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REPORT TO:

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R 83-1

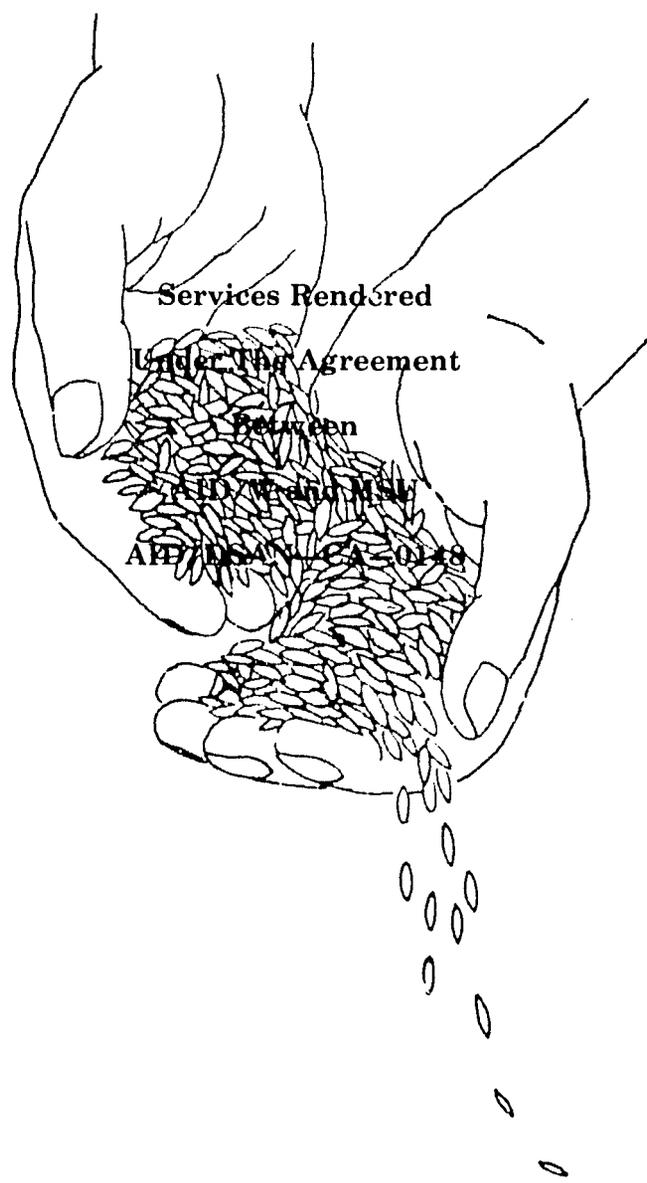
AID EVALUATION TEAM

- R. Jackson
- H. Carlson
- E. Frolick
- M. Pohlman

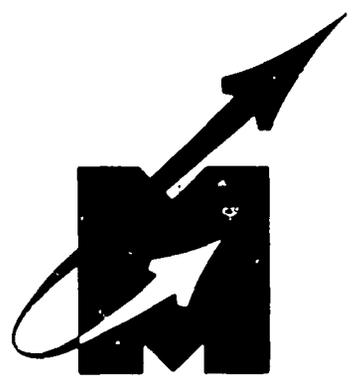
MSU Administration

SUMMARY OF ACTIVITIES

30 April 1979 to 30 June 1983



SEED TECHNOLOGY LABORATORY
 MISSISSIPPI STATE UNIVERSITY
 MISSISSIPPI STATE, MISSISSIPPI



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SUMMARY OF ACTIVITIES

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AID/DSAN-CA-0148

July, 1983

INTRODUCTION

The activities and services performed under the MSU-AID/DSAN-CA-0148 Cooperative Agronomy on Seed Program/Industry Development are summarized in this report for the period 30 April 1979 to 30 June 1983. The summary was prepared in the present format for a cooperative evaluation of the CA by Dr. Bob Jackson and Ms. Mary Mozynski, AID/W, in September, 1982. It has been extended through YEAR FOUR for the present report.

MSU-AID/DSAN-CA-0148 is a continuation of contracts and agreements between the two parties in the "seed technology/seed program development" area that have "operated" continuously since April, 1958. Since 1958, MSU has provided technical assistance under AID contracts/co-operative agreements to 17 countries in Latin America/Caribbean, 17 countries in Africa, and 11 countries in South Asia/Far East - periodically in many cases. In addition, MSU has had a major influence on seed program/industry development in countries in which AID has not had a mission through training programs, informational services and other arrangements: Venezuela, Argentina, Mexico, Malaysia, Korea. The MSU Seed Technology group also serves as an informal informational resource on "seeds" for FAO, World Bank, InterAmerican Development Bank, UNDP, other U.S. Universities, and other AID contractors.

As pointed out in the statement prepared for Bob Jackson and Mary Mozynski last September, the AID "seed projects" with MSU have

contributed to AID objectives in many ways. The most important and lasting contribution , however, has been development of the human resource without which progress is not possible.

Prepared for:

Dr. Bob Jackson
Ms. Mary Mozynski

September 9, 1982

STATEMENT

MISSISSIPPI STATE UNIVERSITY COOPERATIVE AGREEMENT

AID/DSAN-CA-0148

GENERAL PURPOSE AND GENERAL BENEFITS: To assist the LDCs with establishment of an effective, efficient production and supply system for seed of improved varieties of basic food crops, and seed of speciality crops such as vegetables and forage/fodder crops.

Improved seed is the key and crucial input in increasing the production of crops. The benefits of crop introduction, improvement and breeding research are extracted only to the extent that seed of the improved varieties are produced in adequate quantities, distributed to farmers at the proper time, and planted by farmers. Unless seed of the improved varieties are produced, distributed and planted by farmers, there are no benefits from crop improvement research and development activities. Likewise, the key input in the "technological package" offered to farmers by extension services and projects is seed of improved varieties. Extension projects are successful only to the extent that seed of the improved varieties are available for assembling the "technological" package.

While the genetic potential of the seed is paramount in terms of yield improvement, the quality (physical and physiological) of the seed planted has an impact on production. Good quality seed of a crop variety can increase yields by 10-15% over low quality seed of the same variety, i.e., same genetic potential. This benefit can be extracted without additional input (save for the good quality seed).

Another periodic but very important benefit of a seed production and supply system is rehabilitation in the wake of natural disasters such as floods, and unseasonable droughts. The major constraint to rapid rehabilitation in most cases is a shortage of seed. A seed program/industry can supply the seed needed for rapid rehabilitation - often in time to permit crop production in the same season.

Still another benefit of an effective seed production and supply system is its capacity to expedite and facilitate the introduction of new crops in a country or region thereof. Farmers have experience in "seed-saving" for traditional crops, but not for new crops. Therefore, some years are required for the farmers to gain the experience needed to maintain the viability of seed of new crops from harvest to the next planting season. A seed production and supply program or industry has

the personnel resources and facilities to produce, maintain and supply seed of new crops during the years the farmers are gaining experience and periodically thereafter, as new varieties are released. Soybeans is an example of a new crop that is being introduced in many countries. Soybean seed are notoriously short-lived and inadequate quality and quantity of soybean seed is a major constraint to soybean production in the LDCs.

TYPES OF ACTIVITIES: Some activities under the cooperative agreement involve technical assistance - including facility development - and training for the "seed supply component" of some project of broader scope, e.g., Maize and Oil Seeds project in Burma. In other cases the effort is focussed on a specific seed program/industry development project, which is judged to be essential for extraction of the benefits of research, land development and irrigation, credit, and extension projects. In still other cases, the efforts are directed toward improvements in an already established seed program/industry which is not contributing as effectively as it should (and must) to the agricultural development of the country.

A major constraint to the development of an effective and efficient seed supply system in most LDCs is lack of trained personnel and inadequate managerial skills. Major emphasis, therefore, is given to training at all levels; from Ph.D. specialization in seed technology to on-the-job or in-service operational training. Training in management is accorded a prominent position in over-all training activities. As a follow-up to training, informational services are most important. Providing information on all aspects of a seed program/industry is an on-going activity under the cooperative agreement.

Direct technical assistance to the Missions and the seed program/industries of the LDCs has been and remains the dominant activity under the cooperative agreement and its predecessors.

Specific Types of Activities

1. Preparation of project papers on the "seed component" of project papers.
2. Evaluation of seed programs and recommendations for improvement.
3. Design and specification of facilities needed for a seed program.
4. Regional, in-country, in-service, and on-the-job training.
5. Degree (B.S., M.S., Ph.D.) and special training programs at MSU with specialization in seed technology.
6. Informational (technical/management) services.

7. Analysis and resolution of technical problems in seed production, processing and storage.
8. Review and evaluation of seed projects or the seed components of larger projects.

SOME RECENT EXAMPLES:

Costa Rica

CARE has a nutritional project in Costa Rica which involves supplemental feeding of public school children with a high-protein drink. The key element in the drink is soybean protein. The major impediments for the project are foreign material in the soybeans, which interferes with extraction of the protein, and lack of seed for cooperating soybean growers. Assistance is being provided to establish a small cleaning facility to remove the foreign material from the soybeans, which can also be used to process seed lots for planting. When this work is completed, the project should be able to function to full capacity.

Burma

USAID is funding a maize and oil seeds project for Burma. The purpose of the project is to increase production of maize by 375,000 MT, groundnuts by 375,000 MT, sesame by 49,100 MT, sunflower by 65,500, and soybean by 72,000 MT. Achievement of these goals should increase gross farm income by \$161.1 million and generate other benefits for a total of \$280 million. A vital component of the project strategy is the establishment of four seed farms to produce and supply the seed needed for the technological package. MSU through the cooperative agreement has provided and is providing some of the technical assistance for development of the seed farms and a seed production and supply program. Successful accomplishment of this task will permit realization of full benefits of the project. If the seed farm development component does not function in the manner envisioned, benefits will be reduced by 50%.

Cameroon

MSU provided technical assistance to a small North Cameroon Seed Multiplication Project which has achieved good success. The decision was made by the Mission and GOC to expand the activity under a North Cameroon Seed Project Phase II. Assistance was provided in development of the project paper and technical specifications, and will be provided periodically during project implementation including the training of a cadre of Cameroon seed specialists. The North Cameroon Seed Project is designed to be the major means by which "efficient linkages to facilitate transmission of the research results to the farmer" will be achieved. It is projected that as a result of the supply of improved seed to farmers, yields of peanuts will be increased by 15,500T/yr,

corn 23,400T, and sorghum 22,900T. This production will have an annual value of \$25 million in benefits.

Thailand

Periodic technical assistance has been provided to Thailand since the middle 1960s. Thai seed technologists have been trained at MSU since 1958. In 1975 the RTG decided the time was ripe for rapid expansion of seed production and supply. Assistance was provided in preparation of the PID and PP for an AID loan, and the design and specification of seed facilities needed. Long term technical assistance was also provided by MSU under a separate contract with the RTG. However, periodic assistance under the cooperative agreement has continued including preparation of project documents for a "second phase" loan project. The purpose of the first project was to improve crop productivity through increased use of improved seed by Thai farmers. Total benefits were estimated at \$130,000,000 over a 15 year period with some 200,000 Thai farmers as beneficiaries. The project has been very successful not only in terms of achieving the goals laid down, but of equal importance has been the catalyst for other developments.

(1) Private sector involvement in seed production and supply was non-existent at the time the original PP was prepared (1975-76). Moreover, the private sector could not be interested in participation in seed industry development despite extensive efforts by the World Bank, USAID and RTG to generate interest. The successful example of the seed project, however, has stimulated establishment of 6 private seed companies which are now concentrating on corn and sorghum seed production. Other private companies are trying to enter into the developing seed industry.

(2) The USAID loan financed seed project elicited responses from other donors. The Japanese financed one center for the seed program (already operational) and will provide \$30 million for expansion of rice seed production and supply which is not of interest to the private sector (low returns on rice seed). The EEC is financing two seed units - one in lower Thailand for which construction is just getting underway. The MSU group has provided and continues to provide advice and technical assistance for the Japanese and EEC contributions to the seed program/industry in Thailand.

The "Phase II" seed project just getting underway is designed to stimulate similar activity in the vegetable area, i.e., production of vegetable seed.

Over-all Impact: Under terms of various agreements with AID since 1958 and including the present AID/DSAN-CA-0148 cooperative agreement, MSU has made major contribution to the seed program/industry of over 40 countries. In most of these countries MSU-trained seed specialist and managers occupy the key positions in the seed program/industry. In the

case of Brazil, for example, MSU has played an important part in developing excellent seed technology training programs in two Universities which are now offering training opportunities to personnel from other LA countries. More recently MSU has played a major role in the establishment of a Seed Unit within CIAT which has developed a wide range of training programs for participants from LA and Caribbean countries.

It is difficult to quantify the impact of the work of MSU because the work has been focussed on a crucial linkage (improved seed) between research and the farmers, and on a key input in the technological package offered by extension. Yet, it can be stated that efforts of MSU have had a significant impact in almost every country in which crop production has been increased or maintained in the face of diseases and other pests through the use of superior crop varieties.

APPROXIMATE STAFF TIME ALLOCATED

TO

AID/DSAN-CA-0148

<u>Name</u>	<u>Rank</u>	<u>Person Months</u>
C. H. Andrews	Professor (Agronomy)	4
A. H. Boyd	Professor (Agronomy)	4
H. D. Bunch	Dir. Int. Prog. Agr. & For. (& Professor, Agronomy)	0.5-1
E. R. Cabrera	Research Associate	6
J. C. Delouche	Professor (Agronomy) (Coordinator, AID/DSAN-CA-0148)	5
H. C. Potts	Professor (Agronomy)	4
G. Reusche	Research Associate (until Sept. 15, 1982)	3
C. E. Vaughan	Professor (Agronomy)	4
G. B. Welch	Professor (Agr. & Bio. Eng.)	3
W. Couvillion	Associate Professor (Agr. Econ.)	<u>3</u>
		41

TABLE 1 D
YEAR One

Date Prepared: Sept. 3-5, 1982

TIME DISTRIBUTION
(man days)

SITE (NAME)	PERIOD: 4/30/79 to 6/30/80				IN-COUNTRY TECHNICAL ASSISTANCE	AID SUPPORT	REPRESENT- TATION AT TECH. MTG.	SITE (NAME)	SITE (NAME)	SITE XXXXX	Total
	TD-IMC ^{1/} INCREASED AND MAINTAIN TECH CAPABILITIES	ID-V-C ^{2/} LIBRARY AND INFORMATION SERVICES	V-ST ^{3/} TRAINING PROGRAMS ON CAMPUS	TRAINING PROGRAMS IN-COUNTRY							
Andrews, C.H.	0-2	0-4-6	2-18	28	66					LA(CIAT)-2, ROCAP, Ghana, Upper Volta	126
Beck, J.	0-0	0-2.5-5			67					Upper Volta, Guatemala, Cameroon & ATOS ^{5/}	74.5
Boyd, A.H.	4-2	4-1-4	7-15	27	97					LA(CIAT)-4, Guyana-2, Tanzania, Costa Rica, El Salvador	161
Bunch, H. D.	0-0	2-2-0			14	7				ROCAP-2 (Costa Rica and Guatemala)	25
Cabrera, E	9-2	0-8-2	1-8	17	54					LA(CIAT), Paraguay, ROCAP-CR, & ATOS ^{5/}	101
Couvillion, W	0-2	3-4-3	3-		31					ATOS ^{5/}	46
Delouche, J.C.	0-2	2-6-11	0-18	15	80	10				Burundi, LA (CIAT)-2, Guyana, Thailand	144
Reusche, G	0-2	0-4-2	3-8		59					Cameroon, Haiti, & ATOS ^{5/}	78
Potts, H.C.	9-2	3-5.5-8	0-20	31	76	6				LA(CIAT)-12, Colombia, Ethiopia, Paraguay, Sierra Leone, Upper Volta	160.5
Vaughan, C.E.	0-2	0-5-4	0-15	2	42					Cameroon, & ATOS ^{5/}	70.0
Welch, G.B.	0-2	5-7-3	2-6		44					LA(CIAT) & ATOS ^{5/}	69.0
Baskin, C. (Consultant)					18					Sudan	18.0
	23-18	19-49-48	18-108	120	648	23	0			15 Sites	1074
	41	116	126								100
	3.8	10.6	11.8	11.2	60.4	2.2					

^{1/} TD = Technology development (problem solving); IMC = Inc. & maintain tech. capabilities.

^{2/} ID = Information development; V = visitors; C = correspondance. ^{3/} V = visitors; ST = student training.

^{4/} Includes work done at MSU. ^{5/} ATOS = Assistance to other staff on TA activities.

TABLE 1-D
YEAR TWO

Date Prepared: Sept. 3-5, 1982

TIME DISTRIBUTION
(in days)

PERIOD: 7/1/80 - 6/30/81

STAFF (NAME)	TD-IMC ^{1/}	ID-V-C ^{2/}	V-ST ^{3/}	4/		AIR SUPPORT	REPRESENTATION AT TECH. MTG.	SITE (NAME)	SITE (NAME)	SITE (NAME)	Total
	INCREASED AND MAINTAIN TECH CAPABILITIES	LIBRARY AND INFORMATION SERVICES	TRAINING PROGRAMS ON CAMPUS	TRAINING PROGRAMS IN-COUNTRY	IN-COUNTRY TECHNICAL ASSISTANCE						
Andrews, C.H.	11-2	4-3-5	1-18	12	38		18 ^{6/}	Botswana, Sri Lanka, Indonesia, LA (CIAT)			112
Boyd, A.H.	0-2	6-2-6	1-16	31	38			LA (CIAT), Guyana, Senegal, Panama, Costa Rica			102
Bunch, H.D.			1-0			5	23	9th Pan American Seed Seminar (Argentina) FAO/SIDA-International Seed Seminar (Kenya) NC/AID			29
Cabrera, E.	0-2	4-6-5	0-7	21	18			LA(CIAT), plus ATO ^{5/}			63
Couvillion, W.	0-2	0-6-2	4-0		40			Cameroon			54
Deloucne, J.C.	0-2	0-3.5-8	4-16	41	53	10	18 ^{6/}	LA(CIAT), Guyana, Thailand, Sri Lanka Indonesia			155.5
Reusche, G	0-2	0-10-1	1-6		63			Cameroon-2			83
Potts, H.C.	0-2	6-0-8	4-15	11	93	5		ROCAP(CR), LA(CIAT)-2, Thailand-2			144
Vaughan, C.E.	0-2	0-4-4	1-6	48	40			Cameroon, LA(CIAT), Thailand			105
Welch, G.B.	0-2	6-7-4	2-6	12	21			LA(CIAT): Plus ATO ^{5/}			60
Harrington, J. (Consultant)					35			Thailand			35
	11-18	26-41.5-43	19-90	176	439	20	59	12 Sites			942.5
	29	110.5	109								
	3.0	11.8	11.6	18.8	46.6	2.1	6.1				100.0

^{1/} TD = Technology development (problem solving); IMC = Inc. & maintain tech. capabilities.

^{2/} ID = Information development; V = visitors; C = correspondance. ^{3/} V = visitors; ST = student training

^{4/} Includes work done at MSU. ^{5/} ATOS = Assistance to other staff on TA activities

^{6/} Conference on Soybean Seed Quality and Stand Establishment, Jan. 25-31, 1981; co-sponsored by INTSOY.

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TABLE 1-D
YEAR Three

Date Prepared: Sept. 3-5, 1982

TIME DISTRIBUTION
(man-days)

PERIOD: 7/01/81 - 6/30/82

STAFF (NAME)	TD-IMC ^{1/}	ID-V-C ^{2/}	V-ST ^{3/}	4/		ADM SUPPORT	REPRESENTATION AT TECH. MTG.	SITE (NAME)	SITE (NAME)	SITE (NAME)	Total
	INCREASED AND MAINTAIN TECH CAPABILITIES	LIBRARY AND INFORMATION SERVICES	TRAINING PROGRAMS ON CAMPUS	TRAINING PROGRAMS IN-COUNTRY	IN-COUNTRY TECHNICAL ASSISTANCE						
Andrews, C.H.	0-2	5-6-5	2-12	14	12			Ecuador, LA (CIAT)			58
Boyd, A.H.	4-2	5-5-9	1-15	8	70			Costa Rica (CARE), Nepal-2			119
Bunch, H.D.	0-0	0-6-0	4-0			5					15
Cabrera, E	6-2	4-6-2	3-8		38			ATO ^{5/}			69
Couvillion, W.	0-2	2-6-1	4-0		16			Upper Volta			31
Delouhce, J.C.	6-2	0-6-8	2-21	22	47	10		AID/W, LA(CIAT), Burma			124
Reusche, G.	0-2	0-6-1	1-7	40	4			Upper Volta and ATO ^{5/}			61
Potts, H.C.	0-2	6-6-8	1-21	32	50	5		Botswana, Upper Volta, LA(CIAT)			131
Vaughan, C.E.	0-2	2-4-4	1-15	40	19			LA(CIAT), Kenya			87
Welch, G.B.	0-2	5-8-2	3-6		28			ATO ^{5/}			54
Gregg, B.R. (Consultant)					26			Burma			26
Sinclair, J. (Consultant)					25			Thailand			25
Total	16-18	29-59-40	22-105	156	335	20		9 Sites + AID/W			800
Percentage	34	128	127	19.5	41.9	2.5					100.0
	4.2	16.0	15.9								

^{1/} TD = Technology development (problem solving); IMC = Inc. & maintain tech. capabilities.

^{2/} ID = Information development; V = visitors; C = correspondance. ^{3/} V = visitors; ST = student training.

^{4/} Includes work done at MSU. ^{5/} ATOS = Assistance to other staff on TA activities.

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TABLE 1.0
YEAR Four

Date Prepared: July 15, 1983

TIME DISTRIBUTION
(man-days)

PERIOD: 07/01/82 - 06/30/83

STAFF (NAME)	TD-IMC ^{1/}	ID-V-C ^{2/}	V-ST ^{3/}	PERIOD: 07/01/82 - 06/30/83			REPRESENT- TATION AT TECH. HQC. SITE (NAME) SITE (CODE) SITE XXXXX	Total
	INCREASED AND MAINTAIN TECH CAPABILITIES	LIBRARY AND INFORMATION SERVICES	TRAINING PROGRAMS ON CAMPUS	TRAINING PROGRAMS IN-COUNTRY	IN-COUNTRY TECHNICAL ASSISTANCE	SUPPORT		
Andrews, C. H.	0-2	4-3-8	2-15	10	38		Ghana, Upper Volta, Indonesia	82
Boyd, A. H.	6-2	5-6-4	2-18	59	51		Costa Rica, Nepal, Burma, Bolivia CIAT (LA Region)	153
Bunch, H. D.	0-0	0-5-0	0-0	0	0	8		13
Cabrera, E.	7-2	2-8-2	10-0	4	48		Costa Rica, Burma, Nepal, Bolivia, Indonesia	83
Couvillion, W.	0-4	0-5-2	1-0	2	20		Upper Volta, Nepal	34
Delouche, J. C.	3-2	0-8-9	4-30	45	74	10	Nepal, Burma, IITA, CIAT (LA Region)	185
Potts, H. C.	0-2	5-6-4	4-21		39	6	Tanzania, Sierra Leone	87
Reusche, G.	0-1	0-0-0	5-0	0	0		Terminated 15 Sept. 1982 to accept position at N.C. State University	6
Vaughan, C. E.	4-2	2-2-3	2-18	9	32		Ghana, Upper Volta	74
Welch, G. B.	0-2	5-2-1	1-3	27	31		Sierra Leone, CIAT (LA Region), Nepal, Burma	72
<u>TOTALS</u>	<u>20-19</u>	<u>23-45-33</u>	<u>31-105</u>	<u>156</u>	<u>333</u>	<u>24</u>		<u>789</u>
<u>Percentages</u>	<u>39</u> <u>5</u>	<u>101</u> <u>13</u>	<u>136</u> <u>17</u>	<u>20</u>	<u>42</u>	<u>3</u>		

^{1/} TD = Technology development (problem solving); IMC = Inc. & maintain tech. capabilities.

^{2/} ID = Information development; V = visitors; C = correspondance. ^{3/} V = Visitors; ST = student training.

^{3/} Includes work done at MSU. ^{5/} ATOS = Assistance to other staff on TA activities.

TABLE - 11 A^{1/}YEAR ONE ^{1/}

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Date prepared: Sept. 1-3, 1982

Type of Activity^{2/} TA & Training Period: 4/30/79 to 6/30/80

Travel Dates	Requesting Country	Days ^{3/}		Staff Name	Scope of Work
		OS	MSU		
<u>April 30 - June 30, 1979</u>					
04/30 - 05/03	Guatemala (ROCAP)	4	2	Bunch	Confer with ROCAP on possible new regional project.
04/30 - 05/11	Upper Volta	12	5	Beck	Assist with installation of equipment.
05/05 - 05/12	CIAT (Colombia)	8	4	Boyd	Teach seed conditioning; regional training course - CIAT.
04/30 - 05/05	CIAT (Colombia)	6	4	Andrews	Teach seed quality evaluation; regional training course - CIAT.
05/13 - 05/19	Guyana	7	4	Boyd	Technical assistance to GOG rice project.
05/14 - 05/19	CIAT (Colombia)	6	4	Potts	Teach seed marketing; regional training course - CIAT.
05/27 - 05/30	Colombia	4	4	Potts	Present lectures, 1st Colombian Seed Symposium.
	Ethiopia (cont'd)	16		Potts w/Welch, Beck, Vaughan	(Seed facility consultation prev. qtr.)
<u>July 1 - December 31, 1979</u>					
07/08 - 07/12	Costa Rica (ROCAP)	5	3	Bunch	To confer with ROCAP and USAID officials in region;
		5	4	Cabrera	to participate in conference on seed program development
		5	4	Andrews	in ROCAP region.
07/15 - 07/20	Burundi (contd')	4	4	Delouche	Desk review of PP from previous qtr. consultations.
	Colombia (CIAT)	6	12	Boyd et. al.	To assist CIAT on equipment specifications for seed unit.
08/13 - 08/15	AID/W	3	2	Delouche	AID/W staff review of Burundi PP.
09/09 - 09/22	Colombia (CIAT)	4	12	Boyd	Consultation on design of CIAT seed unit facilities;
	Costa Rica	7	4		(w/Cabrera, Welch, Beck)
	El Salvador	3	5		revision of seed law in Costa Rica;
					(w/Cabrera, Welch)
					processing plant operations in El Salvador.
					(w/Cabrera, Welch and Beck)

^{1/} Use this format for two tables; Table 11-A for year one and Table 11-B for year two. Data should be reported on an U.S. fiscal year period, if maintained that way. Otherwise, use twelve month reporting periods according to your records, but specify the time periods.

^{2/} Group activities according to scope of work in your Cooperative Agreement; i.e. pest and pesticide management problems; in-country pesticide Residual Sampling and Analysis; Integrated Coop. Production; etc.

^{3/} OS = Overseas; MSU = Campus

TABLE - 11-A^{1/}YEAR ONE ^{1/}

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Type of Activity^{2/} TA & Training

<u>Travel Dates</u>	<u>Requesting Country</u>	<u>Days 3/</u>		<u>Staff Name</u>	<u>Scope of Work</u>
		<u>OS</u>	<u>MSU</u>		
09/24 - 09/29	Guatemala	6	6	Beck	Provide technical assistance on seed drying and processing to ICTA, GOG. (w/Boyd)
11/16 - 12/13	Tanzania	28	8	Boyd	Assist with plans for phase out and final evaluation of seed project. (w/Delouche)
12/02 - 12/08	Colombia (CIAT)	6	9	Delouche	Confer seed program development in LA with CIAT; plan activities for CIAT's Seed Unit. (w/Cabrera, Boyd, Potts)

January 1 - June 30, 1980

01/02 - 01/26	Cameroon	25	8	Vaughan	Prepare project paper for seed project. (w/Cabrera)
01/08 - 02/07	Cameroon	31	7	Beck	" " " " " "
01/08 - 02/08	Cameroon	32	16	Reusche	" " " " " "
01/07 - 01/11	Colombia (CIAT)	4	6	Boyd	Review of final plans for construction of CIAT seed unit facilities.
		4	3	Welch	
01/20 - 02/16	Ghana	28	12	Andrews	Assist with redesign of seed component of MIDAS II project. (w/Vaughan, Couvillion, Potts, Delouche)
01/25 - 02/17	Thailand	24	12	Delouche	Assist with evaluation and revision of AID loan seed project. (w/ Potts, Couvillion, Welch, Bunch)

^{1/} Use this format for two tables; Table 11-A for year one and Table 11-B for year two. Data should be reported on an U.S. fiscal year period, if maintained that way. Otherwise, use twelve month reporting periods according to your records, but specify the time periods.

^{2/} Group activities according to scope of work in your Cooperative Agreement; i.e. Pest and pesticide management problems; in-country pesticide Residual Sampling and Analysis; Integrated Coop. Production; etc.

Date Prepared: Sept. 1-3, 1982

TABLE - 11-A^{1/}YEAR ONE ^{1/}

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Type of Activity ^{2/} <u>TA & Training</u>		Days		Staff	Scope of Work
Travel Dates	Requesting Country	OS	MSU	Name	
02/11 - 02/29	Paraguay	19	10	Potts	Assist USAID/P and GOP with review of national seed program.
03/19 - 03/21	AID/W	19	12	Cabrera	To AID/W to prepare final Thailand seed project report
		3	3	Delouche	
03/07 - 03/22	Sudan	16	9	Baskin	Assist with identification of wheat seed quality problems.
04/06 - 04/17	Sierra Leone	12	15	(consultant) (w/Delouche, Potts) (Baskin at MSU).	Assist mission with coordination of program and development of seed facilities. (w/Welch, Cabrera)
				Potts	
04/09 - 04/19	Colombia (CIAT)	11	6	Delouche	Instruction in regional training course - CIAT.
		11	7	Andrews	
05/07 - 05/14	Colombia (CIAT)	8	7	Boyd	Instruction in regional training course - CIAT.
		8	9	Cabrera	
05/18 - 05/22	Haiti	5	2	Reusche	Visit with USAID/Haiti and Haitian seed workers in connection with trip to Puerto Rico for another project.
05/24 - 06/07	Guyana	15	7	Delouche	Evaluate seed project and develop specs for rice seed facilities. (w/Cabrera and Welch)
		15	21	Boyd	
05/25 - 05/31	Colombia (CIAT)	7	6	Potts	Present seed marketing workshop, regional seed training course - CIAT.

^{1/} Use this format for two tables; Table 11-A for year one and Table 11-B for year two. Data should be reported on an U.S. fiscal year period, if maintained that way. Otherwise, use twelve month reporting periods according to your records, but specify the time periods.

^{2/} Group activities according to scope of work in your Cooperative Agreement; i.e. Pest and pesticide management problems; in-country pesticide Residual Sampling and Analysis; Integrated Coop. Probation; etc.

Date prepared: Sept. 1-3, 1982

TABLE - 11-A^{1/}YEAR ONE ^{1/}

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Type of Activity ^{2/}		TA & Training					
Travel Dates	Requesting Country	Days		Staff Name	Scope of Work		
		OS	MSU				
06/16 - 07/04	Upper Volta	19	6	Potts	Prepare PP for foundation seed project in Upper Volta.		
		<u>19</u>	<u>8</u>	Andrews			
	Totals	460	308				

^{1/} Use this format for two tables; Table 11-A for year one and Table 11-B for year two. Data should be reported on an U.S. fiscal year period, if maintained that way. Otherwise, use twelve month reporting periods according to your records, but specify the time periods.

^{2/} Group activities according to scope of work in your Cooperative Agreement, i.e. Pest and pesticide management problems; in-country pesticide Residual Sampling and Analysis; Integrated Coop. Production; etc.

Date Prepared:

TABLE - 11-B1/

YEAR TWO 1/

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Type of Activity 2/ TA & Training Period: 7/01/80 to 6/30/81

Travel Dates	Requesting Country	Days		Staff Name	Scope of Work
		OS	MSU		
<u>July 1 - December 31, 1980</u>					
07/29 - 08/24	Cameroon	27	14	Reusche	Assist USAID/Cameroon with preparation of PP.
		27	13	Couvillion	(w/Cabrera)
08/08 - 08/24	Cameroon	17	8	Vaugahn	Assist USAID/Cameroon with preparation of PP.
08/31 - 09/04	Costa Rica (ROCAP)	5	3	Potts	Serve as technical advisor to regional meeting on breeder and foundation seed production. (ROCAP).
09/17 - 10/04	Guyana	18	9	Delouche	Conduct in-country training course & tech. assist. (6)
		18	9	Boyd	Conduct in country training course & tech. assist.(6)
11/14 - 11/24	Thailand	21	12	Delouche	Conduct in-country training course & TA (10)
11/10 - 11/21	Botswana	12	13	Andrews	Advise on seed processing equipment needed for seed facilities. (w/Potts, Cabrera, Boyd and Welch)
11/12 - 11/21	Colombia (CIAT)	10	6	Boyd	Assist with regional training course at CIAT and preparation
		10	7	Potts	of audio-tutorials. (Potts-6; Boyd-6)
11/11 - 12/01	Cameroon	21	20	Reusche	Complete final review and preparation of seed project PP. (w/Cabrera)
11/16 - 11/23	Argentina	8	5	Bunch	Participate in 9th Pan American Seed Seminar representing MSU and AID.

1/ Use this format for two tables; Table 11-A for year one and Table 11-B for year two. Data should be reported on an U.S. fiscal year period, if maintained that way. Otherwise, use twelve month reporting periods according to your records, but specify the time periods.

2/ Group activities according to scope of work in your Cooperative Agreement; i.e. Pest and pesticide management problems; in-country pesticide Residual Sampling and Analysis; Integrated Coop. Probation, etc.

Date Prepared: Sept. 1-3, 1982

TABLE 11-B1/

YEAR TWO 1/

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Type of Activity^{2/} TA & Training

Travel Dates	Requesting Country	Days		Staff Name	Scope of Work
		OS	MSU		
<u>January 1 - June 30, 1981</u>					
01/04 - 01/13	Senegal	10	13	Boyd	To provide technical assistance and advice on GOS rice seed production program. (w/Cabrera)
01/17 - 01/23	Colombia (CIAT)	7	8	Potts	Presentations before Pan American Seed Program Strategies, Plans and Implementation Workshop - CIAT.
01/18 - 01/22	Panama	4	4	Boyd	Assist USAID & GOP with plans for expansion of seed program.
01/22 - 02/13	Sri Lanka & (16)	23	16	Delouche	Participate in and co-sponsor with INTSOY "Soybean Seed. Quality Conference" in Sri Lanka (1/25 - 1/31); consult with USAID/Indonesia and GOI on seed production and supply.
	Indonesia (30)	23	14	Andrews	
01/27 - 01/31	Costa Rica	4	2	Boyd	Provide technical assistance to Costa Rican seed program.
02/14 - 03/16	Thailand	31	16	Vaughan	To conduct in-country training course & TA (12)
02/26 - 03/26	Thailand	29	9	Potts	To assist mission and Royal Thai Government with preparation of PP for Seeds II.
02/19 - 03/25	Thailand	35	0	Harrington (consultant)	Technical advice on vegetable seed aspects of proposed Thai Seeds II. (Harrington from U. of California, Davis)

1/ Use this format for two tables; Table 11-A for year one and Table 11-B for year two. Data should be reported on an U.S. fiscal year period, if maintained that way. Otherwise, use twelve month reporting periods according to your records, but specify the time periods.

2/ Group activities according to scope of work in your Cooperative Agreement; i.e. Pest and pesticide management problems; in-country pesticide Residual Sampling and Analysis; Integrated Coop. Production, etc.

Date Prepared:

TABLE - 11-B1/

YEAR TWO 1/

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Type of Activity ^{2/}		TA & Training				
Travel Dates	Requesting Country	Days		Staff Name	Scope of Work	
		OS	MSU			
03/14 - 03/29	Colombia (CIAT)	16	9	Cabrera	Instruction in regional seed training course - CIAT; plus TA to CIAT Seed Unit (4).	
03/22 - 03/28	Colombia (CIAT)	7	3	Welch	Instruction in region seed training course - CIAT.	
04/20 - 04/30	Colombia (CIAT)	11	5	Andrews	Instruction in regional seed training course - CIAT; plus TA to CIAT Seed Unit (4)	
		11	5	Vaughan		
05/14 - 06/05	Thailand	22	12	Potts	Assist with final revision and review of Seeds II PP. (w/Delouche)	
05/18 - 05/27	Colombia (CIAT)	10	6		Participate in Workshop on Seed Enterprise Management at CIAT; assist CIAT Seed Unit with plans for activities.	
06/02 - 06/06	Kenya	5	5	Bunch	Participate & present paper: FAO/SIDA International Seed Seminar. (No travel cost to AID CA)	
	Totals	442	248			

1/ Use this format for two tables; Table 11-A for year one and Table 11-B for year two. Data should be reported on an U.S. fiscal year period, if maintained that way. Otherwise, use twelve month reporting periods according to your records, but specify the time periods.

2/ Group activities according to scope of work in your Cooperative Agreement; i.e. Pest and pesticide management problems; in-country pesticide Residual Sampling and Analysis; Integrated Coop. Production; etc.

Date Prepared:

TABLE 11 B1/
Year Three 1/

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Type of Activity^{2/} TA & Training

Travel Dates	Requesting Country	Days		Staff Name	Scope of Work
		OS	MSU		
<u>January 1 - June 30, 1982</u>					
02/21 - 03/13	Upper Volta	24	12	Potts	Conduct in-country training course for UV seed technicians, Plus technical assistance (8)
		24	20	Reusche	
04/14 - 05/09	Nepal*	25	19	Boyd	Provide assistance to AIC/SPIS on seed drying and storage problems. (w/Cabrera)
04/16 - 05/13	Burma*	28	20	Delouche	Discussions on seed facilities needed on seed for seed farms and collection of information need for design of facilities, (w/Cabrera, Boyd, Welch)
04/25 - 05/17	Thailand	23	2	Sinclair (consultant)	To conduct seed pathology workshop in Thailand (cooperation with INTSOY. (Sinclair is on Univ. of Illinois, INTSOY staff.)
05/03 - 05/30	Kenya	28	18	Vaughan	To conduct in-country training course (GOK's Kenya Seed Co.) on seed conditioning; TA on seed conditioning & storage (15). Also prep. Burunde assign. cancelled by REDSO/Nairobi)
05/22 - 05/29	Costa Rica*	8	12	Boyd	To assist CARE with soybean seed facility. (w/Cabrera)
05/23 - 06/02	Colombia (CIAT) ¹¹		8	Andrews	Instruction in regional seed training course - CIAT & work on audiotutorials(5)
06/13 - 06/18	Colombia (CIAT)	6	14	Potts	Present papers and preside over sessions in regional workshop on seed training - CIAT; & audiotutorials (6)

*Incomplete in this period.

^{1/} Use this format for two tables; Table 11-A for year one and Table 11-B for year two. Data should be reported on an U.S. fiscal year period, if maintained that way. Otherwise, use twelve month reporting periods according to your records, but specify the time periods.
^{2/} Group activities according to scope of work in your Cooperative Agreement; i.e. Pest and pesticide management problems, in-country pesticide Residual Sampling and Analysis; Integrated comp. Probation, etc.

TABLE - 11 B1/

Year Three 1/

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Type of Activity^{2/} TA & Training Period: 7/01/81 to 6/30/82

Travel Dates	Requesting Country	Days		Staff Name	Scope of Work
		AS ^{2/}	MSU		
<u>July 1 - December 31, 1981</u>					
07/06 - 07/09 10/30 - 11/14	AID/W Nepal	15	4 18	Delouche Boyd	Desk review of ECOWAS proposal for AID/W/AFRJ. Assist KSD with instruction in an in-country training course; advise on seed drying and storage equipment and facilities.
09/30 - 10/01 11/02 - 11/19	AID/W Colombia (CIAT)	3 18	3 10	Delouche Delouche	To AID/W; discussion on ECOWAS proposals. Instruction in Advanced Seed Quality Control regional training course - CIAT.
11/07 - 11/19	Colombia (CIAT)	13	10	Vaughan	Instruction in Advanced Seed Quality Control regional training course - CIAT; plus TA to Seed Unit (4)
11/08 - 11/13	Ecuador	6	6	Andrews	Technical advice on soybean seed production.
11/09 - 11/23	Botswana	15	38	Potts	Discussion and collection of information for design of seed facilities. (w/Cabrera, Boyd, Welch)
12/10 - 12/24	Burma	14	12*	Gregg* (consultant)	Assist USAID Office with plans for seed farms under MOP project. (Gregg is on MSU/Thailand contract staff: 12 days spent in Bangkok, report preparation)

1/ Use this format for two tables; Table 11 A for year one and Table 11 B for year two. Data should be reported on an U.S. fiscal year period, if maintained that way. Otherwise, use twelve month reporting periods according to your records, but specify the time periods.

2/ Group activities according to scope of work in your Cooperative Agreement, i.e., Pest and pesticide management problems; in-country pesticide Residual Sampling and Analysis, Integrated Comp. Probation, etc.

TABLE 11 B1/

Year Three 1/

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Type of Activity TA & Training

Travel Dates	Requesting Country	Days		Staff Name	Scope of Work
		OS	MSU		
06/20 - 07/09	Upper Volta*	<u>11</u>	<u>5</u>	Couvillion	Assist USAID/UV and UV seed project with analysis of seed survey data.
	Totals	272	230		

*TA not completed in this period.

1/ Use this format for two tables; table 11-A for year one and table 11-B for year two. Data should be reported on an U.S. fiscal year period, if maintained that way. Otherwise, use twelve month reporting periods according to your records, but specify the time periods.
2/ Group activities according to scope of work in your Cooperative Agreement; i.e., Pest and pesticide management problems, in-country pesticide Residual Sampling and Analysis; Integrated Coop. Irrigation; etc.

Date Prepared:

TABLE II A/1/
 YEAR Four 1/

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Date prepared: July 13, 1983

Type of Activity: TA & Training Period: 7/1/82-6/30/83

<u>Travel Dates</u>	<u>Requesting Country</u>	<u>Days 3/ OS</u>	<u>MSU</u>	<u>Staff Name</u>	<u>Scope of Work</u>
<u>July 1 - December 31, 1982</u>					
06/20-07/09	Upper Volta	9*	8	Couvillion	Assist USAID/UV and Seed Project with analysis of seed survey data.
*Rest of time reported previous period					
-	Costa Rica	0	6	Boyd	Continuation of work on CARE project from previous period. (w/Cabrera)
-	Burma	0	23	Delouche	Continuation of design and specifications of seed facilities from previous period. (w/Cabrera, Boyd, Welch)
-	Nepal	0	9	Boyd	Continuation of work on AIC/SPIS facilities and problems. (w/Cabrera, Welch)
07/10-07/24	Colombia (CIAT)	15	12	Welch	Assist with instruction in Advanced Seed Conditioning Course for LA region at CIAT.
07/24-08/07	Colombia (CIAT)	15	10	Boyd	Assist with instruction in Advanced Seed Conditioning Course for Latin America at CIAT.
08/08-08/21	Bolivia	14	18	Boyd	Assist with design of seed facilities in Bolivia. (w/Cabrera and Welch)
08/07-08/14	Colombia (CIAT)	8	8	Delouche	Participate in CIAT LA Regional Workshop on Seed Supplies for Small Farmers. (w/Potts)

NOTE: See footnotes previous periods.

TABLE 11.17
YEAR Four 1/

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Type of Activity: TA & Training					
Travel Dates	Requesting Country	Days 3/		Staff Name	Scope of Work
		OS	MSU		
09/23-10/15	Nepal	23	12	Delouche	Review and recommendations on adaptive seed research needs in Nepal; redesign of seed testing laboratory complex. (w/Cabrera)
10/31-11/06	Colombia	7	6	Boyd	Training course (English), Caribbean Region.
10/31-11/19	Ghana	20 20	12 14	Vaughan Andrews	Assist with preparation of seed project paper.
11/06-11/19	Sierra Leone	14	10	Welch	Advise and assist with seed processing, storage and drying systems. (w/Potts)
11/13-11/23	Colombia (CIAT)	11	9	Delouche	Assist with instruction in Intensive Seed Training Course (English) at CIAT for Caribbean region.
11/27-12/22	Tanzania	26	9	Potts	Terminal evaluation of AID financed seed project.
<u>January 1 - June 30, 1983</u>					
01/20-	Upper Volta	0	10 9	Andrews Vaughan	Preparation for in-country training course in Upper Volta; training course cancelled 2 days prior to departure.
02/13-02/25	Costa Rica	13	12	Boyd	Assist CARE/CR at request of USAID/CR with soybean seed/grain facilities for child nutrition program.
03/08-04/01	Burma	25	24	Delouche	Assist USAID/Burma and MOPP with redesign and specifications for seed facilities (w/Cabrera, Welch, Boyd).

TABLE II a/

YEAR Four 1/

TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING

Type of Activity^{2/} TA & Training

<u>Travel Dates</u>	<u>Requesting Country</u>	<u>Days 3/</u>		<u>Staff Name</u>	<u>Scope of Work</u>
		<u>OS</u>	<u>MSU</u>		
04/23-05/01	Colombia (CIAT)*	9	6	Delouche	Assist with instruction in regional Seed Training Course at CIAT.
05/14-05/21	Colombia (CIAT)*	8	7	Boyd	Assist with instruction in regional Seed Training Course at CIAT.

*Assistance requested in normal manner. Change of Ambassadors in Colombia resulted in no action on clearance. CIAT Seed Unit and MSU had to bear expenses involved.

Miscellaneous - Letter/Cable Requests

April	Indonesia	8	Cabrera	Design of seed technology training facilities as per request from Bogor University (IPB).
May	IITA	4	Delouche	Assembly and development of information for a seed processing facility at IITA.
July	KSU	6	Boyd	Present block of instruction on "seeds" to Food Grain Short Course at KSU. Reciprocal arrangement.

TOTALS	<u>237</u>	<u>252</u>
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TABLE - III

IN-COUNTRY TRAINING COURSES BY YEAR, REQUESTING COUNTRY

AND

NUMBER OF PARTICIPANTS, TIME AND SPECIAL SHORT COURSES

Period: 04/30/79 to 12/31/80

<u>Period Covered</u> ^{1/}	<u>Country</u>	<u>Number of Participants</u>	<u>Duration of Training</u>	<u>Short Courses</u>
<u>1979</u>				
04/30 - 06/30	Colombia (CIAT) (Regional)	34	8 weeks	Basic Training Course in Seed Technology - CIAT
<u>1980</u>				
04/01 - 06/30	Colombia (CIAT) (Regional)	34	8 weeks	Basic Training Course in Seed Technology - CIAT
	Colombia (CIAT) (Regional)	31	1 week	Seed Marketing Workshop for Latin America
07/01 - 09/30	Guayana	18	2 weeks	Seed Training Course for Guyanese seed workers
10/01 - 12/31	Thailand	21	2 weeks	Seed Training Course for Thai seed workers
	Colombia (Regional)	28	2 weeks	Regional Seed Training Course on Basic and Foundation Seed - CIAT

^{1/} Report data by quarters for the twenty-four month reporting period used for Tables I-A, I-B, I-C, and II-A and II-B.

Date Prepared:

TABLE - III

IN-COUNTRY TRAINING COURSES BY YEAR, REQUESTING COUNTRY
AND
NUMBER OF PARTICIPANTS, TIME AND SPECIAL SHORT COURSES

Period: 01/01/81 - 12/31/81

<u>Period Covered</u> ^{1/}	<u>Country</u>	<u>Number of Participants</u>	<u>Duration of Training</u>	<u>Short Courses</u>
<u>1981</u>				
01/01 - 03/31	Colombia (CIAT) (Regional)	38	1 week	Regional Workshop on Seed Program Strategies, Plans and Implementation
	Sri Lanka (Regional)	42	1 week	Regional workshop on Soybean Seed Quality
	Thailand	18	2 weeks	Training Course on Seed Quality Evaluation and Control for Thai Workers
	Colombia (CIAT) (Regional)	32	8 weeks	Basic Training Course in Seed Technology - CIAT
04/01 - 06/30	Colombia (CIAT) (Regional)	32	1 week	Regional Workshop on Seed Enterprise Management
07/01 - 09/30	Nepal	21	2 weeks	Training course organized by KSU on grain drying and storage (MSU took care of seed needs)
10/01 - 12/31	Colombia (CIAT) (Regional)	28	4 weeks	Regional Advanced Course on Seed Quality Evaluation and Control (CIAT).

^{1/} Report data by quarters for the twenty-four month reporting period used for Tables I-A, I-B, I-C, and II-A and II-B.

Date Prepared:

TABLE - III

IN-COUNTRY TRAINING COURSES BY YEAR, REQUESTING COUNTRY
AND
NUMBER OF PARTICIPANTS, TIME AND SPECIAL SHORT COURSES

Period: 01/01/82 - 06/30/82

<u>Period Covered</u> ^{1/}	<u>Country</u>	<u>Number of Participants</u>	<u>Duration of Training</u>	<u>Short Courses</u>
01/01 - 03/31	Upper Volta		2 weeks	Basic Training Course in Seed Technology.
04/01 - 06/30	Thailand	17	2 weeks	Seed Pathology Workshop in Thailand (W/INTSOY)
	Kenya	18	3 weeks	Training Course in Seed Conditioning for Kenya seed workers
	Colombia (CIAT) (Regional)	27	2 weeks	Basic Training Course in Seed Technology - CIAT
	Colombia (CIAT) (Regional)	23	1 week	Regional Workshop on Seed Training in LA - CIAT

TABLE - III

IN-COUNTRY TRAINING COURSES BY YEAR, REQUESTING COUNTRY

AND

NUMBER OF PARTICIPANTS, TIME AND SPECIAL SHORT COURSES

Period: 07/01/82 - 12/31/82

<u>Period Covered</u> ^{1/}	<u>Country</u>	<u>Number of Participants</u>	<u>Duration of Training</u>	<u>Short Courses</u>
07/01/-08/30	Colombia (CIAT)	33	1 week	Regional Workshop, Seed Supply to Small Farmers
	Colombia (CIAT)	25	4 weeks	Advanced Regional Training Course on Seed Conditioning
10/1-12/31	Colombia (CIAT)	27	3 weeks	Basic Seed Training Course for English speaking partici- pants from Caribbean area

TABLE - III

IN-COUNTRY TRAINING COURSES BY YEAR, REQUESTING COUNTRY

AND

NUMBER OF PARTICIPANTS, TIME AND SPECIAL SHORT COURSES

Period: 01/01/83 - 06/30/83

<u>Period Covered</u> ^{1/}	<u>Country</u>	<u>Number of Participants</u>	<u>Duration of Training</u>	<u>Short Courses</u>
01/01-3/31		None	(Training course prepared for Upper Volta, workers, but cancelled at last "minute".	
04/01-06/30	Colombia (CIAT)	29	2 weeks	Intensive Seed Training Course for LA Region

TABLE - IV
ON CAMPUS TRAINING COURSES
NUMBER OF PARTICIPANTS

<u>Period Covered</u> ^{1/}	<u>No. for Degree</u> ^{2/}	<u>No. for Non-Degree</u> ^{3/}	<u>Short Courses</u>	
			TC 103-3 ^{4/} (35 or 42 days)	INTSOY (2 days)
4/79 - 6/79	25	-	22	-
7/79 - 9/79	24	3	22	9
10/79 - 12/79	34	3	--	-
1/80 - 3/80	28	-	--	-
4/80 - 6/80	28	-	16	-
7/80 - 9/80	25	-	16	14
10/80 - 12/80	32	-	--	-
1/81 - 3/81	30	-	--	-
4/81 - 6/81	30	-	15	-
7/81 - 9/81	27	5	15	11
10/81 - 12/81	29	5	--	-
1/82 - 3/82	31	-	--	-
4/82 - 6/82	31	-	20	-
7/82 - 9/82	28	-	20	12

^{1/} Report data by quarters for the forty-eight month reporting period used for tables I-A, I-B, I-C and II-A and II-B.

Date prepared: 14 July 1983

^{2/} Graduates by degree and school year and currently enrolled international students are presented as Attachment 1.

^{3/} Special students are listed on Attachment 2.

^{4/} Participants in the five Seed Improvement Training Courses (TC 103-3) held during this report period are listed on Attachment 3.

On Campus Training Courses, Continued

<u>Period Covered</u> ^{1/}	<u>No. for Degree</u> ^{2/}	<u>No. for Non-Degree</u> ^{3/}	<u>Short Courses</u>	
			TC 103-3 ^{4/} (35 or 42 days)	INTSOY (2 days)
10/82 - 12/82	34	2	--	
1/83 - 3/83	29	1	--	
4/83 - 6/83	30	1	20	
Currently Enrolled	23	-	--	-

TABLE IV ATTACHMENT 1
International Students
Graduated in Seed Technology
5/79 - 6/83

<u>Name</u>	<u>Bachelor of Science</u> <u>SY^{1/} 78-79</u>	<u>Home Country</u>
Ackak, J.		Ghana
Ampah-Nunoo, S.		Ghana
Marroquin, J.		Guatemala
	<u>SY 79-80</u>	
Ousseini, M.		Niger
	<u>SY 80-81</u>	
Kpodar, R.		Togo
	<u>SY 81-82</u>	
Amatefe, J. Q.		Ghana
	<u>SY 82-83</u>	
Mtambo, P.		Malawi
	Currently Enrolled	
Banyankie, P.		Burundi
Hwang, W. D.		Taiwan
Moonga, J. M.		Zambia
Muliokela, S. W.		Zambia
Pineda, R.		Honduras
Tilado, O.		Upper Volta
	Master of Science or Master of Agriculture <u>SY 78-79</u>	
Artecona, M. R.		Paraguay
Franca, J. B.		Brazil

^{1/} SY = School Year - September through August

<u>Name</u>		<u>Home Country</u>
Cabrera, E. R.		Guatemala
Larinde, M.		Liberia (WARDA)
Orellana, J.		Ecuador
<u>SY 79-80</u>		
Ahmed, A. H.		Sudan
Al-Ani, R. A.		Iraq
Alvarado, R. C.		Ecuador
Merazo, J. F.		Venezuela
Prokati, W.		Thailand
Nunez, A. A.		Dominican Republic
Assman, E. J.		Brazil
Cordero, J.		Venezuela
Oliveros, M.		Venezuela
<u>SY 80-81</u>		
Aziz, A. A.		Sudan
El Karim, M. A.		Sudan
Fajana, L. O.		Nigeria
Omar, M. R.		Libya
Shaker, A. S.		Iraq
Abdullah, S. H.		Malaysia
Jongvanich, S.		Thailand
Kasesareewong, S.		Thailand
Lisakowski, D.		Brazil
Meeklai, S.		Thailand
<u>SY 81-82</u>		
Mendoza, A. O.		Colombia
Ogundipe, A. O.		Nigeria
Worrell, P. A.		Guyana
Boonyarit, S.		Thailand
Teekachunhatean, T.		Thailand
Wuthipong-Prasert S.		Thailand

<u>Name</u>	<u>Home Country</u>
<u>SY 82-83</u>	
Aung, U. T.	Burma
Brinis, L.	Algeria
Cabanilla, R.	Phillipines
Gatongi, I. N.	Kenya
Jimenez, R.	Mexico
Kemei, J.	Kenya
McAndrew, N.	Guyana
Peretti, C.	Argentina
Stonsaovapak, P.	Thailand

Currently .Enrolled

Acharya, C.	Nepal	8/83
Ali, R.	Iraq	12/83
Garay, J.	Argentina	8/84
Nharebat, I.	Guinea-Bissau	8/84
Kpodar, A.	Togo	8/83
Mtambo, P.	Malawi	5/85
Paksanri, A.	Thailand	12/84
Mahamane, S.	Niger	12/84
Sanchez, E.	Dominca Rep.	12/84
Suvarnin, V.	Thailand	8/84
Unsrison, S.	Thailand	8/84
Veras, R.	Dominican Rep.	8/84
Kandakai, L.	Liberia	8/83

Doctor of Philosophy
SY 79-80

Saisawat, P.	Thailand
Krzyzanowski, F.	Brazil
Mabesa, R.	Philippines
Soplin, H.	Peru

SY 80-81

Artecona, M.	Paraguay
Miranda, F.	Venezuela
Miranda, M.	Venezuela

Name Home Country

SY 81-82

Camargo, C.	Brazil
Patil, V.	India

SY 82-83

Assman, E.	Brazil
DoLago, A.	Brazil
Pereira, L.	Brazil
Peske, S.	Brazil
Razera, L.	Brazil

Currently Enrolled

Andrigueto, R.	Brazil	8/85
Aswathaiah, B.	India	12/84
Aziz, A.	Sudan	8/83
Bragantini, C.	Brazil	5/84
Ogundipe, A.	Nigeria	8/85
Santipracha, Q.	Thailand	5/85
Santipracha, W.	Thailand	12/85
Shaker, A.	Iraq	8/84
Teekachunhatean, T.	Thailand	8/85
Souza, B.	Brazil	12/84

TABLE - IV ATTACHMENT - 2

International Students
in Non-degree Programs
5/79 - 6/83

<u>NAME</u>	<u>HOME COUNTRY</u>	<u>TRAINING PERIOD</u>
Lorpu Kandakai	Liberia	8/7 - 12/18/79
Christophe Lonski	Cameroon	8/7 - 12/18/79
Azizur Rahman	Bangladesh	8/7 - 12/18/79
Nousa Noor	Malaysia	8/10 - 8/31/81
Pirom Lochaiyahul	Thailand	8/10 - 8/31/81
Anan Chanpa	Thailand	8/10 - 8/31/81
Kyi Han	Burma	8/10 - 12/22/81
Abdul Latif	Bangladesh	8/10 - 12/22/81
Muklesur Rahman	Bangladesh	8/10 - 12/22/81
Nyo Nyo Thein	Burma	8/10 - 12/22/81
Thaung Tin	Burma	8/10 - 12/22/81
Rachel Peretti	Argentina	1/5/83 - 12/20/82
Rajeshwari Basnyat	Nepal	8/24/82 - 5/10/83

TABLE IV ATTACHMENT 3
 List of Participants
 USDA/USAID Seed Improvement Training Course
 TC 130-3

<u>Name</u>	<u>Home Country</u>
May 28 - July 6, 1979	
Cheng Chin	Malaysia
Yew Thai Teng	Malaysia
Ricardo Davila	Mexico
Ricot Rolland	Haiti
Louis Cenat	Haiti
Jose (Ernest) Navarette	El Salvador
German Lopez	Ecuador
George E. Hanson	Ghana
Yakabu Diwarah	Ghana
Rodger Seatla	Botswana
Charles The	Cameroon
Mohamed Bhatti	Pakistan
Noor Md. Mongat	Pakistan
Wageeh Androus	Sudan
Sultan Al Saleh	Saudi Arabia
Christophe Lontchi	Cameroon
Azizur Md. Rahman	Bangladesh
Vansanit Charun	Thailand
Plumsab Tawee	Thailand
Izatullah Ansari	Pakistan
Janet Grant	Guyana
Pauline Zekeng	Cameroon

<u>Name</u>		<u>Home Country</u>
	May 26 - July 4, 1980	
Antonio Ortiz		Honduras
Jorge Fortin		Honduras
Mohana Fathil Taha		Iraq
Tawfiq Ahmed Hassan		Iraq
Eunice Wambugu		Kenya
Ahmed Tasir		Malaysia
M. O. Ajala		Nigeria
Cornell Ishengoma		Tanzania
Joseph Matem		Tanzania
Joseph Swai		Tanzania
Thewa Maolanont		Thailand
Sirichai Unrisong		Thailand
Anan Polvatana		Thailand
Pipat Kaewplung		Thailand
Anmat Buakham		Thailand
David Mazuba		Zambia
	June 1 - July 3, 1981	
Nousa Noor		Malaysia
Fatou Sow		Senegal
Muklesur Rahman		Bangladesh
Abdul Latif		Bangladesh
Pirom Lochaiyakul		Thailand
Frank Moses		Ghana
Patsy Worrell		Guyana
Tesfaye Wegderesgen		Ethiopia
Christopher Muyonga		Kenya
Tendani Mpathi		Botswana
Kyi Han		Burma
Nyo Thein		Burma
Thaung Tin		Burma
Mohamed Aliamy		Saudia Arabia
Anan Chanpa		Thailand

NameHome Country

June 7 - July 9, 1982

Fernando J. De Almeida	Brazil
Onesimus Mmolawa	Botswana
Khin Hla Hla	Burma
Sein Kyin	Burma
Kho Kai U Chun	Burma
San U Maung	Burma
Nwe U Nyunt	Burma
Novat Niyungeko	Burundi
Mohmoud A. Shaata	Egypt
Anthony A. Amihere	Ghana
David K. Muthoka	Kenya
Romulus N. Opondo	Kenya
Rasheed A. Adeleke	Nigeria
Moustspha Diop	Senegal
Jean Pierre Rigoulot	Senegal
Prasit N. A. Devahastin	Thailand
Sakchai Intasotti	Thailand
Aime P. Zougrana	Upper Volta
Augustin E. Pernas	Uruguay

<u>Name</u>	<u>Home Country</u>
June 6 - July 8, 1983	
Wade A. H. A. Sattar	P.D.R. Yemen
Maccomark Chijumba Magaanta	Zambia
Wesley C. Muwowo	Zambia
Wir t Pianvithaya	Thailand
Paiboon Ploylearmsang	Thailand
Sampan Sinthoptong	Thailand
B. Colin Nisantha Peiris	Sri Lanka
Khalif Ashoor Mahamed	Somalia
Bimpolo Paul	Congo
Alphonse Sagna	Senegal
Alieu Secka	Gambia
Hatibu Zuberi Ismail	Tanzania
Tiendregeogo N. Jean-Bosco	Upper Volta
Da Sie Vincent De Paul	Upper Volta
Ouangraoua Tilado	Upper Volta
Dupe Christianah Akintobi	Nigeria
Kouakou Kouame Apporture	Ivory Coast
Martini Martojo	Indonesia
Sania Saenong	Indonesia
Jambay Dorji	Bhutan

TABLE IV - ATTACHMENT 4
INTERNATIONAL GRADUATE STUDENT LOADS
BY MAJOR ADVISOR

School Year: 1979-80

Andrews, C. H.:	4 Ph.D., 3 M.S.
Boyd, A. H.:	2 Ph.D., 3 M.S.
Delouche, J.C.:	5 Ph.D., 3 M.S.
Potts, H.C.:	2 Ph.D., 7 M.S.
Vaughan, C. E.:	5 M.S.
Welch, G. B.:	2 M.S.

Andrews, Cabrera, Reusche: 5 B.S.

School Year: 1980-81

Andrews, C. H.:	4 Ph.D., 2 M.S.
Boyd, A. H.:	2 Ph.D., 4 M.S.
Delouche, J. C.:	4 Ph.D., 3 M.S.
Potts, H. C.:	1 Ph.D., 5 M.S.
Vaughan, C. E.:	1 Ph.D., 1 M.S.
Welch, G. B.:	2 M.S.

Andrews, Cabrera, Reusche: 2 B.S.

School Year: 1981-82

Andrews, C. H.:	3 Ph.D., 1 M.S.
Boyd, A. H.:	1 Ph.D., 4 M.S.
Delouche, J.C.:	4 Ph.D., 3 M.S.
Potts, H. C.:	1 Ph.D., 6 M.S.
Vaughan, C. E.:	1 Ph.D., 4 M.S.
Welch, B. B.:	2 M.S.

Andrews, Cabrera, Reusche: 2 B.S.
5 Special (Fall, 1981)

NOTE: As a bare minimum 3 days/year of staff time per international student is required over and above that which can be reasonably expected for U.S. students. Actually, 6 days/staff time/student/year additional is more nearly the requirement.

School Year: 1982-83

Andrews, C. H.	2 Ph.D., 3 M.S.
Boyd, A. H.	2 Ph.D., 5 M.S.
Delouche, J. C.	8 Ph.D., 5 M.S.
Potts, H. C.	1 Ph.D., 6 M.S.
Vaughan, C. E.	1 Ph.D., 5 M.S.
Welch, G. B.	1 Ph.D., 0 M.S.

Andrews, Vaughan, Potts: 7 B.S.
2 Special Students

TABLE V
INTERNATIONAL VISITORS BY YEAR, COUNTRY
OR ORGANIZATION AND PURPOSE ^{1/}

Key Name and No.	No. Days	Country or Organization	Purpose	Staff Days
<u>Period: 04/01/79 - 06/30/80</u>				
1. F. Warren (1)	2	AID/W	Visit with STL staff and review activities IF	4.5
2. Dr. Hafiz (2)	1	UNDP	Discussions on training programs TR	2.0
3. Vanderbilt Eco. Dev. Gp. (18)	1	Vanderbilt	Discussion on international agr. TR	1.0
4. Ms. Tulo (1)	4	Poland	Discussion - seed research IF	5.0
5. M. Sabbah (1)	2	Sudan	Discussion - seed tech. problems IF	2.0
6. Kasem Ali (1)	2	Pakistan	Discussion - Pakistan seed program IF	2.0
7. Yassar Youak (1)	1	Turkey	Discussion - seed processing IF	1.5
8. SECID (5)	4	3 Upper Volta 2 Guinea Bissau	Discussions/training in seed technology TR/IF	5.0
9. A. Tesfaye (1)	3	Ethiopia	Training, seed certification and qual. control TR	3.0
10. J. Douglas & J. Ferguson (2)	9	CIAT	Training tour of range grass seed production, accompanied by A.H. Boyd & arranged by STL IF/TR	11.0
11. P. Aguiar (1)	3	Brazil	Discussion - seed quality control IF	3.0
12. J. Alemara (1)	4	Peru	Discussion - seed and grain quality IF	4.0
13. B. Acosta (1)	1	Honduras	Training of Honduran seed specialists TR	1.0
14. Dr. Haussin (1)	5	Bangladesh (WB)	Discussion - certified seed production IF	5.0
15. Ms. Pokojaska (1)	5	Poland	Discussion - seed quality control IF	5.0
16. T. Plumsab (2)	5	Thailand	Discussion - seed operation management IF	4.0
17. J. Cortes	5	CIAT (Seed Unit)	Discussion on seed processing & arrange tour IF	6.0
18. J. Buissaina (1)	2	IICA (CA)	Discussion - seed production IF	2.0
				<u>67.0</u>

^{1/}Visits often include one-on-one training, as well as discussions and reviews.

() Indicates number of visitors.

Table V. Continued

Key Name and No.	No. Days	Country or Organization	Purpose	Staff Days
<u>Period: 07/01/80 - 06/30/81</u>				
1. J. Hernandez (2)	2	Dom. Republic	Discussion - bean seed quality IF	2.0
2. H. Hill (1)	2	INTSOY	Coordination of training TR	2.0
3. F. Cevallos (2)	2	Ecuador	Discussion of soybean seed production IF	2.0
4. S. Chen (2)	3	Taiwan	Discussion of vegetable seed production IF	3.0
5. Vanderbilt Econ. Dev. Gp. (2)	1	Vanderbilt	Discussion International agric. development TR	1.0
6. D. Rachmeler (1)	12	USAID/UV	Discussion & training - seed technology TR/IF	11.0
7. G. Bittner (1)	11	USAID/Cameroon	Discussion & training on peanut seed production inc. trips to Ala. & Ga. (Reusche) TR/IF	9.0
8. C. Beauvis (1)	3	Australia	Seed problems in LDCs IF	2.0
9. G. Delhove	3	FAO/Rome	Identification of seed equipment mfg. IF	4.0
10. Dr. Barayara (2)	1	Thailand	Organization of seed tech. training TR	2.0
11. Brazilian Seed (17) Assoc. Gp.	4	Brazil	Seed Industry development IF/TR	4.0
12. G. Duffy (1)	2	IRI, Guyana	Discussion design of rice facilities IF	4.0
13. V. Pathak (1)	2	India	Discussion seed regulatory work IF	2.0
14. R. Ayera (1)	2	Argentina	Discussion corn seed processing IF	2.0
15. Dr. Newsome (1)	1	Univ. of MN	Training activities in seed technology TR	1.5
16. Min. Agriculture (3) w/Yeamman	2	Jamiaca	VIP visit, accompanied by D. Yeaman/AID IF	3.5
17. J. Elang and Cameroon Gp. (5)	3	Cameroons	Discussion - seed program development IF	4.5
18. Vanderbilt Eco. Dev. Gp. (17)	1	Vanderbilt U.	Discussion - International Agr. Dev. IF	<u>1.0</u>
60.5				
<u>Period: 07/01/81 - 06/30/82</u>				
1. P. Hardy (1)	1	Trinidad & Tobayo	General discussion - seeds IF	1.0
2. P. Lavery (1)	3	SIDP/CARICOM	General orientation to Caribbean agriculture IF	4.0
3. R. St. George (1)	2	Univ. Bath/UK	Seed industry development in LDCs IF	3.0

Table V. Continued

Key Name and No.	No. Days	Country or Organization	Purpose	Staff Days
4. Brazilian Seed Assoc. (7)	2	Brazil	Orientation - U.S. seed industry TR	3.0
5. H. Caceres (1)	2	Honduras	Discussion on seed storage IF	2.0
6. N. Viega (3)	2	Brazil	Soybean seed quality IF	2.0
7. MASI (3)	3	W. Afr. Entente	Orientation - seed industry development IF/TR	6.0
8. Dr. Khalia	1	Sudan	Discussion - wheat seed production IF	1.0
9. Dr. Sutari (3)	1	Indonesia	Discussion - corn seed facilities IF	2.0
10. K. Rajbadary (4)	3	Nepal	General discussion - Nepalese seed project IF	5.0
11. M. Maxey (3)	3	Guinea Bissau	Seed program problems in Guinea-Bissau (M. Maxey, USAID/GB) IF	3.0
12. Dr. Sajad (3)	3	Indonesia	Discussion of forest tree seed facilities IF	5.0
13. Min. Agr. Zaire (3)	1	Zaire	VIP - vist IF	3.0
14. S. Ahmad (1)	5	Pakistan (WB)	Seed certification procedures & management IF	6.0
15. C. Jojer	1	Israel	Cotton seed production IF	1.0
16. DaVerga (1)	1	Brazil	Soybean seed production IF	1.0
17. China Seed Company (5)	2	P. R. China	Seed processing equipment & operation IF	3.0
18. Barayer (3)	1	Dept. of State Georgetown U.	Orientation on seed industry development	1.0
19. M. Maxey (1)	2	USAID/ Guinea-Bissau	Discussion Guinea-Bissau seed program IF	2.0
20. A. Eschevera (1)	2	Mexico	Discussion - seed training curricula TR	2.0
21. P. Mulligan (1)	3	Botswana (BAMB)	Dis. & tng. seed prod. & cert. IF	4.0
22. C. Simpkins (5)	2	Burma (USAID)	Review of seed activities in Burma IF	4.0
23. Halligan (4)	2	USAID/Thailand	Get-acquainted visit from new USAID Director/ Thailand IF	4.0
24. Dr. A. Campos	2	Philippines	Discussion on seed training program at Central Luzon Univ. TR	3.0
25. Vanderbilt Econ. Dev. Gp. (20)	1	Vanderbilt	Discussion & international agriculture TR	1.0
26. R. Metha	2	India	Trainee at Montana State U., seed processing TR	3.0
27. F. Popinigis	6	Brazil	Management of basic seed programs If	5.0
				<u>81.0</u>

Table V. Continued (Includes summary of days spent answering letter/cable/phone inquiries.)

Key Name and No.	No. Days	Country or Organization	Purpose	Staff Days
<u>Period: 07/01/82 - 06/30/83</u>				
1. S. Fagundes	5	Brazil (EMBRAPA)	Discussion - design seed facilities IF	6
2. Prof. Olera	2	Argentina	Discussion organization seed tech. IF	3
3. P. Satayavibul	2	Thailand	Discuss management seed operations IF	3
4. J. Neto	4	Brazil (EMBRAPA)	Ind. training, foundation seed op. TR	5
5. E. Tolfo (3)	2	Brazil	Visitors from Companhia Mogiana de Oleos Vegetais. Discussion on production/pro- cessing of oil seeds TR/IF	3
6. F. Dhupal (2)	3	India	Maharashtra Seeds Corp.; discuss processing drying/delinting of seeds IF	4
7. L. Amendola (2)	2	Uruguay	Discuss soybean seed operations TR/IF	3
8. C. Hwang (4)	2	PRC	Visit to observe seed technology lab. arranged by PRC Houston Consulate IF	3
9. H. Maiae Silva	3	Brazil	Training; training programs IF	3
10. R. Stewart	8	Argentina	President, Crawford Co. Ltd.; seed facilities, operations TR, IF	8
11. Dr. A. Compos	2	Phillipines	President, Central Luzon University; org. seed training curriculum IF	4
12. INTSOY	2	INTSOY	12 trainees, 8 countries; soybean seed operations TR	4
13. P. Silvia Guillin	2	Venezuela	Univ. Oriente, Maturin-Monagasi; sweet sorghum seed prod. TR	3
14. B. Beachen	2	New Zealand	Arthur Yates & Co., Ltd.; private sector seed ventures in SE ASIA IF	3
15. P. Rungchaung	3	Thailand	Mgr. Suwan Research Farm; foundation seed operations IF, TR	4

Key Name and No.	No. Days	Country or Organization	Purpose	Staff Days
16. E. V. Reynose	2	Mexico	Semillas Berensten SA, Celaya; seed sampling quality assurance TR	3
17. Dr. R. Maiti	2	ICRISAT	On sabbatical, Univ. Autonoma de Nuevo Leon, Monterrey, Mexico; seed training & reseade in Mexico IF	2
18. E. Usabiago	2	Mexico	Discussion seed drying and storage TR	2
19. N. Chen	1	Taiwan	Taiwan Agr. Ext. Serv.; seed extension IF	1
20. J. Maschieto	1	Brazil	Establishment & operation of private seed testing service.	2
21. B. Jackson M. Mozynski	3	AID/W	Comparative evaluation of cooperative agræment IF	5
22. M. Artecona	2	Paraguay	General visit and discussion IF	<u>2</u>
			TOTAL	76

Summary - Responses to Inquiries

<u>Staff Person</u>	<u>Staff Days</u>
Andrews	8
Boyd	4
Cabrera	2
Couvillion	2
Delouche	9
Potts	4
Vaughan	3
Welch	<u>1</u>
TOTAL	33

TABLE VI.

TECHNOLOGY DEVELOPMENT AND ADAPTION
BY YEAR AND PURPOSE

PERIOD: 04/30/79 - 06/30/80

1. Development, adaptation and testing of a simple heater fan unit for drying smaller quantities of seed. System utilizes small, low BTU fuel oil burner of type used in construction to keep building site warm and an off-the shelf high pressure, centrifugal type fan. The heater has a built-in high volume but low pressure fan. The system was developed for drying relatively small lots of seed, mainly cowpea seed, in Guyana and has worked well. Cost of components excluding bins or sack platform for holding seed is less than \$800. This compares to \$4000+ for smallest available integrated crop drying type "heater-fan" unit.

- Boyd (4 days), Cabrera (9)

2. Evaluation of seed quality in tropical forage grasses is a major problem because of high proportions of sterile florets/spiklets and appendages on the seed unit. Work was undertaken to develop methods for evaluation of Andropogon gayanus a relatively new but increasingly important forage grass in Central and South America. Joel Cordero an M.S. student from Venezuela did the work under the direction of Dr. H. C. Potts. CIAT collaborated. Methods for purity analysis and germination testing were established.

- Potts (9 days)

Total/PERIOD: 23 days

PERIOD: 07/01/80 - 06/30/81

3. Continuing development work on tropical grasses, a study was undertaken in cooperation with Dr. John Ferguson, CIAT, on establishment of quality components for Panicum maximum, Andropogon gayanus, and Bracharia decumbens, all major forage grasses in tropical regions. The work was done by A. Mendoza, an M.S. degree student from Colombia. He spent three semesters at MSU for his course work and some lab studies and 6 months at CIAT doing the field work. Dr. Andrews was advisor for the work. He visited with Dr. Ferguson and Mendoza at CIAT for 5 days to plan the research. Uniform blowing techniques for purity analysis and germination testing procedures were developed.

- Andrews (11 days)

Total/PERIOD 11 days

PERIOD: 07/01/81 - 06/30/82

4. Blackeye cowpeas are a major food crop in Guyana and important in other Caribbean countries. Seed production is difficult because of the indeterminate habit of blackeyes. Mechanical harvest has been attempted in Guyana but without satisfactory results. Study by Neville McAndrews, M.S. degree student from Guyana, is in progress on use of common defoliants and desiccants to speed up drying and force more uniform maturity of blackeyes either for mechanical or hand harvest. The work is being done under the direction of Dr. Delouche. Field investigations at MSU are in progress; work will be completed by Dec. 1982.

- Delouche (6 days)

5. Inaccessibility and lack of transportation limits application of modern seed drying techniques in Nepal. In connection with technical assistance activities in Nepal, the feasibility of a small solar dryer with kerosene burner for supplemental heat during the night is being determined. Work is under the direction of Dr. Boyd and Mr. Cabrera and is being done by Mr. Chandra Acharya, M.S. degree student from Nepal. Prototype solar dryer has been designed. Construction and evaluation will begin next period.

- Boyd (4 days), Cabrera (6 days)

Total/PERIOD 16 days

PERIOD: 07/01/82 - 06/30/83

6. Continuing work on evaluation of a small, economical solar dryer. Work done by Dr. Boyd, Mr. Cabrera, and Chandra Acharya, M.S. degree student from Nepal. (See 5 above)

- Boyd (6 days), Cabrera (4 days)

7. Continuing work on use of desiccants and defoliants for increasing rate of dry down of grain legumes (cowpeas) in humid tropics: Work done by Dr. Delouche and Neville McAndrew, M.S. student from Guyana. Additional work initiated on cowpeas this period by Dr. Vaughan and two students: effect of foliar applied fungicides, trellis, and plastic mulch on retardation of field deterioration of cowpea seed.

- Delouche (3 days), Vaughan (4 days)

8. "Niger" seed are produced in India and exported to U.S. primary for use in bird feed (finches). Excessive dodder seed contamination of the niger seed has prevented entry in U.S. Procedures for separation of dodder seed from niger were worked out at request of USDA, ASTA and India Associates of the Cooperative League of U.S.

- Cabrera (3 days)

Total/PERIOD: 20 days

TABLE VII.

DEVELOPMENT INFORMATIONAL MATERIALS
BY YEAR AND PURPOSE

PERIOD: 04/30/79 - 06/30/80

1. Final revision and proof reading of four chapters contributed by H. D. Bunch, J. C. Delouche, G. M. Dougherty (G. B. Welch), and H. C. Potts to: Successful Seed Programs: A Planning and Management Guide, (ed. by J. E. Douglas), Westview Press, Boulder, CO. 1980.

- Potts (3), Delouche (2), Bunch (2), Welch (3)

2. Continued work on handbook of seed drying.

- Boyd (4), Welch (2)

3. Economic analysis of seed projects

- Couvillion (3)

Total/PERIOD 19 days

PERIOD: 07/01/80 - 06/30/81

4. Preparation of audiotutorials (in Spanish) in collaboration with CIAT:
Seed Conditioning; Seed Formation; Seed Development and Maturation.

- Potts (6), Andrews (4), Boyd (6), Cabrera (4)

5. Continue work on seed drying handbook.

- Welch (6)

Total/PERIOD 26 days

PERIOD: 07/01/81 - 06/30/82

6. Continue work on audiotutorials in Spanish (see 4. above)

- Andrews (5), Boyd (5), Cabrera (4), Potts (6)

7. Compilation of quality control techniques for seed.

- Vaughan (2)

8. Economic analysis, seed survey techniques.

- Couvillion (2)

9. Continue work on seed drying handbook.

- Welch (5)

Total/PERIOD: 29 days

5

PERIOD: 07/01/82 - 06/30/83

10. Completion of audiotutorials in Spanish in collaboration with CIAT on Seed Conditioning (Boyd and Caberea), and Seed Formation (Potts)

- Potts (5), Boyd (5), Cabrera (2)

11. Continuation of work on audiotutorial in collaboration with CIAT on Seed Development and Maturation. (Andrews)

- Andrews (4)

12. Continued compilation of seed quality assurance evaluation techniques (see 7. above)

- Vaughan (2)

13. Continue work on handbook on seed drying in the tropics. (see 9. above)

- Welch (5)

Total/PERIOD 23 days