SEED UNIT

HIGHLIGHTS - 1986

CENTRO INTERNACIONAL DE AGRICULTURA TROPICAL (CIAT)
CALI, COLOMBIA

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C O N T E N T S

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A Report presenting the Seed Unit's activities for the period 1984-1986 has been prepared and summarizes the activities of the 1986 period However, since many significant activities were initiated or completed in 1986, this report has been prepared to highlight these activities and provide some of the basic details about the year Persons interested in more information about the background of the Seed Unit and its activities since its start in 1979 should refer to The 1984-86 Seed Unit Report

Training and Conferences

The Seed Unit was involved in training and conference activities every month of the year except for January during which much preparation was done for what was to follow One Intensive Seed Production and Technology course, two regional advanced, specialized courses - Management of Seed Conditioning Facilities and Tropical Pasture Seed Production, a specialized course for one state in Brazil in Rice Seed Production, a Workshop on Improved Seed for Small Farmers and a Workshop for Seed Associations, all held at CIAT, occupied 23 weeks of time Fortunately, the responsibility for three of these events was shared with others or it would not have been possible to manage such an intensive schedule with the limited Seed Unit staff The Tropical Pasture Program provided course coordination and a senior staff member for that course The Rice Program provided a coordinator and much senior staff time for the rice course The Latin American Association of Seed Experts sponsored the Workshop for Seed Associations and the Seed Unit staff provided assistance to them The dates and numbers of people participating in these events are given in Table 1 The Rice Seed Production course is listed in Table 2 since that was a course for a country although it was held at CIAT

In addition to these activities at CIAT the Seed Unit staff was involved with ten training and workshop events throughout the region during the year However, all of these events were achieved in cooperation with other organizations or associations carrying significant and in many cases major responsibility for the preparation and management of details for the activity Table 2 lists these events

As in past years, the Seed Unit staff helped organize and lead two special weeks of seed technology and production training at CIMMYT for participants in their on-going production and breeding courses Assistance was also provided to the bean and rice training activities at CIAT

Of the training courses at CIAT the one that was most unique was the course on Rice Seed Production In cooperation with the Rice Program and the Training and Conference Section, it was possible to bring to CIAT leaders from each of the key components of the rice seed program in the state of Santa Catarina, Brazil, for a four week intensive course that included a strong emphasis on rice agronomy as well as seed production for that crop The course was handled in such a way that the participants were constantly reminded and being encouraged to concentrate upon their particular problems and ways to overcome them The follow-up of these 15 people should be especially interesting as one observes to what extent this group can form the critical mass needed to really move their program as they envisioned at the end of the course

The most significant conference activity was the Workshop on Improved Seed for Small Farmers This workshop was planned as a follow-up of a workshop on this subject held in 1982 That workshop stimulated several activities in Colombia and in other countries in the region toward attempting to reach more small farmers with better seed of newer varieties This workshop focused especially on steps being taken to get more small scale, artesanal seed production and distribution in local communities The activities in Colombia provided a chance for all par-

ticipants to visit one of three different kinds of activities underway in the country By sharing experiences in their own countries and through observations in Colombia, the group was then able to develop extremely useful recommendations for anyone interested in moving ahead in this kind of effort Of more importance, however, was the renewed enthusiasm and conviction on the part of the participants that they were on the right course and that good progress could be made in reaching small farmers through increased local seed production efforts

The Breeder and Basic Seed Course for the Southern Cone countries held in Pelotas, Brazil, was the first event jointly sponsored by the Seed Unit especially for that subregion The cooperation and leadership of the Centro de Estudos e Treinamento em Tecnologia de Sementes e Mudas (CETREISEM) was vital to the success of this course IICA joined with the Seed Unit and CETREISEM by financially assisting the participation of one person per country

Table 3 gives information on the national institutions and private enterprises that participated in courses at CIAT in 1986 Table 4 shows the number of participants from each country Table 5 gives the distribution of training participants by types of employing organizations A somewhat lower percentage of participants were from seed enterprises this year than is normal since all of the course participants in the English language course were from the public sector About one-half of these participants were from the Caribbean and the rest were from outside this region

Table 1 Regional Activities Organized or Assisted by the Seed Unit in 1986

Country and Location	Activity	Number of Participants	Date
Courses			
CIAT	X Intensive Postgraduate Course on Seed Technology	20	April 1- May 23
CIAT	II Advanced Course in Management of Seed Conditioning Facilities	26	August 4 - 29
CIAT	Tropical Pasture Seed Production Course	28	October 6 - November 7
CIMMYT, Mexico	Seed Week Technology Production for Maize	43	February 17 - 21
CIMMYT, Mexico	Seed Week Technology Production for Maize and Wheat	85	August 11 - 15
Workshops			
CIAT	Seed Production for Small Farmers	50	September 22-26
CIAT	Development of Seed Associations	33	November 19-21

Table 2 Participation in Training Activities held at the Subregional and National Level in 1986

Country and Location	Activity	Number of Participants	Date
Córdoba, Argentina	Seed Production Technology Course	23	November 24-December 5
Santa Cruz, Bolivia	Course on Certification and Quality Control	30	June 16 - 20
	IV National Seed Round Table	150	July 14 - 18
Pelotas, Brazil	Breeder and Basic Seed Production	22	March 3 - 21
CIAT, Colombia	Rice Seed Production for Santa Catarina, Brazil	15	September 29-October 24
Dominican Republic	Caribbean Rice Research Network Workshop	37	November 30 - December 3
Quito, Ecuador	First National Forum on the Improvement of the Private Seed Industry	54	March 11 - 13
	Andean Maize Workers Workshop	94	September 29-October 4
Jutiapa, Guatemala	Bean Seed Production for Small Farmers	30	December 1-5
Panamá, Panamá	Seed Enterprise Management and Marketing Course	20	May 5 - 16
Maracay, Venezuela	Seed Enterprise Management and Marketing Course	32	July 14 - 25

Table 3 National Institutions and Private Enterprises from which Course Participants came in 1986

Country	Institution
Antigua	Caribbean Agricultural Research & Development Institute (CARDI)
Argentina	Instituto Nacional de Tecnología Agropecuaria (INTA) Universidad Nacional de Córdoba
Belize	Caribbean Agricultural Research & Development Institute (CARDI)
Bolivia	Centro de Investigación Agrícola Tropical (CIAT) Centro de Investigación en Forrajes "La Violeta" Empresa Universitaria de Semillas Forrajeras (SEFO-SAM) Servicio Regional de Certificación de Semillas
Brazil[1]	Empresa de Pesquisa Agropecuaria de Santa Catarina (EMPASC) Secretaría de Estado da Agricultura e Pecuária Supagro Servicio de Producao de Sementes Básicas (SPSB) Universidad Federal de Pelotas (CETREISEM/UFPel)
Colombia	Centro Nacional de Investigaciones del Café (CENICAFE) Instituto Colombiano Agropecuario (ICA) Procampo Villezca S A Secretaría de Agricultura de Antioquia Semillas del Huila
Costa Rica	Ministerio de Agricultura y Ganadería
Cuba	Estación Experimental de Pastos y Forrajes "Indio Hatuey" Instituto de Pastos y Forrajes - Ministerio de la Agricultura
Ecuador	Empresa Mixta de Semillas (EMSEMILLAS) Instituto Nacional de Investigaciones Agropecuarias (INIAP) Semillas Continental C A
El Salvador	Centro Nacional de Tecnología Agrícola (CENTA)

Table 3 Continued

Country	Institution
Ethiopia	Institute of Agricultural Research International Livestock Centre for Africa (ILCA) Ministry of Agriculture
Guatemala	Instituto de Ciencia y Tecnología Agrícolas (ICTA) Universidad de San Carlos
Guyana	Caribbean Agricultural Research and Development Institute (CARDI) National Agricultural Research Institute (NARI)
Haiti	Ministry of Agriculture
Honduras	Centro Nacional de Ganadería Ministerio de Recursos Naturales
India	International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
Jamaica	Ministry of Agriculture
México	Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias (INIFAP) Northrup King & Co
Nicaragua	MIDINRA - Dirección General de Ganadería
Panamá	Comité Nacional de Semillas Instituto de Investigación Agropecuaria de Panamá (IDIAP)
Paraguay	PRONIEGA
Perú	Empresa Comercializadora de Arroz (ECASA) Instituto Nacional de Investigación y Promoción Agrícola (INIPA) Instituto Veterinario de Investigaciones Tropicales y de Altura (IVITA) Universidad Nacional Agraria "La Molina"

Table 3 Continued

Country	Institution
Philippines	Dalwangan Experiment Station
Rwanda	OPROVIA
St Lucia	Caribbean Agricultural Research & Development Institute (CARDI)
Surinam	University of Surinam
Trinidad & Tobago	University of the West Indies
Uruguay	Dirección General de Granos (DIGRA) - Ministerio de Agricultura y Pesca
Venezuela	Fondo Nacional de Ivnestigaciones Agropecuarias (FONAIAP)
Zambia	Seed Control and Certification Institute

Table 4 Number of Participants by Country Trained during 1986

Countries	Number of Participants
Latin America and the Caribbean	
Antigua	2
Argentina	3
Belize	1
Bolivia	5
Brazil	4
Colombia	11
Costa Rica	3
Cuba	2
Ecuador	5
El Salvador	1
Guatemala	3
Guyana	1
Haiti	3
Honduras	2
Jamaica	2
México	6
Nicaragua	1
Panamá	2
Paraguay	1
Perú	4
St Lucia	1
Surinam	1
Trinidad & Tobago	1
Uruguay	1
Venezuela	1
Outside Region	
Ethiopia	3
India	1
Philippines	1
Rwanda	1
Zambia	1
	74

Table 5 Distribution of Training Participants by Sector or Types of Employing Organizations in 1986

Type of Organization	Number of Participants	%
Public Research	22	26
Seed Development, Quality Control	26	32
Public National Seed Enterprises	8	10
Private Seed Enterprises	8	10
International Research and Development	10	12
Universities	8	10
	82	100

Technical Collaboration

Links were strengthened during the year in all three of the subregions with which the Seed Unit works - Central America, the Andean Zone and the Southern Cone The institutional ties became stronger and training activities were carried out in all three regions as discussed earlier These activities provided many opportunities for assisting the countries in these subregions through the course participants individually and through the other meaningful contacts with program leaders

Discussions within the Seed Unit and in the Central America and Andean subregions have continued on how the Unit can help accelerate the development of seed programs especially in these two areas A reappraisal was made of the stage of development of the countries in the region that reaffirmed the need to place a special emphasis on assisting these two subregions through some kind of special project Each component of the seed programs was evaluated for each country and numerical values were placed on them to show the relative stage of development ranging from the initial development stage 1 to a well developed situation stage 4 Figure 1 shows these stages

When these evaluations were completed only two countries in the Central America and the Caribbean areas were beyond stage 2 Progress in the Andean five countries is better but two of these countries remain below stage 2 and one of them, though making good progress and above stage 2, is at a critical period in its development and will require considerable help during the next three or four years Table 6 shows the percentage of countries in the entire region in various stages of development For the purposes of this study, Brazil was divided with states grouped according to their stage of development Some portions of Brazil have very advanced seed programs while other sections are near the bottom of the development scale

Figure 1 Categories of Development

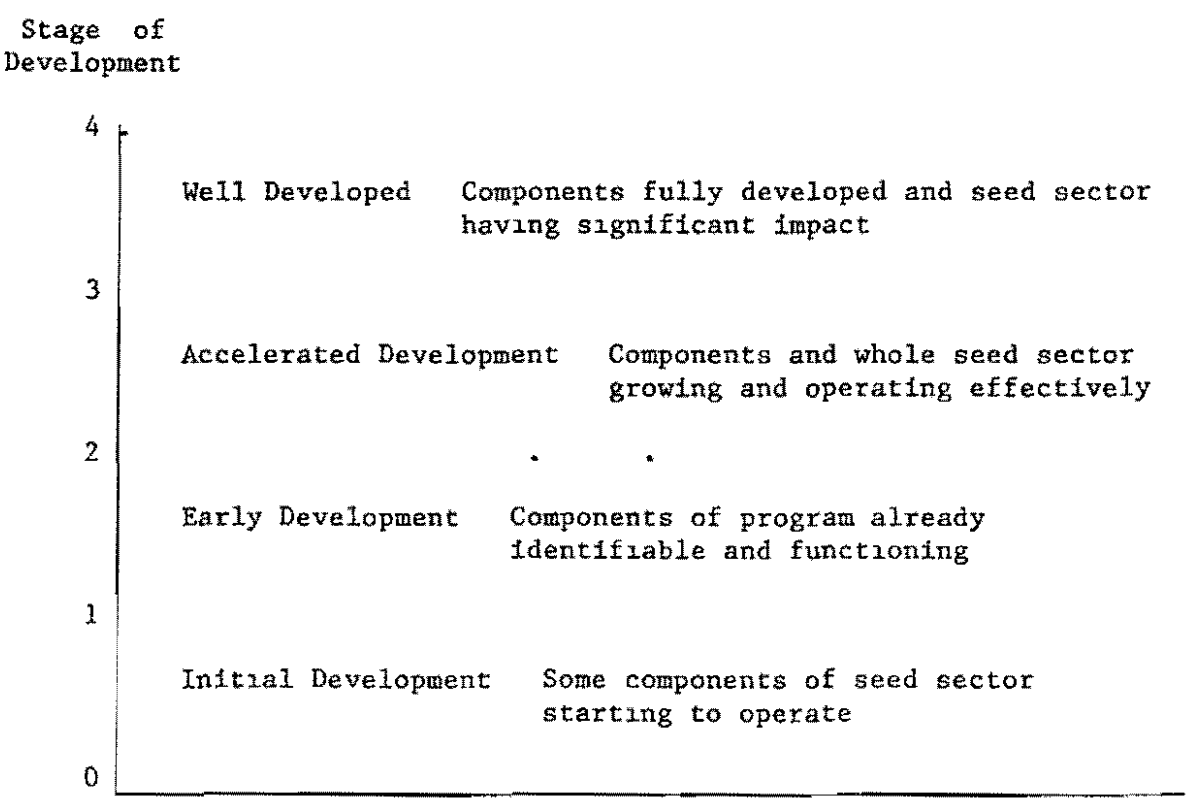

Table 6 Development Status - Percentage of Countries in Each Category Latin America and the Caribbean - 1986

Category	Percentage of Countries*
3 1 - 4	5
2 1 - 3	25
1 1 - 2	45
0 - 1	25

* Brazil was divided by States

This work to assess the status of each country was followed by an evaluation of the condition for individual crops Here again the results differ greatly from country to country and crop by crop These studies are to support a study that is now underway on the nature and future role of the Seed Unit To assist this process, a special task force consisting of six Commodity Program representatives, the administration and the Seed Unit staff has met several times to evaluate the above information and consider how the Commodity Programs and the Seed Unit could cooperate further to accelerate the seed sector development process with a special emphasis on targeted commodities and countries

Two external consultants are identified to work with the Head of the Seed Unit and assist the broader study of the Unit The results of this study will be available for the administration and the Board to consider in 1987 The ultimate object of this entire effort is to identify ways in which the Seed Unit, Commodity Programs of CIAT and other Centers can become even more effective in assisting the improvement of the seed sector

Recognizing the potential of assisting programs through the work of seed technology and trade associations, the Seed Unit continued to be supportive of national and regional developments in this area The highlight of this work came in November when the Latin American Association of Seed Experts (ALES) met to examine ways in which the various national, subregional and regional association activities could be improved and become more supportive of one another This group also contributed to the planning of the next Pan-American Seed Seminar to be held in Uruguay in November, 1987 A new constitution for ALES was developed and its name was changed to be the Federation of Latin American Seed Associations (FELAS) The group continues to look to the Seed Unit for various kinds of support and assistance The Seed Unit sees these developments as extremely positive and an opportunity to build upon the individual leadership capability that exists in the region to help meet the CGIAR objective of increased food production and higher incomes for the food producers of developing countries

Seed Production and Supply

To help accelerate the use of new varieties coming from the crop research programs, the Seed Unit multiplies modest quantities of seed that is sold primarily to national programs This seed, identified as basic seed, has gone through one or two multiplications following the breeder seed stage The primary kinds of seeds multiplied are beans, rice or tropical pastures Two improved varieties of maize were increased in 1986 Table 7 shows the varieties and quantities of seed multiplied during the year Table 8 gives further details on areas planted of tropical pasture seed with estimated harvest where the crop is still in the field

A summary of the seed supplied in 1986 and its approximate value is shown in Table 9 Often when one of the programs takes the seed it actually is used in on-farm testing programs in a country When a Commodity Program utilizes the seed, the value used is the actual cost of seed production -- not a basic seed value All of this work was done in cooperation with one of the Commodity Programs of CIAT, the Maize Program of CIMMYT and the Farm Operations Unit In the case of some of the pasture seed, the contract mechanism was used to provide for the opportunity of multiplying seed in more favorable areas than the CIAT farms

Seed continued to be conditioned as a service to ICA and a few seed growers in the area either because they do not yet have adequate equipment or for troublesome seed lots where the Seed Unit equipment may be better able to make the needed separations Table 10 shows the quantity of seed conditioned The seed laboratory made significant improvements in the seed herbarium and now has over 700 species organized by families to use as a reference in identification, especially on weed seed Table 11 provides information on the numbers of samples tested and the kinds of tests performed

Table 7 Seed Multiplied in 1986

Kind of Seed and Variety			Quantity of Seed Multiplied (Kg)
Beans			
A 36		30	
A 486		744	
BAT 58		466	
PAI 29		59	
PAI 92		55	
PVA 782		201	
PVA 916		319	
PVA 1261		574	
PVA 1438		52	
	Total		2 500
Pastures			
Grasses			
Andropogon gayanus	621	32	
Brachiaria dictyoneura	6133	94	
Legumes			
Centrosema brasilianum	5234	69	
CAPICA	10280	360	
	Total		555
Maize			
CIMMYT 346	(Blanco)		2 600
Suwan-1	(Amarillo)		1 500
Rice			
CICA 8			19 850
	Grand Total		27 005

Table 8 Basic Seed Production of Tropical Pastures - 1986

Specie	CIAT No	Establishment Place	Establishment Year	Area (Ha)	Estimated Final Yield (Kg/ha)	Harvest Estimated Date	Estimated Final Production (Kg)
A gayanus	621	Palmira	1984	0 4	50	December 1986	20
B dictyoneura	6133	Palmira	1985	1 8	80	July 1987	144
B dictyoneura	6133	Quilichao	1985	0 5	40	March 1987	20
B dictyoneura	6133	Balkanes*	1985	24 0	20	November 1987	480
Centrosema sp	5277	Quilichao	1986	0 8	100	February 1987	80
Centrosema sp	5277	Valledupar*	1986	2 1	100	February 1987	210
Centrosema sp	5277	Semillano*	1986	0 5	100	February 1987	50
C macrocarpum	5713	Valledupar*	1986	0 5	75	February 1987	37
C brasilianum	5234	Valledupar*	1986	0 5	200	February 1987	100
CAPICA	10280	Semillano*	1986	2 0	100	February 1987	200

* Areas under contract with the Seed Unit

Table 9 Summary of Seed Supplied in 1986

Kind of Seed and Variety	Quantity (Kg)	Value (US$)	Seed Consignee
Beans			
A-36, 486, BAT-58, 76 Calima, PAI 29, PVA 782, 916, 1261	2 064	4 582	Bean Program, Cassava Program, Farm Operations Unit, Cuba
Pastures			
Andropogon gayanus	450	3 946	Tropical Pasture Program,
CAPICA	271	3 861	ICA - Colombia, Cuba,
Stylosanthes guianensis	11	157	Dominican Republic
Maize			
CIMMYT 364"	620	558	Farm Operations Unit
Rice			
CICA 7, 8 Oryzica 1	4 210	2 947	J Janne, G Villegas
Grand Total	7 626	16 051	

Table 10 Seed Conditioned in 1986

Source of Seed	Kind	Quantity (Kg)
CARGILL	Sorghum	1 383
CIAT		
Bean Program	Beans	3 135
Farm Operations Unit	Beans	2 727
	Rice	19 850
Rice Program	Rice	14 230
Seed Unit	Beans	2 151
	Andropogon gayanus	51
	Brachiaria dictyoneura	94
	CAPICA	430
	Stylosanthes guianensis	9
	Maize	4 100
CRESEMILLAS	Maize	20 950
	Sorghum	62 214
COLDEACEITES	Canola	46
	Mustard	46
FEDECAFE	Beans	1 029
FEDEARROZ	Rice	32 630
ICA	Rice	1 950
	Sorghum	157
	Soybeans	11 834
PROCAMPO	Sorghum	15 150
	Soybeans	10 927
SEMIVALLE	Soybeans	6 683
	Total	211 776

Table 11 Tests Conducted in the Quality Control Laboratory in 1986

Purpose of Tests	Kind of Test					
	Moisture	Purity	Germination	Viability		Vigor
				TZ	pH Exudate	
Rice						
S U Service*	338	15	178	7		
Beans						
S U Service*	60	20	344	10		218
Thesis					356	
Maize						
S U Service*	5	4	5	15		
Sorghum						
S U Service*	12	12	21	3		
Soybean						
S U Service*	30	30	30	30		
Pastures						
S U Service**	22	218	439	514		
	467	299	1 017	579	356	218

Total = 2 936

* Seed Unit service testing

** Tests made by the Tropical Pasture Program and the Seed Unit

Research and Development

The Ph D thesis on Bean Seed Quality was completed and published at Ohio State University in the middle of 1986 The work was done at CIAT jointly between the Bean Program and the Seed Unit in 1984 and 1985 The details of the work are given in the 1984-86 Report

The M S thesis on Disease and Insect Control in Rice, guided jointly by the Rice Program and the Seed Unit but funded by the Seed Unit, was completed in 1986 The student was from the Federal University of Pelotas and a part of the Seed Unit's agreement with that University to cooperate in various areas The results of this work are also summarized in the 1984-86 Report

The research fellow with the Seed Unit from the Federal University of Pelotas contributed in many ways to the Seed Unit's program objectives during his first year with the Unit In research, he concentrated especially on the development of rapid viability test evaluations with CIAT materials He also provided leadership for thesis work and the design of future research to be done

Information and Communication

Good progress continued on the English-Spanish Seed Science and Technology Thesaurus A paper about the Thesaurus was presented at the International Seed Testing Association meeting in July as a way to start the true "internationalization" of the thesaurus and, hopefully, gaining the help of others in adding other languages Concurrently with the development of the Thesaurus have been efforts to initiate its utilization within the Seed Unit in the handling and management of information and training materials

A Manual for Operators of Seed Conditioning Facilities was developed to the first draft stage for use in the course on seed conditioning and ultimate use throughout the region The achievement of this long felt need was largely because of the assistance of a research fellow on the staff

Progress was made on other publications and audiotutorials that are described more fully in the Report on 1984-86

Personnel

Progress with and responsibility assumed by the working groups within the Seed Unit continued to improve The team spirit that permeates the activities of the staff grew even stronger during the year Without this kind of cooperation among the staff the extensive amount of work achieved would not have been possible

The assistance of the CIAT Commodity Programs and links with CIMMYT, INTSORMIL and ICRISAT have also been extremely valuable in helping to achieve objectives The visiting scientists, consultants, research fellows, and the visiting lecturers who are listed in detail in the 1984-86 Report also contributed substantially to the achievement of the Unit in 1986 Mississippi State University contributed with staff for three of the activities of the Seed Unit and their broad experience continues to be a valuable addition to these events Excellent cooperation and assistance continued to be given by ICA, especially through its Seed Division The Colombian seed industry and the association, ACOSEMILLAS, provided invaluable assistance in 1986 as they have in past years The Seed Unit is indeed fortunate to be located in a region and a location where such useful cooperation and help can be provided and usually done without cost

Conclusion

The Seed Unit has continued to build upon advances in the past and the excellent working relationships that it enjoys in the region The year has been the most productive ever It has also opened opportunities for cooperation within CIAT and with other Centers in the region not achieved fully in the past The growing interest within the Commodity Programs to do more to help the seed sector develop so the benefits from properly operating seed programs can be exploited fully as improved varieties are introduced from the accelerating crops research networks points the way to more effective joint efforts in the future