SORGHUM/MILLET CRSP

TRIENNIAL REVIEW INFORMATION

FEBRUARY 14, 1985

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INTSORMIL—Sorghum/Millet International Research
International Programs
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Institute of Agriculture and Natural Resources
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January 9, 1985

Dr. Robert Jackson
S&T/AGR/FCP, Room 411, SA-18
Agency for International Development
Washington, D.C. 20523

Dear Bob:

The purpose of this letter is to request a meeting for the Sorghum/Millet CRSP (Grant AID/DSAN/XII-G-0149) to make a five year report, present a three year global plan of collaborative research, and request a three year program extension for the CRSP for Years 7-9, July 1, 1985 through June 30, 1988.

As we have discussed, INTSORMIL representatives will schedule to be in AID/W S&T/AGR on February 14, 1985 with the first session starting at 8:45 a.m. Present plans are for the INTSORMIL group to include: The Chair of the EEP, Chair of the Board of Directors, Chair of the Technical Committee, or their representatives, a representative from the Prime Site Coordinators group, and Vollmar and Yohe from the INTSORMIL ME.

We will send materials for the review including reports, a three year global plan of research, projected budgets and other relevant materials to you for on or about February 1, 1985 arrival.

If you can give us any counsel regarding the review beyond that already given to us, we would appreciate it.

Best regards,

Sincerely,

Glen J. Vollmar
Program Director
INTSORMIL

GJV:dls
cc: Dr. Anson Bertrand, AID/W
Dr. W. F. Johnson, BIFAD
Dr. Rodney Foil
Dr. John Yohe
INTSORMIL Institutional Representatives

CRSP-SORGHUM/MILLET THREE YEAR EXTENSION REVIEW MEETING

Feburary 14, 1985

List of Representatives:

Dr. Bruce Maunder - Chairman External Evaluation Panel
Vice President and Director of Research
DeKalb-Pfizer Ag Research Inc.
Route 2
Lubbock, TX 79415

Dr. Herbert Massey - Chairman INTSORMIL Board of Directors
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Lexington, KY 40546

Dr. John Axtell - Country Coordinator for Niger
(Representing Country Coordinators)
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Purdue University
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Dr. Kathleen DeWalt - INTSORMIL Technical Committee
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University of Kentucky Medical Center
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241 Keim Hall
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Lincoln, NE 68583-0723

Dr. John Yohe, INTSORMIL Associate Director - ME
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MAJOR INTSORMIL ACHIEVEMENTS YEARS 1-6

Hybrid Sorghum for Sudan: INTSORMIL, ICRISAT, and Sudanese researchers jointly developed a hybrid sorghum, Hageen Dura-1, and have released it for production. Hageen Dura-1 significantly out yields traditional varieties with food quality sorghum. In a four growing season test Hageen Dura-1 yielded 158% of local varieties (5189 Kg/ha) when irrigated and 152% of local varieties (2968 Kg/ha) under rainfed conditions. In 1984 the Sudanese produced 2 tons/acre of food quality sorghum under irrigation and 1 ton per/acre under rainfed conditions using Hageen Dura-1 seed. Most traditional varieties yielded little or no grain during the 1984 drought growing conditions. The national average yield of local sorghums in Sudan in normal years is less than 1/2 ton/acre. Sudan can produce 8 million acres of sorghum annually. With improvements in production and relief from the drought, Sudan has the potential of supplying food grain sorghums to other Sahelean nations who have lesser quality resources and less sorghum production potential. Five thousand acres of the new hybrid were planted in 1984. It is anticipated that 120,000 acres will be planted in 1985. The availabiltiy of the new hybrid seed is a constraint. INTSORMIL provided leadership and the funding of a Hybrid Seed Workshop, which was held in Sudan in 1983. INTSORMIL and U.S. private enterprises are working jointly on the hybrid seed availability problem in the Sudan.

New Sorghums for Central America: Collaborating Honduran and Texas A&M researchers have developed two sorghum releases, a new variety and a new hybrid, that are superior to traditional varieties. The new variety, Tortillero, for example, is drought, insect and disease

resistant and gives superior yields of food quality sorghum when compared with traditional varieties. The new hybrid tested on Honduran farmers in 1984 shows excellent potential. This research has implications for Mexico, Central America and the Caribbean area.

Sorghum Tannins: INTSORMIL collaborative food quality research has biochemically proven that the chemicals in sorghum tannins which give resistance to Quela birds and those chemicals that cause nutritional problems,such as reducing protein assimilation in children,are two separate chemicals. Previously they were believed to be one. This is a significant finding in that bioengineering techniques can be used to increase bird resistance characteristics while at the same time the nutritional problems can be reduced or eliminated.

Acid Soils Research: Millions of hectares of South American land, particularly in Colombia and Brazil, and Southern Africa, and in other areas of the world including some areas of the United States cannot grow sorghum because of aluminum toxicity in the soil which inhibits growth or kills sorghum plants. INTSORMIL collaborative research at CIAT and with South American researchers has shown through the extensive screening of some 2000 lines that there are tolerant varieties. The tolerant varieties and a relatively low level of liming, about 1/2 ton/ acre can produce acceptable yield levels of food quality sorghum grain.

Millet Improvement: INTSORMIL research in Sudan with Kansas State University and Sudanese researchers collaborating has shown considerable yield improvement through the selection of drought, insect and disease resistance millet and the application of improved cultural practices,

such as establishing stands, fertilizing, inter cropping with legumes and weeding. Because of serious drought conditions, the millet research plots at El Obeid, Sudan produced the only grain in the area in 1984. The grain was stolen by farmers to get the seed. A millet variety now grown widely in India was developed through INTSORMIL collaborative research at Kansas State University. Food quality researchers are working on improving the "keeping" quality of millet which tends to turn rancid after processing because of its high fat content.

Socio-Economic Research Results: Sociology, anthropology, and economic studies have been done in the Dominican Republic, Sudan, Burkino Faso, Honduras and Mexico. The reports of studies on farming systems, research and extension structure, sorghum production and world trade and pricing policy have been in demand. For example, Kentucky collaborative research in the Sudan on the Socio-Economic Constraints to Sorghum/Millet Production and Utilization in North Kordofan (Report No. 1) has been distributed widely in the Sudan. One thousand copies have been distributed. USAID/Sudan requested more copies in January, 1985, necessitating another printing. The INTSORMIL socio-economic studies provide base-line information and input for decision-making for host countries and the U.S.

Institution Building: The Sorghum/Millet CRSP's actions in strengthening host country national research programs and U.S. institutions' research capacity are deliberate and an important product of CRSP collaborative research activity. During the first five years of the program 399 graduate students (218 international and 181 U.S.) worked on sorghum/millet research and received Master and Ph.D. degrees. The international students join the trained host country scientific community and many of

the U.S. students develop a continuing interest in international research and employment. During the CRSP's first five years, net working activities included INTSORMIL leadership and all or joint funding of 11 major sorghum/millet research workshops. Extensive exchanges of information, germ plasm and scientists and the in-country funding of research have contributed to strengthening host country research institutions.

CRSP Relationships: The Sorghum/Millet CRSP continues to strengthen USAID/Mission and host country relationships. The Sorghum/Millet CRSP has established effective working relationships with most of the USAID/Missions in countries where sorghum and millet are grown. The CRSP has the goal of establishing program relationships with USAID/Senegal and USAID/India as soon as is feasible. Mission requests for technical assistance and information as well as four missions committing funds to INTSORMIL collaborative research are examples of Mission involvement. USAID/Niger requests that Sorghum/Millet CRSP researchers coming to Niger be prepared with visuals and notes so that they can give a seminar for the mission staff. The CRSP has 23 Memoranda of Understanding in place with Host Countries and their research institutions and with International Agricultural Research Centers.

Food Quality: Food quality improvement of sorghum and pearl millet is an important INTSORMIL collaborative research objective. The food quality aspects of new hybrids and varieties are important considerations in their development. INTSORMIL collaborative research results have been used to improve sorghum and millet traditional foods. Researchers have produced the quality of sorghum acceptable for making Tortillias in Latin America.

Interdisciplinary Collaboration: Sorghum/millet breeders, pathologists, entomologists and physiologists have worked jointly to improve sorghum/millet resistance and tolerance to production constraints. This research has mutual benefits for host countries and the U.S. The INTSORMIL collaborative research plots at El Obeid, Sudan, produced the only grain in that drought stricken area in 1984. New varieties and hybrids are being developed that show yield increases of food quality sorghum and pearl millet over traditional varieties. Interdisciplinary collaborative research teams developing improved varieties and hybrids, the application of improved cultural practices and host country policies that give producers a price incentive are key requirements for sorghum/millet production and utilization in the LDC's. Collaborative research in Botswana and the Sudan shows that rapid sorghum/millet improvement can be acheived with an interdisciplinary approach.

SADCC Degree Training: The Sorghum/Millet CRSP has entered into a sub grant agreement with ICRISAT to provide degree training programs for 15 sorghum/millet scientists from the nine southern Africa SADCC nations. The number will be increased as additional funds are made available. This program is funded by the USAID/Zimbabwe Regional Office. The first students are expected to begin graduate study programs in the summer of 1985.

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INTSORMIL NEWSLETTER
NO. 19
AUGUST, 1984

PROGRAM OFFICE

Dr. Glen Vollmar was appointed INTSORMIL Program Director August 1, 1984. Dr. John Yohe has accepted the INTSORMIL Associate Director position and will begin his duties October 1, 1984. He will serve as SADCC Coordinator.

INTSORMIL WORKSHOPS

As recommended by the Board of Directors, Principal Investigators will be required to submit workshop proposals to the ME by October 31, 1984 for budget Year 7 (1985-86) funding consideration. Proposals will be evaluated by the TC and recommendations made to the Board of Directors for approval. Proposals should include a budget. Outside funding is encouraged. A workshop should be organized in such a way that, when feasible, there is networking between investigators in the developing countries, PIs in the U.S., AID personnel, International Centers and others.

EQUIPMENT PURCHASE APPROVAL

AID/W has advised the following change in the purchase of equipment:

Project equipment purchases need to be approved by INTSORMIL and AID/Washington as previously reported in the June, 1984 issue of the newsletter. However, research equipment having a cost of $1000 U.S. or more requires approval. Approval is required for both domestic and overseas use.

Requests should be made to the INTSORMIL ME office and if approved, INTSORMIL will request approval from AID/W. The request should include: 1) approximate cost, 2) company equipment is to be purchased from 3) origin of manufacture, 4) location where equipment will be located, 5) person(s) responsible for use and maintenance and 6) use or purpose of the equipment.

GLOBAL PLAN

The Global Plan Committee met in Chicago, August 21, 1984 to discuss the results of the first draft of the global plan. The Committee plans for a second draft to be made available for TC, Institutional Representatives and External Evaluation Panel review by September 10, 1984. Committee members include: Dr. John Axtell (Purdue) Chairman, Dr. Darrell Rosenow (Texas A&M), Glen Vollmar (ME) and Dr. Elvin Frolik as a Consultant from Nebraska.

TECHNICAL REPORT

Dr. George Teetes has recently mailed instructions to the Principal Investigators for pertinent information required in preparing a five-year Technical Report of Sorghum/Millet CRSP activities from 1979 to June 30, 1984. This report is important and will require special attention from all PI's and Discipline Coordinators.

SORGHUM HYBRID IN SUDAN

In the July, 1984 issue of BIFAD Briefs, there is an article entitled"INTSORMIL CRSP Workshop Review New Sorghum Hybrid in Sudan". If you do not have access to a copy of BIFAD Briefs and would like to read the article, contact ME headquarters.

COLOMBIAN PHYTOPATHOLOGY SOCIETY

Dr. R.A. Frederiksen, Texas A&M University, attended the Annual Meeting of the Colombian Phytopathology Society (ASCOLFI) May 30-31, at Santa Marta, Colombia, where he presented an invitational paper "Sorghum Diseases:The Potential for Control".

INTSORMIL STUDENTS

In the five year period from 1979 through June 30, 1984 INTSORMIL PI's have advised a total of 399 students, 218 were International Students. Students funded on INTSORMIL research projects numbered 103 from the U.S., and 96 International students. The International students represent 27 countries. There were 298 male and 101 female students.

CIAT/COLOMBIA

Dr. Lynn Gourley will return to Mississippi State University in November. Mississippi State is recruiting for an Assistant/Associate/Agronomist-Sorghum Breeder and Geneticist with duty location at CIAT, Cali, Colombia for a two year period with possible extension depending upon funding. Further information may be obtained from Dr. H. Dean Bunch, Director International Programs, Office of International Programs, Drawer NZ, Mississippi State, Mississippi 39762.

YEAR 6 (1984-85) FUNDING

The ME has received Year 6 funding from AID/W and allocations have been forwarded to each participating university.

TRIENNIAL REVIEW

Plans have been completed for the three project review meetings for active INTSORMIL projects September 10-11, 1984 at Purdue University (Food Quality and Utilization and Socio Economics), Texas A&M University (Sorghum/Millet Breeding, Pathology and Entomology) and University of Nebraska (Agronomy/Physiology). The EEP will travel to Lincoln September 12-14 for meetings with the TC, Board of Directors, and the ME. The INTSORMIL EEP members taking part in the review include: Dr. Bruce Maunder (DeKalb-Pfizer, Chair), Dr. Clarence Gray, Virginia Polytech Institute, Vice Chair), Dr. Nancy Gonzalez (University of Maryland and Guatemala), Dr. Brhane Gebrekidan (Kenya-SAFGRAD-ICRISAT), Dr. John Monyo (FAO-Rome), Dr. Glenn Johnson

Triennial Review cont.

(Michigan State University), Dr. Glenn Burton (ARS-USDA-Georgia, Consultant) and Dr. Ricardo Bressani (Guatemala).

PRINCIPAL INVESTIGATORS CONFERENCE

The Technical Committee decided that there would be a change in the PI Conference this year because of the demands of External Evaluation Panel review, Five Year Technical Report, Global Plan and other activities. The decision was made to explore the possibilities for INTSORMIL PI's to meet on the day following the SICNA (Sorghum Improvement Conference of North America) in Lubbock, Texas at the Holiday Inn Civic Center. A relatively large number of PI's will be attending the SICNA meeting on February 18-20, 1985 and all PI's are encouraged to attend. The day following the SICNA meeting will be February 21, 1985. The TC requested that the day's program include discussion regarding the EEP's Triennial Review and the INTSORMIL Global Plan. A program committee will be appointed and more details will follow. Dr. Max Clegg, University of Nebraska, is chairman of the SICNA Board of Directors.

ECONOMIC ANALYSIS WORKSHOP

A Sorghum/Millet Economic Analysis Workshop was held in Washington D.C. on August 24, 1984. The workshop participants were from AID/W, BIFAD and INTSORMIL. Thomas (Board), Frederiksen (TC), Johnson and Gray (EEP), Vollmar (ME), Anderson, Abbott, Clegg and Ejeta represented INTSORMIL.

TANZANIA

The overall situation in Tanzania became such that Dr. John Mann and his family have returned to Texas A&M. The situation is such in Tanzania that the USAID/ Mission is being closed out.

MEXICO

A Farming Systems Workshop will be held at CIMMYT September 16-22, 1984. Sponsors include INTSORMIL, ICRISAT, CIMMYT, the Farming Systems Research Project at the University of Florida (FSSR), INIA and CATIE. The workshop will involve presentations and visits to farmers' fields and CIMMYT research plots. Dr. Billie DeWalt (INTSORMIL-University of Kentucky) and Dr. Compton Paul (CIMMYT) and others have been active in planning the workshop.

SADCC DEGREE TRAINING

Dr. Earl Ellington, Associate Dean College of Agriculture, Nebraska and Dr. Dallas Oswalt, ICRISAT, have completed a SADCC countries training needs assessment. INTSORMIL's goal is to start 5 SADCC students on programs at mid year 1984-85.

"FRONT LINES ARTICLE"

In the July, 1984 issue of "Front Lines" is an article on CLIGEN, by Neild, et.al. "Cligen" is a program for small computers that utilizes climatic data to estimate growing season length and maturity response of sorghum varieties. The program uses monthly climatic summaries which are the most common weather data available in the LDC's.

PHILIPPINES

Dr. Dely Gapasin, PCARRD Director of Agronomy Research, Philippines, visited Nebraska, Texas A&M, the Peanut CRSP and the University of Illinois (INTSOY) during July, 1984.

ATTENTION PI'S

We welcome articles for submission for future INTSORMIL Newsletters. Just drop us a note at the ME headquarters and let us know the news in your area.

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INTSORMIL PROGRAM PERSONNEL

External Evaluation Panel (EEP)

Dr. Bruce Maunder, Chair
DeKalb-Pfizer
Lubbock, Texas

Dr. Clarence Gray, Vice Chair
Virginia Polytechnic Institute
Fairfax, Virginia

Dr. Nancie L. Gonzalez
University of Maryland
College Park, Maryland

Dr. Glenn L. Johnson
Michigan State University
East Lansing, Michigan

Dr. Glenn W. Burton (Consultant)
USDA/ARS South Atlantic Area
Tifton, Georgia

Dr. Brhane Gebrekidan
SAFGRAD/ICRISAT
Nairobi, Kenya

Dr. B. L. Renfro
CIMMYT
Mexico City, Mexico

Dr. John Monyo
FAO
Rome, Italy

Dr. Ricardo Bressani
Institute of Nutrition
Guatemala City, Guatemala

Dr. Clark Harvey (Consultant)
Texas Tech University
Lubbock, Texas

Board of Directors

Dr. Herbert Massey, Chair
University of Kentucky

Dr. D. Woods Thomas
Purdue University

Dr. R. W. Kleis
University of Nebraska

Dr. John M. Yohe
University of Nebraska

Dr. H. Dean Bunch
Mississippi State University

Dr. Kurt Feltner
Kansas State University

Dr. Glen J. Vollmar
Secretary
University of Nebraska

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University of Kentucky

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Kansas State University

Dr. Charles Kidd
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Univeristy of Nebraska

Dr. Dudley T. Smith
Texas A&M University

Dr. D. Woods Thomas
Purdue University

Dr. George Ware
University of Arizona

Dr. H. Dean Bunch
Mississippi State University

Technical Committee

Dr. Victoria Marcarian, Chair
University of Arizona

Dr. Ed Kanemasu, Vice Chair
Kansas State University

Dr. Kathleen DeWalt
University of Kentucky

Dr. Jerry Eastin
University of Nebraska

Dr. Richard Frederiksen
Texas A&M University

Dr. Larry Butler
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Dr. Lynn Gourley, Secretary
Mississippi State University

Dr. Glen J. Vollmar
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Dr. John M. Yohe
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Management Entity - University of Nebraska

Dr. Glen J. Vollmar
Program Director

Dr. John M. Yohe
Associate Program Director

Dr. Roy Arnold
Vice Chancellor, Institute of
Agriculture and Natural Resources

Dr. John Goebel
Vice Chancellor
Business and Finance

Mrs. Joan Frederick
Administrative Technician

Mrs. Dorothy Stoner
Secretary

Dr. R. W. Kleis
Dean and Director of
International Programs

Mr. Carl Mueller
Grants and Contracts Officer

HOST COUNTRY PRINCIPAL INVESTIGATORS

EAST AFRICA

Sudan - Dr. A.L. Nour (Sorghum Breeding)
Dr. E.H.A. ElGassim (Millet Breeding)
Dr. H. Omer (Pathology)
Dr. S. Farah (Physiology)
Dr. M.S. Mohamed (Cultural Practices)
Dr. M.H. Shazali (Entomology)
Dr. S. Badi (Food Quality & Utilization)
Dr. A.D. Hamdoum (*Striga*)
Dr. F. Bebawi (*Striga*)
Mrs. L. Monawar (Food Quality & Utilization)
Dr. O. Ibrahim (Food Quality & Utilization)
Mr. B. Musa (Agronomist - El Obeid)
Mr. A. Abudick (Agronomist - El Obeid)

Kenya - Mr. J.K. Rutto (Agronomist)
Mr. R. M'Ragwa (Millet Breeder)
Mr. N. Ohanda (Sorghum Breeder)
Mr. A. Ababaker (Agronomist)
Mr. B. Kanyenji (Sorghum Breeder)

Egypt - Dr. F. Bishay
Dr. S. Mostafa
Dr. A. Hassan (Sorghum Breeder)
Dr. F. Fayed (Physiologist)
Dr. A.H. Shehata

WEST AFRICA

Niger - Dr. I. Maga (Entomology)
Dr. M. Saley (Agronomist)
Dr. M. Oumarou (Food Quality & Utilization)
Dr. M. Adamou (Agronomist)
Dr. B. Quendeba (Sorghum Breeder)
Dr. L. Samba (Agronomist)
Mr. Gika (Pathology)

Senegal - Dr. A. Fofana (Sorghum/Millet Breeder)
Dr. A.T. Ndoye (Sorghum/Millet Breeder)
Dr. R.T. Gahukar (Entomology)

Mali - Mr. I.M. Konate (Agronomist)
Dr. O. Niangodo (Sorghum/Millet Breeder)

Burkina Faso - Dr. S.S. Da (Sorghum Breeder)

SOUTHERN AFRICA

Botswana	- Mr. L. Mazhani (Sorghum Breeder) Mr. C.S. Manthe (Agronomist) Ms. D. Solomon (Agronomist)
Tanzania	- Dr. G. Mitawa (Sorghum Breeder) Mr. H. Saadan (Sorghum Breeder) Dr. B. Ndunguru (Agronomist) Dr. Dota (Agronomist)

CENTRAL AMERICA, MEXICO, CARIBBEAN

Honduras	- Ing. G. Reyes (Agronomist) Ing. R. Nolasco (Sorghum Breeder) Ing. J. Guevara (Sorghum Breeder)
Dominican Republic	- Ing. A. Caraballa (Agronomist) Ing. R.P. Duverge (Sorghum Breeder) Dr. W. Moscoso (Food Quality & Utilization) Ing. F. Perez (Sorghum Breeder)
Guatamala	- Dr. F. Alonzo
Mexico	- Dr. G. Vega (Sorghum Breeder) Dr. J. Narro (Sorghum Breeder) Dr. S. Bedello (Sorghum Breeder) Dr. L. Romero (Sorghum Breeder) Dr. R. Matti (Physiologist) Dr. A. Irnegar (Food Quality & Utilization) Ing. J.N. Sanchez (Pathology)

ASIAN SUBCONTINENT

India	- Dr. D. P. Singh (Physiologist)
Philippines	- Dr. S. Yoshida (Physiologist) Dr. S. Dalmacio (Sorghum Breeder) Dr. A. Soriano (Agronomist) Dr. R.K. Pandy (Physiologist) Dr. W. Herrea (Agronomist) Dr. E. Luis (Food Quality & Utilization)

SOUTH AMERICA

CIAT/North, South America	- Dr. F. Ariboleda (Sorghum Breeder) Dr. E. Owen (Agronomist) Mr. C. Ruiz (Sorghum Breeder)
Brazil	- Dr. R. Shaffert (Sorghum Breeder) Mr. R. Borgonovi (Sorghum Breeder) Mr. D.G. Pitta (Agronomist) Dr. G. Jham (Food Quality & Technology) Dr. G. de Moran (Food Quality & Utilization)
Venezuela	- Dr. H. Mena (Sorghum Breeder) Dr. O. de Córdova (Sorghum Breeder) Dr. M. Riccelle (Sorghum Breeder)
Peru	- Mr. L.A.N. Leon (Sorghum Breeder) Mr. O.A. Turriate (Agronomist)

U.S. PRINCIPAL INVESTIGATORS

Breeding Genetics

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University of Arizona

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Texas A&M University

Dr. Gary Peterson
Texas A&M University

Dr. Babrak Khaleeq
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Dr. Dan Mecksenstock
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Dr. Frank Barnett
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Dr. Darrell Rosenow
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Dr. William Ross
University of Nebraska

Mr. William Stegmeier
Kansas State University

Dr. Robert Voigt
University of Arizona

Dr. Tareke Berhe
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Mr. David Andrews
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Physiology

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Dr. Jerry Eastin
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Dr. Wayne R. Jordan
Texas A&M University

Dr. Ed Kanemasu
Kansas State University

Dr. Ralph Neild
University of Nebraska

Dr. Charles Sullivan
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Pathology

Dr. Richard Frederiksen
Texas A&M University

Dr. Stanley Jensen
University of Nebraska

Dr. Gary Odvody
Texas A&M University

Dr. George Wall
Texas A&M University

Dr. Larry Claflin
Kansas State University

Dr. Herman Warren
Purdue University

Dr. Natale Zummo
Mississippi State University

Dr. Robert Toler
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Ms. Jan Leach
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Entomology

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Dr. Robert B. Mills
Kansas State University

Dr. John Pederson
Kansas State University

Dr. Henry Pitre
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Dr. George Teetes
Texas A&M University

Utilization

Dr. Hetty Banatte
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Dr. Edward Reeves
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Dr. William Lacy
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Dr. John Sanders
Purdue University

Agronomy

Dr. Ralph B. Clark
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Dr. Max Clegg
University of Nebraska

Dr. James C. Delouche
Mississippi State University

Dr. L.V. Withee
Kansas State University

Dr. Steve Mason
University of Nebraska

Dr. Joanne Logan
Univeristy of Nebraska
(Dominican Republic)

Dr. Jerry Maranville
University of Nebraska

Dr. Art Onken
Texas A&M University

Dr. Tom Housley
Purdue University

Dr. Richard Vanderlip
Kansas State University

Dr. Wayne Youngquist
Kansas State University (Botswana)

Dr. Doug Carter
Kansas State University (Botswana)

Discipline and Country Coordinators

(As of January 1, 1985)

I. Discipline Coordinators

Agronomy/Physiology	Dr. Ed Kanemasu, Kansas State University
Entomology	Dr. George Teetes, Texas A&M University
Plant Pathology	Dr. Richard Frederiksen, Texas A&M Univ.
Socio-Economics	Dr. Billie DeWalt, University of Kentucky
Utilization and Quality	Dr. Larry Butler, Purdue University
Plant Breeding/Genetics	Dr. Fred Miller, Texas A&M University

II. Country Coordinators

Mexico and CIMMYT (Technical)	Dr. Fred Miller, Texas A&M University
Honduras	Dr. Darrell Rosenow, Texas A&M University
South America	Dr. Richard Frederiksen, Texas A&M Univ.
Botswana	Dr. Van Withee, Kansas State University
Niger - ICRISAT (Technical)	Dr. John Axtell, Purdue University
Sudan	Dr. Allen Kirleis, Purdue University
Mali	Dr. Art Onken, Texas A&M University
Egypt	Dr. Jerry Eastin, University of Nebraska
Tanzania	Dr. Fred Miller, Texas A&M University
Philippines and IRRI (Tech.)	Dr. Jerry Maranville, Univ. of Nebraska
CIAT (Technical)	Dr. Lynn Gourley, Mississippi State Univ.
Caribbean	Dr. Mary Futrell, Mississippi State Univ.
IICA - Costa Rica	Dr. Billie DeWalt, University of Kentucky
Dominican Republic	Dr. Ralph Neild, University of Nebraska
Burkino Faso	Dr. Phil Abbott, Purdue University
India	Dr. David Andrews, University of Nebraska
ICRISAT-CIMMYT-IRRI-CIAT and other Centers with Administration	Dr. Glen Vollmar, Program Director

III. Special Projects

Germplasm	Dr. Keith Schertz, Texas A&M University
Striga	Dr. Nat Zummo, Mississippi State University
SADCC Degree Training	Dr. John Yohe, Associate Program Director

INTSORMIL and Food

Sorghum and millets are major food crops for the least developed and most marginal agricultural areas of the world. They are important sources of human food in parts of Asia, much of sub-Saharan Africa, and certain regions of Latin America and the Caribbean. These crops were chosen as the highest priority food grains requiring research in the Title XII Coordinated Research Support Program (CRSP). As a result, the Sorghum/Millet CRSP (INTSORMIL) was activated July 1, 1979. Its objective is to improve human nutrition through research and technology development. To accomplish this, training of host country scientists and strengthening host country research facilities and procedures are given high priority.

INTSORMIL'S objectives are to:

*Link institutions having common interests in sorghum and millet research.

*Mobilize and coordinate research talent.

*Achieve optimum collaboration and information exchange with AID (Agency for International Development) Missions, International Research Centers, U.S. and LDC (Less Developed Country) institutions.

*Be responsible for the program and its fiscal management.

Who Is Involved?

INTSORMIL is an international network of research workers and organizations working to improve human nutrition and prosperity. Some 82 scientists from 8 U.S. Land-Grant Universities are collaborating with scientists and in-country programs of host countries on problems of sorghum and millet production and utilization for human food.

INTSORMIL is funded by the Agency for International Development, participating Land-Grant Universities, host country research agencies and private donors.

On-Site Host Country Field Work is Important to INTSORMIL's Research Program.

Where?

Collaborative activities include research and training support at:

*U.S. Land-Grant Institutions
- University of Arizona
- Florida A&M University
- Kansas State University
- University of Kentucky
- Mississippi State University
- University of Nebraska
- Purdue University
- Texas A&M University

*Host Countries. INTSORMIL is involved with the following in-country research programs and the International Research Centers.

Mali, Sudan, Botswana, Honduras, Philippines, India, Mexico, Tanzania, Colombia, Niger, Upper Volta, Egypt, and Brazil.

*International Research Centers
- CIAT (International Center for Tropical Agriculture)
- CIMMYT (International Maize and Wheat Improvement Center)
- ICRISAT (International Crops Research Institute for the Semi Arid Tropics)
- IRRI (International Rice Research Institute)

Also, there are cooperative relationships with SAFGRAD (Semi Arid Food Grain Research and Development) , FAO (Food and Agriculture Organization) and other organizations where improvement of sorghum and millet production is an objective.

What Research?

INTSORMIL researchers located in the U.S.A. and in host countries conduct sorghum and millet research projects in the following areas:

*Agronomy, cultural practices

*Physiology, especially plant stress

*Breeding, genetics and varietal improvement

*Entomology and pest control

*Plant pathology

*Storage, utilization and nutrition

*Socio-economic considerations.

How Does INTSORMIL Operate?

INTSORMIL stresses "collaborative research" among researchers working with sorghum and millet. The headquarters is located at the University of Nebraska, Lincoln, Nebraska (USA) and includes a program director, assistant program director and office staff. A technical committee of six senior researchers reviews proposals and activities and makes recommendations to a five-member Board of Directors who represent the Land-Grant Universities involved. The Board of Directors makes policy determinations which are implemented by the management entity. An administrative council gives overall direction to the INTSORMIL CRSP.

AID staff participate in technical committee, Board of Directors and administrative council meetings. AID Mission support in host countries contributes to INTSORMIL's activities.

INTSORMIL research activity is reviewed by an external review panel of scientists who are recognized internationally for their research achievements.

The Nebraska Agricultural Experiment Station provides information and educational programs to all people without regard to race, color or national origin.

INTSORMIL Places High Priority on the Training of Host Country Sorghum/Millet Scientists.

INTSORMIL scientists work cooperatively with scientists of other nations in a joint research venture which includes sharing knowledge, research techniques and plant materials. They are active in training LDC scientists through University graduate programs and workshops.

Germ Plasm

Seed of selected, improved materials is made available to sorghum and millet workers worldwide. INTSORMIL scientists are cooperating with an international germ plasm network which tests sorghum and millet genetic plant materials throughout the world. An international bank of sorghum and millet genetic materials is maintained at ICRISAT, Hyderabad, India, and INTSORMIL contributes material to it.

Publications

INTSORMIL supports the publication of sorghum-millet workshop proceedings and research reports. As an example INTSORMIL is helping to fund the publication of proceedings of a recent "Sorghum in the 80's" workshop. It also gives financial support to the Sorghum Newsletter published by SICNA (Sorghum Improvement Conference of North America).

Information

INTSORMIL scientists in the U.S. and host countries exchange information regarding their research. This is done at symposia, workshops, through individual correspondence and discussions, research reviews, professional journals and newsletters.

Training

INTSORMIL gives high priority to training host country scientists who will have major sorghum and millet research responsibility in their home countries. Training ranges from workshops and scientist exchanges to formal masters and doctors degree graduate programs. Some graduate students are following a program of completing their course work in the U.S. and their thesis or dissertation research in their home countries.

Nutrition and SocioEconomic Research are Collaborative Efforts Involving US and Host Country Scientists.

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Intsormil

☆ International Sorghum/Millet

☆ Collaborative Research Support Program (CRSP)

A Research Development Program of the Agency for International Development, Participating Land-Grant Universities, Host County Research Agencies and Private Donors.

Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln

INTSORMIL et l'alimentation

Le sorgho et le millet sont les principales cultures vivrières dans les régions agricoles du monde qui sont les moins développées et ont le plus faible rendement. Elles fournissent une partie importante de l'alimentation humaine dans certaines parties de l'Asie, dans une grande partie de l'Afrique sous-saharienne, dans certaines régions de l'Amérique latine et aux Caraïbes. Le programme commun de soutien à la recherche (CRSP) défini par le titre XII donne la plus haute priorité aux recherches destinées à améliorer la culture de ces céréales destinées à l'alimentation. Voici pourquoi l'on a créé le 1er juillet 1979 le programme INTSORMIL (programme commun de soutien à la recherche:sorgho et millet) dont les objectifs sont les suivants:

—servir de lien entre les établissements intéressés par la recherche sur le sorgho et le millet

—mobiliser et coordonner les compétences dans le domaine de la recherche

—assurer une collaboration plus étroite et un échange d'informations plus fructueux entre les missions de l'AID (Agence pour le Développement International) les centres de recherche internationaux, aux Etats-Unis et dans les pays en voie de développement.

—assurer la responsabilité du programme ainsi que sa gestion financière.

Quels en sont les participants?

INTSORMIL est un réseau international de chercheurs et d'organisations travaillant à améliorer l'alimentation de l'homme et son bien-être général. Plus de 82 chercheurs venant de 8 universités ''Land Grant'' collaborent avec les chercheurs des pay-hôtes et leurs programmes locaux sur les questions de production du sorgho et du millet et de leur rôle dans l'alimentation humaine.

INTSORMIL est financé par l'Agence pour le Développement International, les universités ''Land Grant'' qui font partie du programme, les agences de recherche des pays-hôtes et des donateurs individuels.

Le travail sur le terrain dans le pays hôte est fondamental pour le programme de recherche de l'INTSORMIL.

Où fonctionne INTSORMIL?

La collaboration de ces universités ''Land Grant'' fonctionne à la fois au niveau de la recherche et de la formation du personnel scientifique

*University of Arizona
Florida A&M University
Kansas State University
University of Kentucky
Mississippi State University
University of Nebraska
Purdue University
Texas A&M University

*Pays-hôtes. INTSORMIL, en collaboration avec les Centres Internationaux de Recherche, participe aux programmes de recherche dans les pays suivants: Mali, Soudan, Botswana, Honduras, Philippines, Inde, Mexique, Tanzanie, Colombie, Niger, Haute-Volta, Egypte, et Brésil.

*Centres internationaux de Recherche:

CIAT (Centre International d'Agriculture Tropicale)

CIMMYT (Centre International pour l'Amélioration du Maïs et du Blé)

ICRISAT (Institut International de Recherches sur les Cultures de la zone inter-tropicale semi-aride)

IRRI (Institut International de Recherche sur le Riz)

The Nebraska Agricultural Experiment Station provides information and educational programs to all people without regard to race, color or national origin.

Des relations de coopération sont également entretenues avec SAFGRAD (Développement et Recherche des Céréales en zone semi-aride), FAO (Organisation pour l'Alimentation et l'Agriculture), et d'autres organisations qui ont comme objectif l'amélioration de la production du sorgho et du millet.

De quelles recherches s'agit-il?

Les chercheurs de l'INTSORMIL, à la fois aux USA et dans les pays hôtes, poursuivent leurs projects de recherche sur le sorgo et le millet dans les disciplines suivantes:

*Agronomie, procédés culturaux
*Physiologie, spécialement les stress subis par la plante
*Sélection génétique et amélioration variétale
*Entomologie et contrôle des insectes nuisibles
*Pathologie végétale
*Stockage, utilisation et nutrition
*Considérations socio-économiques

Comment fonctionne INTSORMIL?

L'INTSORMIL insiste sur une ''recherche en collaboration'' parmi les chercheurs travaillant sur le sorgho et millet. Le siège de l'organisation se trouve à l'Université du Nebraska, Lincoln, Nebraska (USA) et comprend un directeur du programme, un sous-directeur et du personnel administratif. Un comité technique de six chercheurs confirmés examine les propositions de recherche, les activités en cours et formule des recommendations à un conseil de cinq directeurs représentant les Universités ''Land-Grant'' participantes. Le conseil des directeurs prend les décisions quant à la conduite générale du projet, décisions mises à exécution par les services gestionnaires du projet. Un conseil administratif donne des directives générales au CRSP INTSORMIL.

Le personnel de l'AID participe aux comités techniques, au conseil des directeurs ainsi qu'au conseil administratif. Les missions de L'AID dans les pays hôtes contribuent aux activités de L'INTSORMIL.

Le activités de recherche de l'INTSORMIL sont passées en revue par une commission d'enquête

INTSOMIL accorde une très haute priorité à la formation de chercheurs dans les pays-hôtes.

composée de chercheurs à qui leurs travaux de recherche ont valu une réputation internationale.

Les chercheurs de l'INTSORMIL collaborent avec les chercheurs d'autres nations à un programme de recherche où sont mis en commun les connaissances, les techniques de recherche, aussi bien que des plants. Il prennent aussi une part active à la formation de futurs chercheurs dans les pays en voie de dévloppment en leur offrant leur programme universitaire de cours et groupes de travail.

Protoplasmes de Germes

Les graines de plants sélectionnés et améliorés sont mises à la disposition des spécialistes du sorgho et du millet à l'échelon international. Les chercheurs de l'INTSORMIL font partie d'un réseau international de protoplasmes de germes qui teste le matériel génétique des sorghos et millets à travers le monde. Une banque internationale de matériel généntique se trouve à ICISAT, Hyderabad, Inde. et l'INTSORMIL y contribue.

Publications

L'INTSORMIL soutient la publication de travaux des groupes de travail sur le sorgho et le millet. Par exemple l'INTSORMIL aide à financer la publication des récents travaux d' un groupe de travail ''Le Sorgho dans les Années 80''. L'INTSORMIL contribue aussi financièrement au journal ''Sorghum newsletter'' publié par la SICNA (Conférence Nord-Américaine pour l'Amélioration du Sorgho).

Information

Les chercheurs de l'INTSORMIL aux Etas-Unis et dans les pays-hôtes échangent leurs travaux de recherche au cours de symposiums et groupes de travail, dans leurs journaux professionels et bulletins mensuels aussi bien que dans leurs correspondances et discussions individuelles.

Formation

L'INTSORMIL accorde une haute priorité à la formation de chercheurs dans les pays-hôtes, futurs responsables des programmes de recherche sur le sorgho et le millet dans leurs pays. Leur formation revêt diverses formes allant de l'organisation de groupes de travail et d' échanges de chercheurs à des programmes plus formalisés de maîtrise et de doctorat. Certains étudiants suivent un programme consistant en des cours suivis aux Etats-Unis puis de la rédaction d'une thèse ou d'un mémoire dans leurs pays d'origine.

La recherche dans le domaine de la nutrition et le domaine socio-économique bénéficie des efforts communs des chercheurs américains et des pays hôtes.

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Intsormil

International
Sorgho/Millet

Programme commun de
soutien à la recherche
(CRSP)

Un programme de développement de recherche proposé par l'Agence pour Développement International (AID), auquel participent des universités "Land Grant", les agences des pays-hôtes et des donateurs individuels.

Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln

INTSORMIL y los Alimentos

Sorgo y mijo son cultivos alimenticios de mucha importancia para las areas menos desarrolladas y de agricultura mas marginada del mundo. Ellos son recursos importantes para el alimento del hombre en partes de Asia, mucho del Africa sub Sahara, y ciertas regiones de Latinoamérica y del Caribe. El Programa del Titulo XII para la Coordinación y Apoyo de Investigación (CRSP) escogió estos cultivos como los granos alimenticios que mas necesitan investigación. Por lo tanto el CRSP Sorgo/Mijo (INTSORMIL) fue iniciado el primero de Julio del 1979. Su objetivo es mejorar la nutrición humana através del desarrollo de la investigación y tecnologia. Para lograr tal objectivo el entrenamiento de los científicos del país participante y el refuerzo de las instalaciones para la investigación reciben una alta prioridad tanto como los procedimientos para conducir las investigaciones.

Los objetivos del INTSORMIL son los siqiuentes:

*Ligar aquellas instituciones con intereses comunes en la investigación de sorgo y d mijo.

*Movilizar y coordinar los talentos de los investigadores

*Lograr la colaboración óptima y el mejor intercambio de información entre la misión diplomática del AID (Agencia para el Desarrollo Internacional), centros internacionales de investigación y las instituciones de los EEUU y las de los paises en desarrollo.

*Asumir responsabilidad del programa y su manejo fiscal.

Quienes Participan?

INTSORMIL es una red internacional de trabajadores y organizaciones de investigación que colaboran a fin de mejorar la nutrición del hombre y la prosperidad del pais participante. Algunos 82 científicos de 8 universidades de los EEUU están colaborando con los científicos y los programas de paises participantes para resolver los problemas de la producción y utilización del sorgo y mijo como alimento humano.

INTSORMIL recibe fondos de la Agencia para el Desarrollo Internacional, de las Universidades participantes de los EEUU, de las agencias

Investigación aplicada en el campo en paices participantes es importante en INTSORMIL.

investigadoras de los paises participantes y de donantes privados.

Donde?

Las actividades colaborativas incluyen apoyo para la investigación y el entrenamiento en las siguientes organizaciones:

Universidades estatales de los EEUU:
Universidad de Arizona
Universidad de Florida A y M
Universidad del Estado de Kansas
Universidad de Kentucky
Universidad del Estado de Mississippi
Universidad de Nebraska
Universidad de Purdue
Universidad de Texas A y M

*Paises Participantes. INTSORMIL participa en los sigiuentes programas de investigacion de los paises participantes y los Centros Internacionales de Investigacion.

Mali, Sudan, Botswana, Honduras, Las Filipinas, India, México, Tanzania, Colombia, Niger, Upper Volta, Egipto, y Brazil.

*Centros Internacionales de Investigacion.

CIAT (Centro Internacional para La Agricultura Tropical)
CIMMYT (Centro Internacional para el Mejoramiento de Maiz y Trigo)
ICRISAT (Instituto Internacional de Investigación sobre Cultivos para los Trópicos Semi-Aridos)
IRRI (Instituto Internacional para la Investigacion de Arroz)

También hay relaciones cooperativas con SAFGRAD (Investigacion y Desarrollo de los Granos Alimenticios de Regiones Semi-Aridos.), FAO (Organización de Alimentos y Agricultura) y otras organizaciones en las cuales el mejoramiento del sorgo y mijo es su objetivo.

Que Tipo de Investigacion?

Investigadores de INTSORMIL ubicados en los EEUU y en los paises participantes conducen investigaciones de sorgo y mijo en los siguientes campos:

*Agronomia, prácticas culturales
*Fisiologia, especializando en la planta sometida a climas marginales (stress).
*Fitomejoramiento, genetica
*Entomologia y control de plagas
*Fitopatologia
*Almacenamiento, utilización y nutrición
*Consideraciones socio-economicas

Como Funciona INTSORMIL?

INTSORMIL da importancia a la investigación colaborativa entre los investigadores trabajando en sorgo y mijo. La sede está ubicada en la Universidad de Nebraska, Lincoln, Nebraska, EEUU donde se encuentran el director del programa, el director asistente del programa, y el personal de la oficina. Un comité técnico de seis investigadores majores repasan las propuestas y actividades y hacen recomendaciones a la Junta Directiva. La Junta Directiva de 5 miembros representan a las Universidades participantes. Esta determina la política que será implementado por la Universidad de Nebraska. Un consejo administrativo brinda dirección general al INTSORMIL CRSP.

El personal de AID participa en las reuniones del comité técnico, de la Junta Directiva y del Consejo Administrativo. El apoyo de la Misión Diplomática de AID contribuye a las actividades de INTSORMIL.

La actividad investigatoria de INTSORMIL se revisa por un panel exterior de científicos, los cuales están reconocidos al nivel internacional por sus logros de investigación.

The Nebraska Agricultural Experiment Station provides information and educational programs to all people without regard to race, color or national origin.

INTSORMIL da alta prioridad el entrenamiento de científicos de los paices participantes.

Los cientificos de INTSORMIL colaboran con científicos de otras naciones en una empresa investigatoria en la cual comparten conocimientos, técnicas de investigación, y germoplasma. Ellos participan en el entrenamiento de científicos procedentes de los paises en desarrollo através de los programas universitarios para estudiantes post graduados y también en los talleres especiales.

Germo Plasma

Semilla de materiales seleccionados y mejorados se hacen disponibles a los trabajadores de sorgo y mijo del mundo entero. Los científicos de INTSORMIL están cooperando con una red internacional de germoplasma, la cual hace ensayos probando el material genético de sorgo y mijo por todo el mundo. Un banco internacional de germoplasma para sorgo y mijo se mantiene en ICRISAT, Hyderabad, India, al cual INTSORMIL contribuye con materiales genéticos.

Publicaciones

INTSORMIL patrocina la publicación de los actas de talleres de sorgo y mijo y de los informes de investigaciones. Por ejemplo, INTSORMIL está ayudando a financiar la publicación del acta del taller reciente titulado "Sorgo en los '80". También contribuye fondos al *Sorghum Newsletter*, publicado por SICNA (Conferencia para el Mejoramiento de Sorgo de Norteamerica).

Informacion

Científicos de INTSORMIL en los EEUU de los paises participantes intercambian información sobre sus investigaciones. Tal intercambio se lleva a cabo durante simpósios y talleres, através de correspondencia personal y discusiones individuales, repasos de investigaciones, revistas profesionales, y cartes noticieras.

Entrenamiento

INTSORMIL da alta prioridad al entrenamiento de los científicos de los paises participantes, quienes llevarán la mayor responsabilidad para la investigación de sorgo y mijo en sus própios paices. El entrenamiento se puede impartir através de talleres e intercambios de científicos, o através de programas formales para estudiantes de post grado, terminando en títulos de maestria o doctorado. Algunos estudiantes de post grado completan los cursos necesarios in los EEUU, pero hacen las investigaciones para sus tesis en sus propios paices.

Investigación en Nutricion y las Ciencias Socio-Económicos es una actividad colaborativa entre tecnicos de varios paices.

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Intsormil

☆ Sorgo/Mijo Internacional

☆ Programa Colaborativo de Apoyo a la Investigacion (CRSP)

Un Programa de la Agencia para Desarrollo Internacional, Universidades Participantes, Agencias de Investigación de los Paises Participantes y Donantes Privados Para el Desarrollo de la Investigación

Instituto de Agricultura y Recursos Naturales
Universidad de Nebraska–Lincoln