerating just over half of those accessions.
2. Appropriate processing and storage of seed of the regenerated accessions by both national and international institutions.
3. Practical training for national program staff in the use of computer software, in germplasm characterization, and in other procedures related to regeneration.
4. For all accessions regenerated, passport and some characterization data stored in electronic form, such that it can be exchanged among national cooperatives and other institutions and eventually compiled in a single database.