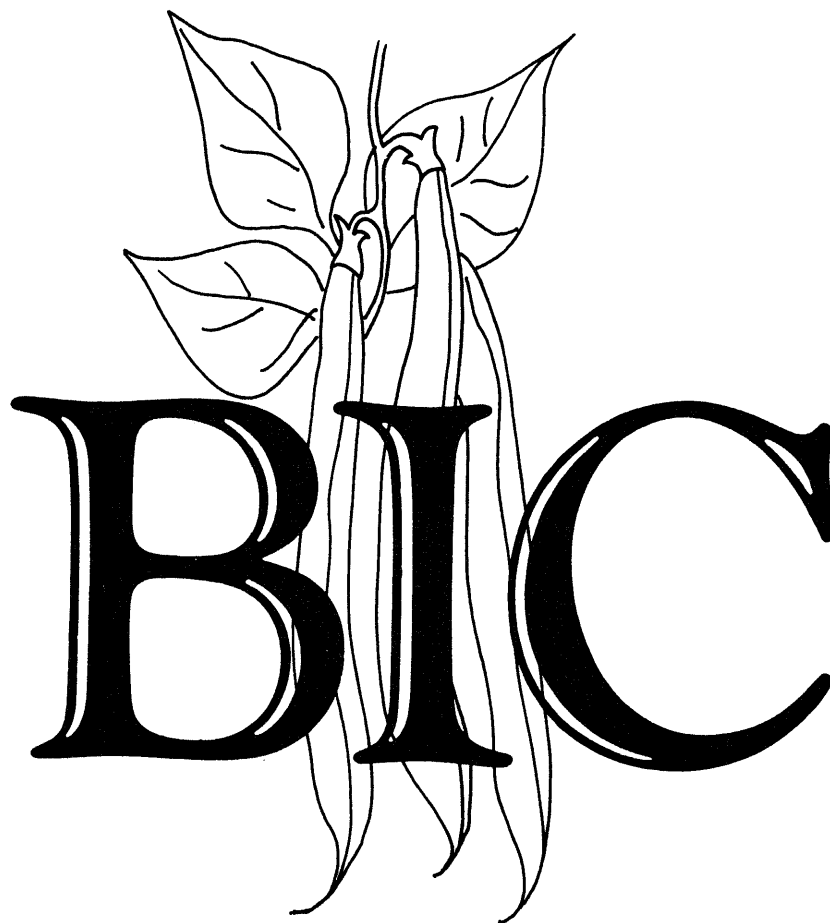


**ANNUAL REPORT OF THE
BEAN IMPROVEMENT
COOPERATIVE**



**A VOLUNTARY AND INFORMAL ORGANIZATION
TO EFFECT THE EXCHANGE OF INFORMATION AND MATERIALS**

**VOLUME 35
1992**

The XXXV
Report of The
BEAN IMPROVEMENT COOPERATIVE

No. 35

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Coordinating Committee

Ken F. Grafton
Michael H. Dickson
George C. Emery
Steve Magnuson

Howard F. Schwartz (President)

J. Rennie Stavely
Shree P. Singh
James R. Steadman
Mark A. Uebersax

Please address correspondence about BIC membership and BIC annual reports to:

Dr. Howard F. Schwartz (303) 491-6987
Department of Plant Pathology & Weed Science
Colorado State University
Fort Collins, CO 80523
U. S. A.

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THE XXXV ANNUAL REPORT OF THE BEAN IMPROVEMENT COOPERATIVE

The 1991 Annual Meeting in Lincoln was a great success as judged by the local hospitality and attendance, quality and quantity of papers and posters, and new and renewed friendships of BIC members. We owe a special thank you to the Nebraska Organizing Committee of Dermot Coyne, Jim Steadman, David Nuland, Dale Lindgren and Lisa Sutton. Besides helping organize the 1991 BIC meeting in Lincoln, Dermot Coyne was also the well-deserved recipient of the 1991 American Society for Horticultural Science Outstanding Career Research Award.

The BIC is currently 375 members strong, and is financially solvent due to private industry sponsorship of many of the 1991 meeting costs (Agtrol Chemical Products, Asgrow Seed, Ferry-Morse Seed, Griffin Corp., Jacks Bean Co., Kelley Bean Co., National Dry Bean Council, Northrup King, Rogers NK Seed, Sacramento Valley Milling, and Trinidad/Benham Corp.), and a generous contribution from the Nebraska Dry Bean Commission for the cost of publishing the 1991 proceedings.

We rotated two new members (J. Rennie Stavely and Ken Grafton) onto the BIC Coordinating Committee, and I would like to thank the outgoing members - Eric Roos and Mark Brick - for their valuable contributions to the BIC. I would also like to thank the Awards Committee of Matt Silbernagel, Dermot Coyne and Don Wallace for their continued service to the BIC.

Dr. Howard F. Schwartz for the Coordinating Committee

1993 BIC MEETING IN BOISE, IDAHO

The 1993 BIC meeting will be held in the Red Lion Downtowner during October 30 to November 4. This time period will also include companion meetings for the National Pea Improvement Association, Phaseolus Crop Advisory Committees, and W-150. Additional details will be finalized in the next few months and included in next year's annual report. This meeting will provide some unique opportunities to interact even more closely with many of our colleagues involved with commercial seed production. If you have any suggestions for special program topics or questions about the meeting, please feel free to contact the Idaho Organizing Committee members - James R. Myers and Robert L. Forster with the University of Idaho at Kimberly.

REPORT OF THE GENETICS COMMITTEE

Meeting of 11/4/1991 during the BIC meeting in Lincoln, Nebraska

Notes of J. Myers and P. Gepts

Members present: M. Bassett, P. Gepts, M. Iwanaga, C. Leakey, J. Myers, S. Singh, E. Vallejos, N. Weeden

Invited by chair: R. Hannan, J. McFerson

1. Phaseolus genetic stocks collection:

Jim McFerson (USDA-ARS/Geneva, NY) summarized how genetic stocks of the *Pisum* (G. Marx) collection are being incorporated into the PI collection

A discussion followed in which it was decided which genetic stocks to include in the *Phaseolus* PI and CIAT collections. The following categories were included:

- 1) Induced mutants: preferably in a common background such as M. Bassett's 593
- 2) Multiple marker lines: i.e. Prakken's multiple recessive tester
- 3) Lamprecht collection: the most valuable traits should be placed in a common genetic background
- 4) Disease differentials: preferably in a common genetic background: e.g., anthracnose, BCMV, rust
- 5) Cytogenetic stocks: those with high fertility and easy to maintain
- 6) Standards for biochemical markers (phaseolin, allozymes, etc.): flag if already in the collection, otherwise add to the collection.
- 7) *Dl* gene testers

Recombinant inbred lines should be maintained by the originator and discussion was tables until next BIC meeting: at this point, the PI system does not appear to have the capability to maintain the mapping information that accompanies this type of stock. However, a sample of each of the lines can be deposited at the NSSL. Sterile and hard to maintain stocks are excluded.

The decision as to what to include in the genetics stocks collection will be made by the genetics committee when genetic/gene symbol data are reviewed by the committee.

The collection will be duplicated by CIAT. In addition, CIAT will take on a limited number of hard to maintain lines such as male steriles and synaptic mutants.

A set of general rules regarding the genetic stocks collection will be developed by the Genetics Committee. Subsequently, the Genetics Committee will make a formal proposal for funding to the USDA.

2. Review of current nomenclature

Discussion was focused on the complex *C* locus. C. Leakey read a proposal to replace current terminology with a new set of symbols based on the biochemistry of anthocyanins and flavonoids. After much debate, a consensus was reached to go on naming genes supported by solid genetic data for Mendelian inheritance, but to adopt C. Leakey's terminology for discussion of the mode of action of pigmentation genes.

3. Nomenclature for QTLs

It was decided that N. Weeden and J. Myers would develop a set of guidelines for QTLs to be appended to the current guidelines for qualitative loci (Annu Rept Bean Improv Coop 31:16-18, 1988). The committee

would then evaluate data for QTLs with these guidelines. QTLs should be measurable to a certain level of precision, they should show a certain level of consistency among populations and environments, and the method of evaluation of their phenotype should be described in sufficient detail. Standard nomenclature rules should be used in naming them.

4. Membership

It was decided to invite R. Hannan to become a member of the committee given his added responsibilities in maintaining the future genetic stocks collection. R. Hannan accepted this invitation. It was also decided to invite Dr. J. Harborne (UK), an expert on flavonoids, to become a member of the committee specifically to review work on pigments. P. Gepts will draft a letter to invite him. Paul Gepts will write a letter to individual committee members who have been inactive to inquire about their continued membership. Finally, Paul Gepts was unanimously re-elected to the chair position.

IN MEMORIAM - Mr. Willem Vermeulen

Mr. Willem Vermeulen , Bean and Sunflower Breeder with the Department of Agriculture in the Republic of South Africa, died unexpectedly on June 15, 1990 at the age of 59. Willem worked at Potchefstroom since 1970 as plant breeder of oil and protein seed crops. He was internationally known as a specialist in sunflower breeding. Apart from the release of the well-known sunflower hybrid HV 772, he was nationally and internationally renowned for the release of sunflower germplasm. The international sunflower and bean contacts built up over the years can possibly be considered as his greatest legacy. Mr. Vermeulen's more recent research activity was concerned with the broadening of the genetic basis of sunflower material by the use of interspecies crosses.

To illustrate the versatility of Willem's scientific knowledge, it is necessary to stress the fact that at one time he was the only dry bean breeder in the Republic of South Africa and that cultivars like Teebus, Nuweveld, Kamberg and, as recently as 1989, Kompasberg, were varieties emanating from his dry bean breeding program. It is also a fact that the whole canning bean industry in his country was based on material developed by Mr. Vermeulen. The sudden demise of Mr. Vermeulen will leave a significant void in the South Africa agricultural research fraternity and it will be difficult to maintain the high level of scientific excellence in dry bean and sunflower breeding.

BEAN IMPROVEMENT COOPERATIVE ACHIEVEMENT & MERITORIOUS SERVICE AWARDS FOR 1991

A large number of awards were presented at this meeting, and included the Achievement Award which was presented to Drs. Daniel Debouck, Paul Gepts, and Pat Barnes-McConnell; while the Meritorious Service Award was presented to Drs. Iver Jorgensen, John Morris, Rosario Providenti, Shree Singh, and Rennie Stavely in recognition of their outstanding accomplishments relating to bean (*Phaseolus*) improvement. The following excerpts were presented at the Awards Program.

D A N I E L D E B O U C K

Dr. Daniel Debouck, research scientist, research division of the International Board of Plant Genetic Resources at Rome, Italy is recognized for his contributions to the genetic diversity of 45 species of the genus *Phaseolus* and insights into its evolution. He has provided major collections from Mexico, Guatemala, Colombia, Ecuador, Peru, Bolivia and Argentina. He has deposited at least 2500 accessions of *Phaseolus* germplasm at CIAT and other banks, and many of these accessions are land races of the five cultigens as well as of wild populations. These collections have been made from farmer's fields and seed stocks, as well as from natural vegetation that has not been used by farmers.

He has also contributed a substantial collection of *Rhizobia* bacteria from Argentina, Peru, and Ecuador. Dr. Debouck has developed an excellent data base with complete passport data and reports that are widely distributed. In addition he has deposited a large number of herbarium samples at major herbaria such as Kew, Stanford and Michigan.

Dr. Debouck was born in Brussels, Belgium in 1953. His undergraduate program began at the Faculte des Sciences Agronomiques at Gembloux, Belgium where he obtained the Diplome d' Ingenieur Agronome in 1977. He then joined the Genetic Resources Unit at CIAT in Colombia during 1977 to 1978, and collected germplasm for the Genetic Resources Program of INIA (INIFAP). He worked as a research assistant to Professor R. Marechal at Gembloux, Belgium during 1979 to 1984. His Ph. D. dissertation dealt with the morphogenesis and physiology of various growth habits of beans. During this time period, he also served as a consultant on various occasions to the International Board for Plant Genetic Resources on Grain Legumes.

During 1985 to 1990, he served as a senior research fellow to the Genetic Resources Unit at CIAT. He collected wild and cultivated species in nearly every American country where beans are naturally distributed. Since 1990, Dr. Debouck has worked at the Research Division of IBPGR in Rome, Italy.

P A U L L. G E P T S

Dr. Paul L. Gepts, Associate Professor, Department of Agronomy and Range Science, University of California, Davis, California is recognized for his innovative work on the genetic diversity and evolution of beans. Among his most outstanding research contributions are: (1) identifying phaseolin as a major source of methionine in common bean seeds; (2) using phaseolin to identify major patterns of genetic diversity between Middle and Andean American germplasm; (3) tracing the worldwide dispersal of cultivated beans from their centers of domestication in America; and (4) providing evidence of reduction in genetic diversity in cultivated common and tepary beans upon domestication.

More recently Dr. Gept's collaborative research work using multivariate statistical analyses of molecular, morphological, and agronomic traits has helped identify races of common bean. His continuing work on genetics of heat tolerance, and morphological, isozyme, and RFLP markers for linkage analysis, and mapping of the bean genome are also noteworthy. Paul has published approximately 25 research articles, contributed chapters in books, and edited an excellent book on *Phaseolus* germplasm resources.

Dr. Gepts was born in Brussels, Belgium in 1953. He earned his Candidature en Sciences Agronomiques at Gembloux, Belgium, and obtained his Diplome d' Ingenieur Agronome in 1976. He worked as a research assistant on chemical control of cereal diseases at Gembloux during 1977 to 1978, and on

interspecific crosses in common bean breeding at CIAT from 1978 to 1981. Paul then moved to the University of Wisconsin at Madison, where he earned his Ph.D. in Plant Breeding and Plant Genetics in 1984. During 1985 to 1986 he was a post-doctoral research geneticist at University of California - Riverside working on genetic variability of nuclear and chloroplast DNA sequences in pearl millet. Since 1987, he has worked at the University of California - Davis as a post-doctoral fellow, Assistant Professor, and now as Associate Professor on genetics of food legumes. He is an active member of more than six professional societies and committees.

PAT BARNES - MCCONNELL

Dr. Pat Barnes-McConnell, Director of the Bean/Cowpea CRSP, Michigan State University, East Lansing, Michigan is recognized for her contributions to collaborative bean research between United States and developing country institutions. This project has addressed the production and consumption constraints of both U.S. and developing country bean and cowpea programs. Dr. Barnes-McConnell and a six-member management team selected 18 projects from 15 U.S. institutions in 12 foreign countries to form the Bean/Cowpea CRSP.

Pat has been very active in designing projects, negotiating with foreign institutions on research plans and budgets, setting up and conducting national and international meetings, and facilitating cross-cultural and multidisciplinary teams. Pat was Deputy Director of the CRSP from 1981 to 1983, and has been the Director since 1983. Under her direction, over 34 million dollars has been directed to bean researchers around the world. With an annual budget of 3.3 million dollars, the Bean/Cowpea CRSP is a very important source of funds and collaborative opportunities for bean researchers worldwide.

Barnes-McConnell was also a co-principal investigator working in Malawi on genetic diversity. Her studies in Malawi showed the importance of socio-cultural considerations in maintaining genetic diversity in beans.

Pat was born in 1936. Her degrees include an A.B. from Fisk University in Tennessee in 1956, and a M. A. in 1959 and a Ph. D. in 1972 from Ohio State University. Pat's involvement with beans started in 1979 when she took a sabbatical leave from the Department of Urban and Metropolitan Studies at Michigan State University to be the assistant coordinator for development of the Bean/Cowpea CRSP.

IVER L. JORGENSEN

Mr. Iver L. Jorgensen, retired vegetable breeder and executive of the Northrup King Company of Gilroy, California is recognized for his sustained, productive, and significant contributions to garden variety development and executive leadership in vegetable production and seed procurement with Northrup King and the vegetable seed industry at large.

Iver Jorgensen successfully developed a number of garden bean varieties for canning which combined the traits of white seed, slow seed and fiber development, and erect plant habit with concentrated pod set for machine harvesting. He was also successful in developing a number of garden bean varieties for the fresh market. Some of his more successful varieties have been 'Sprite' (1961), 'Green Isle' (1970), 'Green Genes' (1970), and 'Triumph' (1977). He also developed 'Abunda' (1961), 'Harvest King' (1965), 'Bonvert' (1966), 'Blue Danube' (1967), 'Salem' (1967), 'Moongold' (1969), 'Regal' (1969), 'Itasca' (1974), 'Blue Max' (1975), 'Lakeland' (1978), 'Paymaster' (1978), and 'Empress' (1979).

Iver Jorgensen was born in Des Moines, Iowa in 1924. Iver was a staff sergeant in the U.S. Air Force during 1943 to 1946. He received his B. S. degree at Iowa State University at Ames in 1949, and his M. S. degree from the Department of Horticulture and Forestry at the University of Nebraska in Lincoln in 1952. He was involved in vegetable breeding for Northrup King Company at Minneapolis, Minnesota from 1951 to 1975, and was then appointed vegetable production manager from 1975 to 1981. In 1981 he moved to Northrup King's Vegetable Seed Division at Gilroy, California where he was later procurement manager from 1985 to 1989. He has also served as the Director (1974 to 1978) and President (1979 to 1980) of All-America Selections at Downers Grove, Illinois.

JOHN L. MORRIS

Dr. John L. Morris, plant breeder, Rogers NK Seed Company, Twin Falls, Idaho is recognized for his thirty years of significant contributions to the genetic improvement of snap beans and processing peas. His achievements include such varieties as 'Roma II', 'Burly', 'Dandy', 'Blazer', 'Shamrock', 'Colt', and 'McHarvest', which have benefitted both producers and consumers. John's life and career are characterized by his hard work, strong ethics and his friendly, generous nature. He has served both the Bean Improvement Cooperative and the National Pea Improvement Association in numerous committee capacities over the years.

John Morris was born in Iowa in 1929, and grew up on a row crop and livestock farm. After high school, John served in the Army and then entered Iowa State University for his B. S. degree in Agronomy. He then joined Rogers Brothers Seed Company as a field representative at Twin Falls, Idaho. At that time, Dr. Melvin Anderson directed pea and bean breeding. While working closely with "Doc" Anderson, John developed a keen interest in bean research. Recognizing John's capabilities and motivation, the company supported the pursuit of his doctorate while he continued to work part-time. John received his Ph. D. in plant breeding and pathology in 1967 from Utah State University. When Dr. Anderson retired in 1968, John assumed the responsibility as Rogers' Director of Pea and Bean Research.

John and his wife Betty have two children and continue to be active in church and community affairs in their hometown of Twin Falls, Idaho.

ROSARIO PROVIDENTI

Dr. Rosario Provvidenti, the Liberty Hyde Bailey Professor of Plant Pathology at Cornell University, New York State Agricultural Experiment Station at Geneva is recognized for his contributions on viral diseases affecting Phaseolus vulgaris and related species, the search for sources of resistance, and the genetics of resistance. He has found more sources of resistance to viruses in beans than any other individual researcher.

His 42 papers concerning Phaseolus species illustrate other aspects of his research, including resistance to powdery mildew in phasemy bean, serological relationships of bean viruses, characterization of genetic factors which incite virus-like diseases in bean, seed transmission of bean common mosaic virus in phasemy and tepary beans, soybean mosaic virus in common bean, blackeye cowpea mosaic virus in black gram bean, and the ultrastructural localization of bean common mosaic virus particles in the bean embryo. Recently he also found a dominant gene for specific resistance to the NL-8 strain of bean common mosaic virus.

Dr. Provvidenti's broad knowledge of viral diseases of vegetables and sources of resistance has led to several international assignments, including China, Cyprus, Egypt, Greece, Korea, Taiwan, and Turkey. He is a fellow of the American Phytopathological Society, a Technical and Scientific Advisor to the Tianjin Academy of Agricultural Sciences of China, and the recipient of an Award of Merit in Plant Pathology from the American Phytopathological Society.

Dr. Provvidenti is a native of Italy where he received most of his education, including a B. S. in agricultural sciences and a doctorate in microbiology from Palermo University. After a few years teaching plant pathology in Italy he emigrated to the United States, and since 1954 has been a faculty member of Cornell University at the Geneva campus. Through the years he has also identified valuable sources of resistance to viruses affecting other crops: cucurbits, crucifers, cowpea, lettuce, pea, pepper, tomato, and spinach. His cooperative work with vegetable breeders of public and private institutions has contributed to the development of viral resistant cultivars, including three recently released multiviral resistant bean lines.

S H R E E P. S I N G H

Dr. Shree P. Singh, Senior Staff Scientist in bean breeding, International Center of Tropical Agriculture (CIAT), Cali, Colombia is recognized for his significant contributions to bean breeding and genetics. He research focus includes the characterization of genetic diversity and patterns of variation in wild and cultivated common beans; genetic analyses of morphological and agronomic traits; development and evaluation of alternative methods of creating useful genetic variation and selection in the primary gene pool of Phaseolus vulgaris; transfer of useful genes from tepary to common bean through interspecific hybridization; and breeding for yield potential, early maturity, plant architecture, tolerance to drought and poor soil fertility, and resistance to fungal, bacterial, and viral diseases of major economic importance of common bean in the tropics and subtropics.

Shree was born in Pattinarendrappur, Jaunpur, Uttar Pradesh, India in 1943. He obtained his B. S. in agriculture from the University of Gorakhpur in 1964, and a M. S. in agricultural botany from Agra University in 1966 in India. He obtained a M. S. degree in plant breeding and plant genetics in 1971, and a Ph. D. in plant breeding and plant genetics in 1973 from the University of Wisconsin at Madison. He started his plant breeding career by working with sorghum from 1973 to 1977 at Pioneer Hi-Bred International in Texas, CIMMYT in Mexico and finally ICRISAT in Mexico.

Dr. Singh started his bean career in 1977 when he joined the CIAT Bean Program. Since then he has contributed a tremendous amount of leadership and insight to scientific advances in bean breeding and germplasm improvement. He has trained literally hundreds of workers from national programs throughout the world in the latest theories and practices of bean breeding and varietal development. He cooperates with numerous scientists throughout the world involved with applied and basic research thrusts, and has actively published his breeding results and theories in more than 20 refereed papers and 3 book chapters since 1985.

J. R E N N I E S T A V E L Y

Dr. J. Rennie Stavely, Research Plant Pathologist, Agricultural Research Service, USDA, Beltsville, Maryland is an internationally recognized authority on bean rust. In 1983, he organized an international bean rust workshop in Puerto Rico that standardized the grading scale for rust reactions and developed an international set of differential cultivars for identifying pathogenic races. Pathogenic variability in the rust fungus is continuously monitored and 55 races have now been identified from rust collections from North America, Africa, Europe and Asia.

He developed an efficient method for inoculating individual plants with multiple individual races of the rust fungus. Resistance to multiple races has been introgressed and combined with partial rust resistance already present in snap, wax, pinto, and great northern bean lines. Many of these lines also carry the I gene for bean common mosaic virus resistance. From 1987 to 1989, nearly 3600 plant introductions were field evaluated for rust resistance and 32 of these were subsequently shown in greenhouse tests to be resistant to all available races of the rust fungus.

Research on biological control for bean rust led to a patent on a strain of Bacillus subtilis, and recently identified conditions favorable for rust hyperparasitism by Verticillium lecanii. In other bean pathology research, close-spaced planting effectively reduced or negated losses from nonpersistent, aphid-transmitted viruses.

Dr. Stavely was born in Wilmington, Delaware in 1939. He received his B. S. in Entomology and Plant Pathology from the University of Delaware in 1961, and his M. S. in 1963 and his Ph. D. in 1965 in Plant Pathology from the University of Wisconsin at Madison. After a year of postdoctoral research on the nature of powdery mildew resistance in red clover at Wisconsin, he joined the ARS-USDA as a research plant pathologist to work on tobacco at Beltsville until he transferred to beans in 1980. Rennie is an active member and participant in the BIC, National Dry Bean Research Conference, W-150, and Phaseolus Crop Advisory Committee among other professional organizations.

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George Abawi
Dept. of Plant Pathology
MYS Agr. Exp. Station
Geneva, NY 14456

Agricultural Improvement Station
c/o Keo Tzy Books Co. Ltd.
P. O. Box 5-299
Taipei 10098, Taiwan
REPUBLIC OF CHINA

Agr. Sales, Inc.
Attn: Mr. Armour
P.O. Box 149
Olivia, MN 56277

Akademia Rolnicza
Katedra Nasiennictwa i
Szkarstwa
Ogrodniczego
Poznan-Baranowo POLAND

David Allen
SADCC/CIAT Reg. Bean Program
P.O. Box 2704 Arusha
TANZANIA

Richard F. Allison
Dept. of Botany & Plant Path.
Michigan State University
East Lansing, MI 48824-1312

Eduardo Alvarez-Luna
Apartado Postal 1342
81200 Los Mochis, Sinaloa
MEXICO

Ambassade de Belgique
Pour Projet ISABU
B. P. 1920
Bujumbura
BURUNDI

American Ag. International
2201 North Indian Ruins Rd
Tucson, AZ 85715

Axel L. Andersen
902 Whitman Drive
East Lansing, MI 48823-2448

Warren L. Anderson
Box 5, Dept. of Agriculture
Middle Tennessee State Univ.
Murfreesboro, TN 37132

Anne J. Anderson
Utah State University
Department of Biology
Logan, UT 84322-5305

J. M. Andeweg
Eekhoornlaan 12
6705 CH Wageningen
THE NETHERLANDS

Steve Antonius
L. D. Maffei Seed Co.
P.O. Box 903
Newman, CA 95360

Gisela C. Arndt
Dept. of Agronomy & Range Sci.
University of California
Davis, CA 95616

Alan A. Atchley
Plant Variety Protection Ofc.
Rm. 500, MAL Bldg.
10301 Balto. Blvd.
Beltsville, MD 20705

J. W. Aylesworth
Box 98
Woodslee, Ontario
CANADA NOR 1V0

James R. Baggett
Dept. of Horticulture
Oregon State University
Corvallis, OR 97331

J. O. Bakker
Bakker Brothers
P.O. Box 7, 1722 ZG
Noord-Scharwoude
THE NETHERLANDS

Marco Ballarin
Univ. of California
1320 Harbor Bay Pkwy, Suite 150
Alameda, CA 94501

Mark J. Bassett
1253 Fifield Hall
University of Florida
Gainesville, FL 32611

Jean-Pierre Baudoin
VER Phytotec des Regions Chaudes
Fac. des Sciences Agronomiques
5030 Gembloux
BELGIUM

Ken Baumgartner
P. O. Box 38
Wiggins, CO 80654

James S. Beaver
Dept. of Agronomy & Soils
Univ. of Puerto Rico, Mayaguez
Mayaguez, PR 00708

R. F. Becker
201 Hedrick Hall
MYS Agr. Exp. Station
Geneva, NY 14456

Steve Beebe
C.I.A.T.
A. A. 6713
Cali, COLOMBIA

Piero Belletti
Inst. Pl. Breeding & Seed Prod.
University of Turin
Via P. Giuria, 15
10126 Turin, ITALY

Rene C. Beussen
Royal Sluis, Inc.
1293 Harkins Road
Salinas, CA 93901

A. C. Beyer
Medel SE Str. 4
4005 V. C. Tiel
THE NETHERLANDS

Blackwell North America, Inc.
New Title Department
1001 Fries Mill Road
Blackwood, NJ 08012

Fred A. Bliss
Pomology Department
University of California
Davis, CA 95616

Madison Andre Blondeau
45 Rue Nestor
Longue Esee
59235 Bersee
FRANCE

Janice Bohac
USDA/ARS Vegetable Lab
2875 Savannah Highway
Charleston, SC 29414

Roberto Bollini
Consiglio Nazionale Dell Ricerch
Istituto Biosintesi Vegetali
Via Bassini 15, 20133 Milano
ITALY

D. A. Bond
Plant Breeding International
Maris Lane, Trumpington
Cambridge CB22 1Q
ENGLAND

Lech Boros
Plant Breeding Institute
Radzikow, 05-870 Blonie
POLAND

Mark Boudreau
Dept. of Plant Pathology
The Ohio State University
Wooster, OH 44691

John C. Bouwkamp
Department of Horticulture
University of Maryland
College Park, MD 20742

J. W. Bradbeer
Div. of Biosphere Sci.
King's College, London
Camden Hill Road
London, W8 7AH, United Kingdom

James F. Breinling
Gerber Products
445 State St.
Fremont, MI 49412

Mark A. Brick
Dept. of Agronomy
Colorado State University
Fort Collins, CO 80523

Harley W. Brotherton
Brotherton Seed Co.
Box 1136
Moses Lake, WA 98837

Judith K. Brown
Dept. of Plant Pathology
Forbes Bldg. 104
University of Arizona
Tucson, AZ 85721

G. A. Kaufmanns Buchhandlung
Aloys-Schulte-Str. 2
Postfach 190143
5300 Bonn 1
GERMANY

Iedo Valentin Carrijo
Sementes Agroceres
Caixa Postal 58
32500 Betim-MG
BRAZIL

Alejandro E. Castellanos V.
CICTUS - UNISON
Apdo. Postal # 54
Hermosillo, Sonora
MEXICO 83000

Leland Chandler
Department of Entomology
Texas Tech University
Lubbock, TX 79409

Christine Chase
Veg. Crops Dept., 1255 Fifield
University of Florida
Gainesville, FL 32611

N. C. Chen
W. Atlee Burpee Company
335 So. Briggs Road
Santa Paula, CA 93060

Wei-Jong Chung, Hort. Spec.
Taichung Dist. Agr. Imp. Sta.
200, Lane 361, Section 1,
Chiatung Rd., Tienyang Village,
Tatsuen Hsiang, Changhua, TAIWA

National Bean Coordinator
Facultade de Ciencias Agrarias
C. P. 236
(Attn. Mr. Francisco Eduardo)
Huambo, ANGOLA

National Bean Coordinator Sebele Research Station P. O. Box 0033 (Attn. Mr. E. Mosarwe) Gaborone, BOTSWANA	Tim Courneya Northarvest Bean Growers Ass RR 3, Box 520 Frazee, MN 56544	O. T. Edge SADCC/CIAT Bean Programme P.O. Box 2704 Arusha, TANZANIA
National Bean Coordinator Maseru Research Station P. O. Box 829 Maseru 100 (Attn. Simon Moimoi) LESOTHO	Dermot P. Coyne 386 Plant Sci Bldg, Dept of Hort University of Nebraska Lincoln, NE 68503	George C. Emery Res. Div., Ferry Morse Seed Co. P.O. Box 1010 San Juan Bautista, CA 95023
National Bean Coordinator Bunöa College of Agriculture P. O. Box 219 (Attn. Dr. A.B.C. Mkandawire) Lilongwe, MALAWI	Credit Agricole Caisse Regionale de la Somme E.P. 0921 80009 Amiens Cedex FRANCE	J. Alberto S. Escalante-Estrada Centro de Botanica Colegio de Postgraduados Chapingo, Mex. MEXICO 56230
National Bean Coordinator INIA, C. P. 3658 Mavalane, Maputo (Attn. Mr. Manuel Amame) MOZAMBIQUE	Crites-Moscow Growers, Inc. Attn: Robert Arthur P.O. Box 8912 Moscow, ID 83843	Graines Gautier B.P. No. 1 13630 Eyragues FRANCE
National Bean Coordinator c/o Mr. Vilho Nghipondoka Ministry of Agr., F, W & Rural D P/S 13184, Windhoek 9000 NAMIBIA	Robert L. Croissant Agronomy Dept. Colorado State University Fort Collins, CO 80523	Fayek Saweris Faris Agr. Research Center 51 Salah Salim Street Giza, EGYPT
CIAT Regional Programme on Beans in Eastern Africa P.O. Box 6247 Kawanda, UGANDA	David W. Davis Dept. of Horticulture University of Minnesota St. Paul, MN 55108	B. Featonby-Smith Starke Ayres (Pty) LTD P.O. Box 304 Eppindust 7475 SOUTH AFRICA
Project CIAT Great Lakes Bean Program B. P. 259, Butare RWANDA	L. Dean Idaho Seed Bean Co., Inc. P.O. Box 1072 Twin Falls, ID 83303-1072	Claire Thomas Federici Botany & Plant Science Dept. University of California Riverside, CA 92521
National Bean Coordinator Malkern Research Station P. O. Box 4 Malkerns (Attn. Ms. Zodwa Mamba) SWAZILAND	Daniel G. Debouck IBPGR Research Programme 142 Via delle Sette Chiese 00145 Rome, ITALY	Adrian Fisher Southwestern CO Research Center Box 233 Yellow Jacket, CO 81335
National Bean Coordinator Agr. Res. & Training Institute Lyamungu, P. O. Box 3004 (Attn. Dr. Clemence S. Mushi) Moshi, TANZANIA	Alfonso Delgado-Salinas Inst. de Biologia, UNAM Herbario Nacional, (MEXU) Apartado Postal 70-367 04510 Mexico, D. F., MEXICO	Harold Ford Rogers NK Seed Company P. O. Box 511 Dover, DE 19903-0511
National Bean Coordinator Msekera Research Station P. O. Box 510089 Chipata (Attn. Dr. Coy Haciwa) ZAMBIA	Del Monte Corporation Attn: Vicki J. Pierce 6580 Furlong Avenue Gilroy, CA 95020	Robert E. Forrest Centralia College Agr. Tech Huron Park, Ontario CANADA N0M 1Y0
National Bean Coordinator Crop Breeding Institute DR & SS P. O. Box 8100, Causeway, Harare (Attn. Mrs. Olivia Mukoko) ZIMBABWE	Rich De Moura 1143 Alice St. Davis, CA 95616	Robert L. Forster University of Idaho Kimberly Res. & Ext. Center 3793N, 3600E Kimberly, ID 83341
Clause Semences Professionnelles 24, Bld Pierre Brosselette 91221 Bretigny Sur Orge Cedex FRANCE	J. Michael Dessert P. O. Box 3485 El Centro, CA 92244-3485	Eunice Foster 160B Plant & Soil Sci. Bldg. Michigan State University East Lansing, MI 48824-1325
Carl D. Clayberg Dept. of Horticulture Kansas State University Manhattan, KS 66506	Michael H. Dickson Dept. Horticultural Sciences NYS Agr. Exp. Station Geneva, NY 14456	Gary D. Franc P. O. Box 3354 University of Wyoming - PSIS Laramie, WY 82071-3354
Jerry Clinkinbeard 13283 W.C.R. 25.5 Platteville, CO 80651	Helene Dillard Plant Pathology NYS Agr. Exp. Station Geneva, NY 14456	Eric De Franciosi AGRO Company of Canada Ltd. 450 Bridge Montreal, P.Q. CANADA H3K 2C6
Carlton Colcord Colcord Farms Allene E. Maschke, Agent P. O. Box K Paris, KY 40361	Rodrigo Echavez-Badel P.O. Box 5617 College Station Mayaguez, PR 00681	W. A. Frazier 3225 N.W. Crest Drive Corvallis, OR 97330
Robert B. Colville 1127 Westview Drive Rochelle, IL 61068	James W. Echols Extension Agronomist Colorado State University Fort Collins, CO 80523	Russell Fraed 200 International Center Michigan State University East Lansing, MI 48824
Janice Coons Botany Department Eastern Illinois University Charleston, IL 61920	B. R. Edington University of Natal Dept. of Micro. & Plant Path. Pietermaritzburg 3200 REPUBLIC OF SOUTH AFRICA	George F. Freytag 3808 Crescent Drive Fort Collins, CO 80526

Warren H. Gabelman University of Wisconsin 1575 Linden Drive Madison, WI 53706	Cosme Guerrero E. A. G. UNI - SON Correo Federal # 275 252 Grand Avenue Nogales, AZ 85621	George L. Hosfield Dept of Crop & Soil Science Michigan State University East Lansing, MI 48824-1325
J. F. Gage Dept. of Primary Industries Redlands Hort Res Sta, Cleveland 4163 AUSTRALIA	W. A. Haglund Washington State University 1468 Memorial Highway Mount Vernon, WA 98273	Rodrigo A. Hoyos Dept. of Crop & Soil Sciences Michigan State University East Lansing, MI 48823
Jorge A. Acosta Gallegos Campo Exp. Valle de Mexico Apdo. Postal No. 10 56230 Chapingo, Mex. MEXICO	Scott Haley Dept. of Crop & Soil Sciences Michigan State University East Lansing, MI 48824-1325	Pierre Hucl Crop Sci. & Plant Ecol. Dept. University of Saskatchewan Saskatchewan, Sask. CANADA S7N 0W0
Guillermo E. Galvez CIAT 1380 N.W. 78th Ave. Miami, FL 33126-1606	Robert Hall Dept. of Environ. Biology University of Guelph Guelph, Ontario N1G 2W1 CANADA	A. P. Hugo, Sensako P.O. Box 556 Bethlehem 9700 REPUBLIC OF SOUTH AFRICA
Nick Galwey Dept. of Genetics University of Cambridge Downing St., Cambridge CB2 3EH ENGLAND	Donald Halseth 147 E. Plant Science Bldg. Cornell University Ithaca, NY 14853-0327	Lih Hung Dept. of Hort., Nat. Taiwan Univ Taipei, Taiwan, 10764 REPUBLIC OF CHINA
Refe Gaudiel Alberta Hort. Res. Center Brooks, Alberta CANADA T0J 0J0	Sang Joo Han Mikado Seed Growers Co., Ltd. 1203 Hoshikuki Ciba City, 280 JAPAN	James Hunter Jordan Hall NYS Agr. Exp. Station Geneva, NY 14456
Robert J. Gehin Ferry-Morse Seed Co. P.O. Box 392 Sun Prairie, WI 53590	Richard M. Hannan Plant Introduction, USDA 59 Johnson Hall Pullman, WA 99164	Aly Mohamed Ibrahim USREP/JECOR Agwat (Box 43) APO New York, NY 09038-7001
Dimitar D. Gentchev Wheat & Sunflower Breeding Inst. Gen. Tochevo - 9520 BULGARIA	Leland Hardman Dept. of Agr. & Plant Genetics University of Minnesota St. Paul, MN 55108	Shuzo Z. Iida Lab. of Field Crop & Vegetables Kitami Agr. Exp. Station Kunep-Cho, Tokoro-Gun Hokkaido 099-14, JAPAN
Paul Gepts Agron. & Range Science University of California Davis, CA 95616-8515	Rhea Harmsen 327 Woodhaven Drive Monroeville, PA 15146	INRA - Laboratoire Genetique Et Amelioration des Plantes Mons en Chaussee 80200 Peronne FRANCE
Mattis Gerlagh I.P.O., P.O. Box 9060 6700 GW Wageningen THE NETHERLANDS	Frederick Harper Maricopa Co. Office 4301 E. Broadway Phoenix, AZ 85040	INRA Sta. de Genetique des Plantes Route de St. Cyr 78000 Versailles FRANCE
Robert C. Gilbertson Department of Plant Pathology Univ. of California-Davis Davis, CA 95616	Harris Moran Seed Co. Attn: Ron Baker Box 980 Nampa, ID 83653	Instituto di Fitovirolologia Appl. Strade delle Cacce, 73 10135 Torino ITALY
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Pullman, WA 99164

Margaret T. Mmbaga
406 Plant Science
Dept. of Plant Pathology
University of Nebraska
Lincoln, NE 68583-0722

F. Mohamed
Dept. of Horticulture
377 Plant Science
University of Nebraska
Lincoln, NE 68583-0724

S. Krishna Mohan
Univ. of Idaho
29603 U of I Lane
Parma, ID 83660

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Dept. of Horticulture
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Corvallis, OR 97331

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Kimberly, ID 83341

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MEXICO

Phil Osterli
UC Cooperative Extension
733 County Center III Court
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Henry Y. Ozaki
498 E. Conference Dr.
Boca Raton, FL 33486

Gloria Palomares
Dept. de Biotecnologia
Universidad Politecnica
Camino de Vera 14
46022 Valencia, SPAIN

Leonard Panella
Dept. of Agronomy & Range Sci.
University of California
Davis, CA 95616

Jennifer L. Parke
Dept. of Plant Pathology
1630 Linden Drive, Univ. of Wis.
Madison, WI 53706

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John C. Bouwkamp	301-405-4334	ISAR Programme Legumineuses	
J. W. Bradbeer	071-333-4321	Masaru Iwanaga	57-23-675050
James F. Bretnling	616-928-2466	J. A. Jarvie	0334-31131
Mark A. Brick	303-491-6551	Dan P. Jenott	303-669-0493
Harley W. Brotherton	509-765-1816	Frans J. Jongeleen	02280-10711
Judith K. Brown	602-621-9290 FAX	Ena Joseph	308-234-8475
G. A. Kaufmanns Buchhandlung		Walter J. Kaiser	509-335-1502
Iedo Valentin Carrizo		Lawrence Kaplan	617-287-6606
Alejandro E. Castellanos V.	12-19-95 / 17-31-81	Ashok K. Karel	94-237-214
LeLand Chandler	806-742-2828	Kawanda Research Station	
Christine Chase	904-392-7920	Phocas Kayinamura	
N. C. Chen	805-525-3348	Ed Kee	302-856-7303
Wei-Jong Chung, Hort. Spec.	04-8523101	John Keenan	
Clause Semences Professionnelles	33-1-60-84-95-84	Kelley Bean Co.	308-635-2338
Carl D. Clayberg	913-532-6170	James D. Kelly	517-355-0205
Jerry Clankinbeard	303-785-6270	Mireille Khairallah	517-353-3954
Carlton Colcord	606-987-5544	Roger Kirkby	255-51-72714
Robert B. Colville	815-562-2980	Sherry Kitto	302-451-2531
Janice Coons	217-581-6243	Ken Kniecik	608-262-6044
Tim Courneys	218-334-6351	Josue Kohashi Shibata	915-585-45-55 5294
Dermot P. Coyne	402-472-1126	A. W. Koppenhofer	609-342-6215
Credit Agricole		Julia Kornegay	57-3-675050
Crites-Moscow Growers, Inc.		George P. Kotch	208-734-5470
Robert L. Croissant	303-491-6201	Jutta Kruger	0-41-02-5-11-21-24
David W. Davis	612-624-9737	Gary Krumm	303-854-3656
L. Dean	208-734-5221	Elizabeth M. Lamb	
Daniel G. Debouck	39-6-574.47.19	Calvin Lamborn	208-733-8205
Alfonso Delgado-Salinas	011-525-550-5921	The Larsen Co.	414-435-5301
Del Monte Corporation	408-842-4100	Colin Leakey	223-276-866
Rich De Moura	916-756-5946	A. J. Liebenberg	
J. Michael Dessert	619-353-7822	Dale T. Lindgren	308-532-3611
Michael H. Dickson	315-787-2222	Lucia Lioi	080-583400
Helene Dillard	315-787-2376	Benito O. de Lumen	510-642-8144
Rodrigo Echavez-Badel	809-265-3859	Patrick J. Lynch	519-625-8063
James W. Echols	303-491-6201	Ing. Daniel Macias	598-739-2171
B. R. Edington	0331-63320	Sally MacKenzie	317-494-4772
O. T. Edje	2268-8557	Susan MacKinnon	902-838-2992
George C. Emery	408-637-7461	B. Mackintosh	67-059 / 82-159
J. Alberto S. Escalante-Estrada	595-4-22-00 x 5344	Steve Magnuson	408-623-4323
Graines Gautier	90-94-13-44	Amir A. Malik	217-283-7771
Fayek Sawaris Faris	625498	Alain Maquet	57-23-675050
B. Featonby-Smith		Victoria Marcarian	602-621-5322
Claire Thomas Federici	619-787-3706	Terry E. Marquardt	919-549-2084
Adrian Fisher	303-562-4255	Lurline Marsh	314-681-5463
Harold Ford	302-674-2221	Gregory Martin	607-255-7886
Robert E. Forrest	519-228-6691	Elle Marx	41-68-64-64
Robert L. Forster	208-423-6603	Porfirio Masaya	506-293155
Eunice Foster	517-353-1784	Douglas P. Maxwell	608-262-1995
Gary D. Franc	307-766-2397	Martin N. Mbewe	
Eric De Franciosi	514-937-4241	Phil McClean	701-237-8443
W. A. Frazier	503-753-8183	Mark S. McMillan	
Russell Freed	517-355-4693	E. M. Meader	603-332-5666
George F. Freytag	303-223-2189	R. J. M. Melis	
Warren H. Gabelman	608-262-1681	Mekassa Research Center	
J. F. Gage	07-286-1488	Maria del Carmen Menendez	
Jorge A. Acosta Gallegos	595-4-24-99/4-28-77	Richard A. Meronuck	612-625-6290
Guillermo E. Galvez		Tom E. Michaels	519-824-4120 3392
Nick Galwey	0223-333999	Michigan Bean Shippers Assn.	517-790-3010
Refe Gaudiel	403-362-3391	Merrel Mikesell	913-462-3971
Robert J. Gehin	608-837-6574	Phil Miklas	
Dimitar D. Gentchev	2-74-54	Emil Milkov	509-335-4061
Paul Gepts	916-752-7743	Margaret T. Mmbaga	402-472-2858
Mattis Gerlagh	0-8370-19151		

F. Mohamed	402-472-2854	Yuji Shinada	0155-62-2431
S. Krishna Mohan	208-722-6701	Mathias J. Silbernagel	509-786-3454
David Mok	503-737-3695	Shree Singh	57-3-675050 ext 346
Harold A. Mooney	415-723-1179	A. E. Slinkard	306-966-4978
John Morris	208-466-0319	Gordon C. Smith & Son	065-561351
Paul E. Moser	208-466-0319	Judith Lyman Snow	908-932-8165
H. P. Mueller		Nicola J. Spence	0789-470382
C. Muller		Carl Sperling & Co.	04131-301740
Charles A. Mullins	615-484-0034	A. P. Sprague	510-537-1953
P. N. L. Mulungu		Susan L. Sprecher	601-634-1137
Larry Murdock	317-494-4592	J. Rennie Stavely	301-504-6600/6564
James R. Myers	208-423-6609	James R. Steadman	402-472-3163
Hiroshi Nakano	09808-2-2306	Ron Steele	519-283-6495
NAPI		Peter Stoffella	407-468-3922
Yigal Natav	03-5434798	William L. Summers	515-294-1978
Navy Bean Marketing Board	071-621666	D. R. Summer	912-386-3158
Arnoldo J. Netto	035-821-1280	Sunspiced, Inc.	509-765-7807
Dawn S. Neuman	702-739-3399	Barry G. Swanson	509-335-3793
Nickersch-Zwaan b.v.		Swets North America	
S. Suzanne Nielsen	317-494-8328	Southwest Multi-Foods Inc.	303-484-0600
James Nienhuis	608-262-6975	Ryoji Takahashi	011-851-9141
Northwest Bean Growers Assoc.	218-334-6351	Juan-Tay Urbina	056-042-211177
David Nuland	308-632-1244	Alan Taylor	315-787-2243
Nunhems Seed Corp.	208-754-8666	Steven R. Temple	916-752-8216
Barry Ogg	303-491-6354	Ann Marie Thro	
M. L. Ortega D.		Joseph Michel Tohme	302-592-9661
Pedro Francisco Ortega M.		D. R. Tompkins	202-401-4603
Phil Osterli	209-525-6654	Lon Tonneson	218-236-8420
Henry Y. Ozaki	305-391-4112	S. J. Tsao	886-04-3302301 x 227
Gloria Palomares	96-387-74-21	T. S. Seeds	078-108911
Leonard Panella	916-752-2464	J. C. Tu	519-738-2251
Jennifer L. Parke	608-262-0061	Mark A. Uebersax	517-355-2176
Soon Jai Park	519-738-2251	Unilever Research PLC	0234-222352
Calvin H. Pearson	303-858-3629	C. E. Vallejos	904-392-7924
David Peek	703-667-7506	Bert Vandenberg	306-966-4978
P. A. Arraes Pereira	55-62-2613022	John Van Herk, Jr.	519-676-8146
Miklos Pesti		Greg Varner	517-781-0260
Arthur C. Petersen, Jr.	809-778-1620 ext. 1	Istvan Velich	
Florence Picard	41-79-41-79	James R. Venette	701-237-7073
J. M. Pillas	33-61-37-32-29	Clibas Vieira	031-891-1824
Richard Pratt	216-263-3972	Malik Vikram	519-824-4120
Processors & Growers Res. Organ.	0780-782585	Oswaldo V. Voysest	57-23-675050
Larry Proctor	303-874-7488	J. G. Waines	714-787-3706
Programa de Leguminosas	629-691 / 629-695	Donald H. Wallace	607-255-1657
Programme Legumineuses		Earl E. Watt	
R. Providenti	315-787-2316	Barbara D. Webster	916-752-2468
Pure Line Seeds, Inc.	208-882-4422	Norman F. Weeden	315-787-2245
Almee Rabakoarihanta		Floyd A. Weems	509-928-2803
Garnett D. Radebaugh, Jr.	602-783-9048	Jeffrey White	57-3-675050
Robert E. Rand	608-262-6531	Hans C. Wien	607-255-4570
Thomas Randgaard	507-334-5521	David B. Willmot	208-466-0319
M. Rangappa	804-524-5651	Jim E. Wyatt	901-424-1643
R. Redden	076-612944	Alan C. York	
Jack Riesselman	406-994-5149	J. T. Yost, Edgell/Birdseye Div	063-42-1600
Ron Riley	208-887-0952	Carrie Young	916-895-3533
John Roby	612-665-3515 x 487	Yasuo Yukura	03-425-3801
Eric E. Roos	303-484-0402	Pop Vriend Zaadhandel B.V.	31-2289-1462
Juan Carlos Rosas	504-76-6140	Zaadunie B.V.	02280-11411
ROYAL SLUIS	08370-13210	Nunhems Zaden B.V.	0-4759-9222
P. R. Rubaihayo		Haytham Zaiter	
M. Ricardo Abrego Ruiz		Maria Elena Zavala	818-885-3356
Cornel L. Rweyemamu			
Gilles Saandon	403-327-4561		
Marcelo Salgado	303-491-6987		
Rafael Salinas	60137/60320		
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Eladio Arnaud Santana	402-464-5718		
Karl J. Sauter	612-624-5300		
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Martin G. Schnock	0049-0-7633-13095		
Eduardo C. Schroder	809-832-3980		
Robert H. Schroeder	916-756-1382		
Roy Schulbach	503-362-3585		
Howard F. Schwartz	303-491-6987		
Richard A. Schwartzbeck	913-451-0980		
Gilbert Scott	716-289-6030		
Mrs. T. Sengooba			
Ronald Shellenberger	208-322-7272		

BEAN IMPROVEMENT COOPERATIVE

Financial Statement

Balance on hand March 15, 1991 \$ 3,397.79

Income

Dues collected & sale of back issues	\$ 3,915.72
Bank account interest earned	37.35
1991 BIC meeting contribution	1,964.41

Expenses

Printing & photocopying (1991 issue)	\$ 2,124.94
Postage	1,282.22
Office supplies	13.69
Secretarial services	548.00
1991 BIC meeting banquet	346.68
1991 BIC meeting printing & supplies	234.82

Balance on hand March 15, 1992 \$ 4,764.92