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MINUTES OF THE MEETING OF THE S-9 TECHNICAL COMMITTEE ON
THE INTRODUCTION, MULTIPLICATION, AND EVALUATION OF NEW
PLANTS FOR AGRICULTURAL AND INDUSTRIAL USES AND THE
PRESERVATION OF VALUABLE GERMPLASM

North Carolina State University
Raleigh, North Carolina

July 23-24, 1985

Submitted by

J. F. Pederson, Secretary
S-9 Technical Committee 1984-85

1. OPENING STATEMENTS

Bill Fike made a brief opening statement and welcomed the S-9 Technical Committee to North Carolina State University.

2. WELCOME

Dr. Durwood Bateman, Director of Research, NCSU welcomed the S-9 Technical Committee to NCSU and discussed the use of PI materials in Plant Breeding and Bio Tech programs.

3. CALL TO ORDER

The 1985 annual meeting of the S-9 Committee was called to order by Chairman David Coffey at 8:30 AM, July 23.

4. INTRODUCTION OF ATTENDEES

Name	Address	Phone
* David W. Bradshaw	Dept. of Horticulture Clemson University Clemson, SC 29631	804-656-3403
* David L. Coffey	Dept. Plant Soil Science University of Tennessee Knoxville, TN 39901	615-974-7391
James A. Duke	GRL, ARS, USDA B-001, R-133 Beltsville, MD 20705	301-344-4419
* Bill Fike	Dept. Crop Science North Carolina State Univ. Raleigh, NC 27650	919-737-3267
* Philip J. Ito	Dept. of Horticulture Univ. of Hawaii Hilo, HI 96720	808-935-2885
* Richard Johnson	Dept. of Horticulture Virginia Tech Blacksburg, VA 24061	703-961-7639
* James S. Kirby	Agronomy Dept. Oklahoma State University Stillwater, OK 74078	405-624-6417
Charles W. Laughlin	Georgia Agricultural Experiment Station Experiment, GA 30212	404-228-7263

Gilbert Lovell	USDA-ARS S. Reg. Plant Intro. Station Georgia Station Experiment, GA 30212	404-228-7255
* Teddy E. Morelock	Dept. of Horticulture Univ. of Arkansas 316 Plant Science Fayetteville, AR 72701	501-575-2603
* Jeff Pedersen	Dept. Agronomy & Soils Auburn University, AL 36849	205-826-4100
* Oscar D. Ramirez	Univ. of Puerto Rico Horticulture Dept. Agriculture Exp. Sta. College of Agriculture Rio Piedras, Puerto Rico 00625	809-767-9705
Keith Salvo	SCS Federal Building Raleigh, NC 27601	919-856-4375
* Oliver E. Smith	Soil & Crop Sci. Dept. Texas A & M Univ. College Station, TX 77843	409-845-5389
Francisco Vasquez	USDA-ARS Tropical Agri. Res. Sta. Box 70 Mayaguez, Puerto Rico 00625	809-834-2435
* Clarence E. Watson	Agronomy Dept. Box 5248 Miss. State, MS 39762	405-325-2311
Samuel C. Wiggins	USDA-CSRS Marrill Hall Washington, DC 20251	202-447-4202

*Members of S-9 Technical Committee

5. APPROVAL OF MINUTES

Oliver Smith moved that the 1984 minutes be approved as circulated. The motion was seconded by Phillip Ito and was approved.

6. APPROVAL OF AGENDA

The 1985 agenda was approved as circulated.

7. APPOINTMENT OF COMMITTEES

Chairman Coffey appointed the following committees:

- a. Nominations Jeff Pedersen
 Oscar Ramirez
 Richard Johnson

- b. Time and Place Teddy Morelock
 Phillip Ito
 Jim Kirby

- c. Resolutions Oliver Smith
 Clarence Watson

8. REMARKS FROM ADVISOR

Dr. Charles Laughlin emphasized that the members of the S-9 Technical Committee needed to become advocates of the Committee, particularly with their administrators.

9. STATE PROGRESS REPORTS

The following state representative presented their annual reports. Copies of the state reports are included in Appendix I.

<u>Representative</u>	<u>State</u>
J. Pedersen	Alabama
T. Morelock	Arkansas
P. Ito	Hawaii
C. Watson	Mississippi
W. Fike	North Carolina
J. Kirby	Oklahoma
O. Ramirez	Puerto Rico
D. Bradshaw	South Carolina
D. Coffey	Tennessee
O. Smith	Texas
R. Johnson	Virginia

10. NORTH CAROLINA STATE STAFF REPORTS

Reports dealing with several crop species were presented by the following:

Wanda Collins	Sweet Potato
Tod Warner	Cucumber
Tom Stalker	Peanut
Major Goodman	Corn

11. OTHER AGENCY REPORTS

Reports were presented by the following individuals and are included in appendix 1.

- Keith Salvo - SCS (Representing Wayne Evert)
- Francisco Vazquez - Tropical Station, Puerto Rico
- Jim Duke - Lab Chief's Office (also representing Charles Murphy)

12. NATIONAL PROGRAM STAFF REPORT

A report prepared by Louis N. Bass, Director National Seed Storage Laboratory was distributed by Gil Lovel and is included in appendix 1.

13. REGIONAL PLANT INTRODUCTION STATION REPORT

A report of the primary activities of the Southern Regional Plant introduction Station during the previous year was presented by Gil Lovel and is included in appendix 1.

14. PLANT EXPLORATION PROPOSALS

A report of a Gossypium exploration and collection trip to Australia during the previous year was filed by Dr. James McD. Stewart and Dr. Paul A. Fryxell, and is included in appendix 1.

Information about a new pre review process for plant exploration proposals was presented to the S-9 Technical Committee.

15. COMMITTEE REPORTS

a. Nominations - The nominating Committee presented the following candidates to the floor for consideration: Jeff Pedersen (Alabama) as Chairman and Richard Johnson (Virginia) as Secretary of the S-9 Technical Committee. The candidates were elected by acclamation.

b. Time and Place of Next Meeting - The time and place Committee proposed that the 1986 S-9 Technical Committee meeting be held at the Fruit Substation, University of Arkansas, Clarksville, ARK on July 22-23. The proposal was accepted by acclamation.

c. Resolutions - The following resolutions were presented by the Resolutions Committee and were accepted by acclamation:

Resolution 1

Be it resolved that the S-9 Technical Committee express its appreciation to Dr. Bill Fike and his colleagues at North Carolina State University for their efforts in hosting our annual meeting. The hospitality and food were excellent and the tours and presentations highly informative.

Resolution 2

Be it resolved that the S-9 Technical Committee expresses its appreciation to Dr. Quentin Jones, Assistant to Deputy Administrator for Germplasm, for his many years of dedicated service with the National Plant Germplasm System has witnessed tremendous growth under his leadership and he will be greatly missed. The S-9 Technical Committee expresses its best wishes to Quentin in his retirement.

Resolution 3

Be it resolved that the S-9 Technical Committee expresses its appreciation to Ms. Muriel O'Brien for her fine work in compiling Agriculture Handbook 165 and wishes her a speedy recovery.

16. UNFINISHED OR NEW BUSINESS

a. "Diversity" magazine - Gil Lovell indicated that he had received no clarification in regards to the issue of purchasing subscriptions for S-9 members with ARS funds. He will continue making inquiries.

b. State Reports Format - State S-9 Technical Committee members were reminded that 200 copies of their reports, photocopied on both sides, should be sent to Gil Lovell by September 1.

A motion was made by Phillip Ito to alter the heading format to a word processor compatible format. He proposed that headings be all capital letters, and scientific names be underlined. The motion passed by acclamation.

17. ADJOURNMENT

The meeting was adjourned by Chairman David Coffey at 12:00 noon, July 24.

18. TOUR

A tour of the campus facilities and projects relating to S-9 was conducted on the afternoon of July 23.

APPENDIX I

STATE AND FEDERAL AGENCY REPORTS

Written progress reports are attached in the following order:

Alabama
Arkansas
Hawaii
Mississippi
North Carolina
Oklahoma
Puerto Rico
South Carolina
Tennessee
Texas
Virginia

National Seed Storage Laboratory
Soil Conservation Service
National Plant Germplasm System
Tropical Agriculture Research Station
Germplasm Resources Laboratory
Southern Regional Plant Introduction Station

USDA - ARS Foreign Travel Report
of
Dr. James McD. Stewart and Dr. Paul A. Fryxell

APPENDIX I

STATE AND FEDERAL AGENCY REPORTS

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Texas
Virginia

National Seed Storage Laboratory
Soil Conservation Service
National Plant Germplasm System
Tropical Agriculture Research Station
Subtropical Horticulture Research Station
Germplasm Resources Laboratory
Southern Regional Plant Introduction Station

S-9 Technical Committee Report

Agency: Auburn University

Submitted by: J.F. Pedersen

Address: Department of Agronomy and Soils, Auburn University, AL 36849

Accession User: J.F. Pedersen

Address: Department of Agronomy and Soils, Auburn University, AL 36849

Nature of Research: Improved cultivar development from tall fescue P.I. accessions

Progress to Date: Improved populations were selected from each of the following P.I. accessions: 283286, 265357, 283287, 283298, 291903, 297909, 315432, 316252, 321676, 422719, 422737, 422744, 422747, 422749, 422750, 422765, 423049, 423050, 325322, 388897, 388898, 418601, 418604, 418606, 418608, 419532, 422621, 422697, 422704, 422705, 422706, 422707, 422714, 423054, 423107, 442117, 442120, and 449300. Sufficient seed of these cycle 1 selections were increased to allow yield testing to be initiated in the fall of 1985.

Publications: J.F. Pedersen, C.C. King, Jr., S.P. Schmidt, E.M. Clark, and L.A. Smith. 1984. Beef gains higher on AU Triumph tall fescue than on Kentucky 31. Highlights Agr. Res. Ala. Agri. Exp. Sta. Vol. 31, No. 4.

Cultivar Releases: None

Accession User: J.F. Pedersen

Address: Department of Agronomy and Soils, Auburn University, AL 36849

Nature of Research: Development of a southeasternly adapted birdsfoot trefoil cultivar from P.I. accessions.

Progress to Date: The experimental line ATP (selected from P.I. 188556 and 251558) was released by the Alabama Agricultural Experiment Station, Auburn University, as the new cultivar AU Dewey.

Publications: None

Cultivar Releases: AU Dewey birdsfoot trefoil

Accession User: Tony A. Glover

Address: The Alabama Cooperative Extension Service
Jefferson County Office
Courthouse/Rm. 409
Birmingham, AL 35263

Nature of Research: Screening of Amaranthus spp. for vegetable and seed production in the Southern Region.

Progress to Date: Seeds have been obtained and prepared for spring 1986 planting.

Cultivar Release: None

Publications: None

Accession User: Mike Davis

Address: Route 1, Box 196, Ashford, AL 36312

Nature of Research: Screening tall fescue for adaption to the Southern Coastal Plain Region.

Progress to Date: Seed of 64 accessions have been prepared for fall 1985 planting.

Publications: None

Cultivar Releases: None

Accession User: Dr. Jorge Mosjidis

Address: Department of Agronomy and Soils, Auburn University, AL 36849

Nature of Research: Screening Vicia spp. and Lespedeza spp. for adaptation to conditions found in Alabama.

Progress to Date: Seed has been packaged for fall 1985 planting.

Publications: None

Cultivar Releases: None

Accession User: Mr. Shelby Fleischer

Address: Department of Entomology, Auburn University, AL 36849

Nature of Research: Measure of developmental rate and fecundity of tarnish plant bug in Woodford vetch.

Progress to Date: None

Publications: None

Cultivar Releases: None

Accession User: Dr. C.C. King, Jr.

Address: Department of Agronomy and Soils, Auburn University, AL 36849

Nature of Research: Evaluation of several species for biomass
production. Sweet sorghum M 81 E and 71-1 are
included in the above.

Progress to Date: Test plots have been established.

Publications: None

Cultivar Releases: None

1985 S-9 Technical Committee Report

Agency: Arkansas Agricultural Experiment Station

Submitted by: T. E. Morelock

Address: Department of Horticulture and Forestry, 316 Plant
Science Building, University of Arkansas,
Fayetteville, AR 72701

Accession User: S. Jeffrey Scott

Nature of Research: Okra breeding.

Progress to Date: Beginning field evaluations and seed
increase of all PI's.

Publications: None.

Cultivar Releases: None.

Accession User: S. Jeffrey Scott

Address: Department of Horticulture and Forestry, 316 Plant
Science Building, University of Arkansas,
Fayetteville, AR 72701

Nature of Research: Development of cold-germinating tomatoes.

Progress to Date: Characterized seed germination and seedling
growth responses over a range of low temperatures for
seven wild and cultivated tomato lines. We are
beginning introgression of cold tolerance into
cultivated lines.

Publications: Scott, S. J. and R. A. Jones. 1985. Quantifying
seed germination responses to low temperatures:
Variation among Lycopersicon spp. Env. and Exper.
Bot. 25(2):129-137.

Scott, S. J. and R. A. Jones. 1985. Cold tolerance in
tomato. I. Seed germination and early seedling growth
of Lycopersicon esculentum. Physiol. Plant. (in
press).

Cultivar Releases: None.

1985

S-9 TECHNICAL COMMITTEE REPORT

Agency: Florida Agricultural Experiment Stations

Submitted by: G. M. Prine

Address: Department of Agronomy
304 Newell Hall
University of Florida
Gainesville, FL 32611

Accession User: A. M. Hibberd and R. E. Stall

Address: Vegetable Crops and Plant Pathology Departments,
University of Florida, Gainesville, Florida 32611

Nature of Research: Genetic resistance in pepper (Capsicum annum L.) germplasm to bacterial leaf spot incited by Xanthomonas campestris pv. Vesicatoria (Doidge), Dye.

Progress to Date: Three races of X. campestris pv. vesicatoria (Xcv) are differentiated by race specific genes, Bs1, (found in PI 163192, 163189, and 271322), and Bs3 (found in PI 271322). These genes control dominant hypersensitive resistance (HR). The HR induced by a third dominant gene, Bs2, (found in PI 260435 of C. chacoense) controls resistance to both races 1 and 3, and may also control race 2. Genes Bs1, Bs2, and Bs3 segregate independently in crosses. Resistance which reduces the rate of bacterial multiplication and is not typically hypersensitive in nature occurs in many PI lines. This resistance is effective in controlling races 1, 2, and 3 of Xcv. In PI's 163189, 246331 and 271322, this resistance is inherited as a monogenic additive factor in crosses with susceptible bell pepper. Allelism of genes in these PI's has not been tested.

Publications:

A. M. Hibberd Ph.D. dissertation. The inheritance of components of resistance to bacterial leaf spot in pepper (Capsicum annum L.) University of Florida, Vegetable Crops Department, 1985.

Cultivar Release: None yet; fourth recurrent backcross stage achieved.

Accession User: E. A. Wolf

Address: Everglades Research and
Education Center
IFAS, University of Florida
P. O. Drawer A
Belle Glade, FL 33430

Nature of Research: Development of celery cultivars resistant to early blight caused by Cercospora apii Fres. and Bacterial leaf blight caused by Pseudomonas chitorii Stapp.

Progress to Date: Several lines in various stages of backcrossing and inbreeding are being developed which contain resistance genes obtained from PI's 171499 and 196831.

Accession User: L. S. Dunavin

Address: Agricultural Research and
Education Center
Route 3, Box 575
Jay, FL 32565-9524

Nature of Research: Evaluation of forage and biomass crops for utilization in panhandle of Florida.

Progress to Date:

The introduction, PI 300086 Pennisetum purpureum, is being evaluated for biomass in comparison with ten other napiergrass selections and one sugarcane selection in a replicated trial set in December, 1982. This entry yielded 54.6 Mg ha⁻¹ of dry biomass in 1984 to rate second in the group. Severe stand loss occurred during the very cold weather of January, 1985; however, the remaining plants are growing rather well in 1985.

The introductions PI 432425, PI 432426, PI 432427, and PI 432432 Arundo donax (Giant Reed) were set at AREC, Jay on 13 May 1985 for observation as to biomass potential.

Accession User: P. Mislevy and R. S. Kalmbacher

Address: Agricultural Research and
Education Center
Ona, FL 32865

Nature of Research: Evaluate the effect of the grazing animal on screening perennial grasses.

Progress to Date:

Eight grass entries including PI 306, 279 bahiagrass, PI 364869 Hemarthria and PI 364871 Hemarthria are being established in a mob grazing study. The experimental design is a split plot with grazing frequencies (2, 4, 5 and 7 weeks) as main plots and grass entries as subplots.

Publications:

Mislevy, P., and W. G. Blue. 1984. Forage Production and Quality as influenced by Amended Quartz Sand-Tailings following phosphate mining. In: Symposium on the Reclamation of Lands Disturbed by Surface Mining: A cornerstone for Communication and Understanding. Science Reviews Limited, Middlesex, England. pp. 114-130.

Accession User: P. Mislevy and R. S. Kalmbacher

Address: Agricultural Research and
Education Center
Ona, FL 32865

Nature of Research: Evaluate tall growing grasses for biomass production.

Progress to Date: Several experiments are being conducted with Elephantgrass PI 300086 to determine its biomass production potential. Preliminary results indicate this entry will tolerate drought, saturated soil, and nematodes with little insect and disease problems. Single annual dry matter yields range from 20 to 30 T/A.

Accession User: F. P. Gardner

Address: Department of Agronomy
304 Newell Hall
University of Florida
Gainesville, FL 32611

Nature of Research: Evaluation of perennial peanut (Arachis glabrata) for turf.

Progress to Date:

PI 262840 was planted in rows from rhizomes on May 11, 1983 over entire yard at 306 N. W. 28th Terrace, Gainesville, FL. Ground cover was nearly achieved by frost in December 1983. Complete cover and solid stand was achieved by May 1, 1984. Annual weeds, especially legumes were a problem during establishment. Grasses and other weeds were controlled early with chemicals. Appearance of turf is not resistant to traffic and would not be suitable to lawn games. It appears well adapted for ground cover in sunny locations for more extensive use.

Accession User: W. D. Pitman

Address: University of Florida
Agricultural Research Center
Ona, Florida 33865

Nature of Research: Screening available germplasm of Phalaris for potential suitability as a cool-season pasture plant for peninsular Florida.

Progress to Date:

The USDA collection of 590 PI accessions of Phalaris plus selected commercial cultivars were seeded in the field at Ona, Florida on Nov. 27, 1984. Establishment was excellent but forage productivity was restricted by lack of moisture. The major limiting factor of cool-season perennial grasses in peninsular Florida is failure to perennate through the summer on the wet flatwoods sites; thus, the major selection criteria is yet to be encountered.

Accession User: G. M. Prine

Address: Agronomy Department
University of Florida
Gainesville, Florida 32611

Nature of Research: New Crops and Plant Introductions

Progress to Date:

1. Arbrook rhizoma peanut (PI 262817 Arachis glabrata Benth.) was released as a named cultivar by IFAS and USDA, SCS. Rhizomes are being furnished to commercial rhizome growers during January and February 1985, 1986, and 1987. The commercial acreage of Florigraze rhizoma peanut climbed to over 1000 acres. New plantings of both Arbrook and Florigraze suffered severe plant loss during the dry winter and spring of 1984-85.
2. PI 300086 elephantgrass (Pennisetum purpureum) which had been leading the elephantgrass trials in biomass yields suffered considerable winter damage at Gainesville from the January 1985 freeze which gave record low temperatures. A number of other elephantgrass accessions showed little freeze damage.

3. Pigeonpea cultivar development remained static over 1984 season from a quarantine on legumes due to the peanut strip virus.
4. The third cycle of recurrent selection of a Marshall-maturity annual ryegrass population for rust resistance was conducted at Gainesville during the 1984-85 winter season. A second nursery at Quincy was abandoned due to lack of a sufficient infestation of crown rust. Testing of plants from the second cycle of selection indicated a high level of crown rust resistance was already obtained.
5. A recurrent selection nursery of fababeans (Vicia faba) was conducted during the winter of 1984-85. This nursery probably escaped the January freeze through fact it had not emerged yet. Seed were obtained from the best plants for next year's nursery.
6. A 5-acre planting of K-8 leucaena (Leucaena leucocephala) was established in cooperation with the USDA at Brooksville in July 1985. Initial seedling emergence seems good. We used Cole planters with small kernel corn plates to plant the leucaena seed directly in the field. The plates usually planted 2 or 3 leucaena seed per hill. We scarified seed by placing in boiling water, then applied fungicide plus Nitragin "peligel" and used lime to dry up moisture and form a coating over seed. Seed were then allowed to dry. Two hours prior to seeding, inoculant and peligel were applied to coated seed and allowed to dry before beginning planting operations.

Cultivar Release: Arbrook Rhizoma Peanut, release Circular in preparation.

Accession User: D. W. Gorbet, A. J. Norden and D. A. Knauft

Address: Agronomy Department
University of Florida
Gainesville, FL 32611

Nature of Research: Peanut Breeding

Progress to Date:

No report from these investigators this year. Guess they were just too busy trying to eradicate peanut stripe virus from their various genetics stocks to reply. Practically all the genetic material in possession of these investigators was exposed to contamination by the peanut stripe virus. The need for vigorous screening of legume and other introductions for virus disease is now obvious.

Accession User: O. C. Ruelke

Address: Agronomy Department
University of Florida
Gainesville, FL 32611

Nature of Research: Forage management

Progress to Date:

1. Bermudagrass cultivars, especially Burton's hybrids from Tifton, are under evaluation for hay production.
2. Floralta (PI 264888) and other limpograsses (Hemarthria altissima) are receiving different fertilizer and cutting management treatments and planting of annual legumes in mixture with the grass.
3. Florigraze rhizoma peanut is being evaluated in mixture with digitgrass, bahiagrass, bermudagrass and dwarf elephantgrass.

Cultivar Release: Floralta Limpograss

Publications:

K. H. Quesenberry, W. R. Ocumpaugh, O. C. Ruelke, L. S. Dunavin and P. Mislevy. 1984. Floralta, a limpograss selected for yield and persistence in pastures. Univ. of Fla. Ag. Exp. Sta. Circ. S-312. 16 p.

Accession User: D. D. Baltensperger

Address: Agronomy Department
University of Florida
Gainesville, FL 32611

Nature of Research: Forage legume breeding

Progress to Date:

Many plant introduction accessions are being used in development of ladino clover, crimson clover, sub clover, berseem clover, alyceclover and hairy indigo cultivars. Primary emphasis is on development of rootknot nematode resistance in the crops.

Publications:

Taylor, S. G., D. D. Baltensperger, K. H. Quesenberry and R. A. Dunn. 1985. Interactions between forage legumes and root-knot nematodes. American Forage and Grassland Congress.

Publications (continued):

Quesenberry, K. H., D. D. Baltensperger, and R. A. Dunn. 1985.
Screening Trifolium spp. for response to Meloidogyne spp. Crop
Sci. In Press.

Baltensperger, D. D., K. H. Quesenberry, R. A. Dunn, and M. M.
Abd-Elgawad. 1985. Root-knot nematode interaction with berseem
clover. Crop Sci. In Press.

Taylor, S. G. and D. D. Baltensperger. 1985. Reaction of
pigeonpea
lines and five other warm-season legumes to root-knot nematodes,
Meloidogyne spp. International Pigeonpea Newsletter 4:45-47.

Accession User: S. C. Schank

Address: Agronomy Department
University of Florida
Gainesville, FL 32611

Nature of Research: Pennisetum breeding

Progress to Date:

Over 10,000 pearl millet x elephantgrass hybrids made and are under
evaluation for both forage and biomass.

Accession User: K. H. Quesenberry

Address: Agronomy Department
University of Florida
Gainesville, FL 32611

Nature of Research: Forage legume breeding

Progress to Date:

Recurrent selection of annual type red clover with root-knot
nearly completed. Research continues to develop a perennial
forage legume in the genera Desmodium and Aeschynomene with
superior nematode resistance.

1985 GEORGIA S-9 TECHNICAL COMMITTEE REPORT

Agency: Georgia Agricultural Experiment Station, University of Georgia, and
USDA.

Submitted by: Carl S. Hoveland

Address: Department of Agronomy, University of Georgia, Athens, GA 30602.

1. Accession User

Richard B. Chalfant & Georges Ntoukam
Coastal Plain Expt. Station
Tifton, Ga. 31793

J. A. A. Renwick & Frank Messina
Boyce Thompson Institute at Cornell
Tower Road
Ithaca, NY 14850

2. Nature of Research:

Locating sources of resistance to insects (cowpea curculio, cowpea aphid, thrips).

3. Progress:

In Georgia significant differences in resistance to the cowpea curculio were found among 125 PI lines evaluated in the field in 1984. 85 of these lines are being re-evaluated in 1985.

At Boyce Thompson Institute four PI lines had moderate resistance to the cowpea aphid. These were PI 205139, 339572, 339596 and 367860.

4. Publications:

F. J. Messina, J. A. A. Renwick and J. L. Barmore. Resistance to Aphis craccivora in selected varieties of cowpea. Accepted for publication in Journal of Entomological Research.

5. Cultivar Releases: None

6. Exploration:

West Africa is probably the origin of Vigna unguiculata. Recently, a trained botanist observed wild Vigna in the Mandara Mountains in northern Cameroon, West Africa. Exploration of this area for wild Vigna would be useful for locating resistance to local insects.

1. Accession user:

Dr. John Cardina
USDA-ARS
Box 748
Tifton, GA 31793

2. Nature of Research:

We are studying a fungal pathogen of Florida beggarweed (Desmodium tortuosum). we are using plant introductions to help determine the host range of the pathogen.

3. Progress:

Host range thus far is restricted to D. tortuosum, although our testing is not complete.

4. Publications: None to date

5. Cultivar Releases: Not applicable

6. Exploration: Not applicable

1. Accession user:

Dr. Casimir A. Jaworski
Nematodes, Weeds and Crops Research Unit
ARS-USDA
Coatal Plain Experiment Station
P. O. Box 748
Tifton, GA 31793

2. Nature of Research:

Tomato (Lycopersicon esculentum and related wild species and hybrids: We have screened in the past two years 4,248 entries for resistance to Pseudomonas solanacearum (race 1, biotype 1), which causes bacterial wilt).

Potato (Solanum tuberosum and related tubes-forming species and hybrids):

1. We have screened in the past seven years approximately 1,500 entries (mostly vegetative material) for resistance to Pseudomonas solanacearum.
2. We have screened in the past year 92 different tuber-forming Solanum species (for a total of over 1,500 entries) for performance and adaptation with true seed at high temperatures.

3. Progress:

Tomato: We have five different selections with high Pseudomonas solanacearum resistance in the third screening generation. We should be releasing

within the next two years approximately ten different selections with high Pseudonomas solanacearum resistance (race 1, biotype 1).

Potato:

- I. Released Solanum species germplasm with high Pseudonomas solanacearum resistance:
 - Solanum sucrense PI 458391, BWT83
 - Solanum tuberosum, 'Noordeling,' PI 109760, BWT83
2. Identified selections from eleven different tuber-forming solanum species with many desirable characteristics from true seed and under high temperature.

4. Publications:

Jaworski, C. A., S. C. Phatak, S. R. Ghaté, R. D. Gitaitis. 1984. Solanum sucrense and Solanum tuberosum, bacterial wilt-tolerant potato germplasm. HortScience 19:312-313.

Jaworski, Casimir A., Sharad C. Phatak, Suhas R. Ghaté and Ronald D. Gitaitis. 1985. Potato production from true seed in warm climate. American Society of Agricultural Engineers, paper no. 85-6019, 13 pages.

5. Cultivar Releases: (See 3B above)

6. Exploration:

Need to be able to import all entries of true seed of tuber-forming Solanum species from the International Potato Center (CIP), Lima, Peru.

1. Accession user:

B. R. Wiseman
USDA-ARS
IBPMRL
Tifton, GA 31793-0748

2. Nature of Research:

Host plant resistance to insects.

3. Progress:

Sorghum cultivar AF28 was introduced by me and assigned No. PI 383856. It has the highest level of sorghum midge resistance and has been used in the development of a number of potential releases with resistance to the sorghum midge. A total of 2500 and 2000 PI's from Ethiopia and Yemen were screened in the seedling stages for fall armyworm leaf-feeding resistance.

Just recently 10,000 new accessions were introduced from Yemen and Ethiopia with assigned PI numbers. I am in the progress of screening these for fall armyworm and sorghum midge resistance.

4. Publications:

Widstrom, N. W., W. W. McMillian, and B. R. Wiseman. 1985. HPR Annual Report Summary. Annual Plant Resistance to Insects Newsletter. 11:5-11.

5. Cultivar Releases:

None in FY 1985.

1. Accession user:

Dr. Sharad C. Phatak
Department of Horticulture
Coastal Plain Experiment Station
P. O. Box 748
Tifton, GA 31793
Phone: 912/386-3355

2. Nature of Research:

Screening for herbicide tolerance in Lycopersicon esculentum and related species, Capsicum annuum and related species and in Vigna unguiculata.

Screening for Sclerotium rolfsii in Lycopersicon esculentum and in related species and hybrids.

3. Progress:

Released metribuzin-tolerant tomato germplasm UGA 1113MT and UGA 1160MT. These two selections exhibited no phytotoxicity nor reduced growth during cloudy weather when sprayed with metribuzin at 16X recommended rate of 1.12 kg/ha.

4. Publications:

Phatak, Sharad C. and Casimir A. Jaworski. 1985. Metribuzin tolerance in genus Lycopersicon. HortScience 20:591. (Abstr.).

Phatak, Sharad C. and Casimir A. Jaworski. 1985. UGA 1113MT and UGA 1160MT metribuzin tolerant tomato germplasm. HortScience 20:(in press).

5. Cultivar Releases:

UGA 1113MT was from a single healthy plant in PI 204976.

UGA 1160MT was from a single healthy plant in PI 205023.

1. Accession user:

Carl S. Hoveland
Department of Agronomy
University of Georgia
Athens, GA 30602

2. Nature of Research:

Screening perennial legumes for persistence, production and persistence in pastures of north Georgia.

3. Progress:

Several hundred introductions of Trifolium ambiguum, T. canescens, T. caucasicum, T. medium, T. rubens, T. orhroleucon, T. alpastre, T. armenium, T. africanum, and Hedysarum were planted in the field at Athens and Eatonton in October 1984. The extreme January freeze of January 1985 with temperatures of -7°F killed a number of them. Drought during the spring severely retarded growth. However, by July, a number of Hedysarum coronarium, T. ambiguum, T. alpastre, and T. canescens are growing very well and showing promise. Nurseries will be monitored for another year and successful accessions will be increased for further testing.

4. Publications: None

5. Cultivar Releases: None

S-9 TECHNICAL COMMITTEE REPORT

JULY 1985

Agency: Hawaii Institute of Tropical Agriculture & Human Resources
Submitted by: P. J. Ito
Address: 461 W. Lanikaula Street, Hilo, HI 96720
Page 1 of 2

* * * * *

Accession User: R. W. Hartmann
Address: Department of Horticulture, 3190 Maile Way, University of Hawaii,
Honolulu, HI 96822
Nature of Research: Breeding green beans for high quality combined with
disease resistance and high productivity.
Progress to Date: PI 289372 was used as a source of length and stringless-
ness to combine with the high productivity, smooth, straight pod, and
resistance to root-knot nematodes of 'Manoa wonder' to produce a new
cultivar, name 'Poamoho' after the farm on which most of the selection
was done. 'Poamoho' is stringless, earlier than 'Manoa Wonder', resis-
tant to root-knot nematodes, and yields heavily with long, straight pods.
Publications: Hartmann, R. W., 1985. 'Poamoho', pole bean. HITAHR research
extension series 51: 6pp.
Cultivar Releases: 'Poamoho'

Nature of Research: Breeding lettuce for resistance to spotted wilt virus.
Progress to Date: PI's 167128, 342510, 345517, 342522, and 342526 appear
to be resistant and are being crossed to 'Manoa' ('Green Mignonette'),
'Ithaca', 'Mesa 659', 'Salinas', and 'Calmar', which are the cultivars
grown in Hawaii, with the intention of incorporating virus resistance
through a backcross breeding program.
Publications: None
Cultivar Releases: None

Nature of Research: Increase of bean seeds for Western Regional Plant
Introduction Station.
Progress to Date: 300 lines of Phaseolus lunatus and P. coccineus were
planted at Poamoho Farm on October 4 and November 11, 1984. Growth
and seed production on most lines was excellent and nearly 500 pounds
of seed were returned to Pullman for replenishing their seed supply.
Publications: None
Cultivar Releases: None

Accession Users: B. S. Kim and R. W. Hartmann
Address: Department of Horticulture, 3190 Maile Way, University of Hawaii,
Honolulu, HI 96822
Nature of Research: Inheritance of resistance to Xanthomonas campestris
pv. vesicatoria in pepper.
Progress to Date: 2 major genes and numerous quantitatively-inherited
genes were detected in P.I.'s 271322, 163192, 244670, 369994, 308787,
297495, 224451, 241670, 322719, 377688, and 369998.

Publications: Kim, B. S. and R. W. Hartmann. 1985. Inheritance of a gene (Bs3) conferring hypersensitive resistance to Xanthomonas campestris pv. vesicatoria in pepper (Capsicum annuum). Plant Disease 69:322-325.
Cultivar Releases: None

Accession User: Robert Joy, SCS Hawaii Plant Materials Center
Address: P.O. Box 236, Hoolehua, Hawaii 96729

Nature of Research: Development of new conservation plants for Hawaii.

Progress to Date: PI-490365, Erythrina variegata, was released as 'Tropic Coral' in 1985 by SCS, the University of Hawaii, and the Honolulu Botanical Gardens. 'Tropic Coral' is a leguminous tree with an erect or columnar growth form and was tested and released primarily for windbreak. T-37919, Desmodium heterophyllum, and T-37926, Desmodium ovalifolium show promise as ground covers in orchards and other erosion-prone areas. T-37869, Pennisetum purpureum, shows promise for windbreak use.

Publications: Joy, R. J. and P. Rotar. 1984. 'Tropic Lalo' Paspalum Paspalum hieronymii Hack. CITAHR, University of Hawaii. Research Extension Series 046. pp 7.

USDA - Soil Conservation Service, 1984. 'Tropic Sun' sunn hemp.

Cultivar Release: 'Tropic Lalo' paspalum and 'Tropic Sun' sunn hemp.

Accession User: T. T. Sekioka, K. Y. Takeda and J. S. Tanaka

Address: Kauai Branch Station, University of Hawaii, Kapaa, HI 96746

Nature of Research: Evaluation of Cucumis germplasm for horticultural traits and resistance to powdery mildew and angular leaf spot.

Progress to Date: Thirty-seven breeding and PI lines were screened for fruit traits, maturity, and resistance to powdery mildew and angular leaf spot. None of the lines were judged to have adequate resistance for breeding purposes to powdery mildew to angular leaf spot. PI lines, 418963 and 418964, were selected for crisp ovary wall.

Publications: None

Cultivar Releases: None

Accession User: P. J. Ito and C. L. Chia

Address: Department of Horticulture, University of Hawaii, Hilo, HI 96720

Nature of Research: Introduction, selection and testing of Tropical fruits and nuts.

Progress to Date: New additions have been made to the banana collection and the introduced cultivar, Santa Catarina Prata, from Brazil have been well distributed by meristem culture. A seedling of Cherimoya was selected for high production of good quality fruits. Two of the four carambola selections are better than the standard cultivars, having sweet and crisp flesh. A new processing guava have been propagated by cuttings and distributed to growers. Pulasan, Rambutan and Durian have started fruiting and several selections made. A national germplasm repository for macadamia, guava, papaya, passion fruit and pineapple is being developed in Hawaii, located at Hilo utilizing the Waiakea, Kainaliu and Poamoho experimental stations.

Publications: Hamilton, R. A. and P. J. Ito. 1984. Macadamia nut cultivars recommended for Hawaii. HITAHR, University of Hawaii. Information Text Series 023, pp 7.

Cultivar Releases: None

KENTUCKY ANNUAL REPORT TO S-9 TECHNICAL COMMITTEE
Raleigh, NC July 23 and 24, 1985

Kentucky Agricultural Experiment Station
Submitted by Roy E. Sigafus
Department of Agronomy
University of Ky.
Lexington, Kentucky 40546-0091

Although he will soon retire, germplasm obtained earlier by tall fescue breeder Robert C. Buckner will continue to be used. A Ph.D. candidate under Dr. Georgia C. Eizenga is using giant fescue germplasm obtained in 1967. In 1981 she obtained about five dozen accessions of tall, meadow, and giant fescue and Italian and perennial ryegrasses which she has been using in her cytology work on the fescue-ryegrass complex.

Dr. Robert E. McNeil has received woody ornamentals from the Iowa station over the last eight years. Materials must be moved to a new location and he will summarize observations made to date. Many accessions showed promise and have been moved to a permanent garden for further observation, class use and display. His report will contain information on desirable aspects of these accessions as well as reasons for discarding apparently undesirable ones.

Dr. Dean E. Knavel obtained the lettuce, Lactuca serriola, P.I. 251245 several years ago from the Geneva station. Through hybridization he has developed lettuce that grows at low temperatures in a greenhouse obtaining heat from coal mine air. Either germplasm or a variety will be released.

John C. Snyder and his students have made good use of PI 251303 Lycopersicon hirsutum by hybridization with garden tomatoes. His studies have involved various trichomes and their relationship to two-spotted spider mite resistance. Recent publications include:

John C. Snyder and John P. Hyatt. 1984. Influence of day length on trichome densities and leaf volatiles of Lycopersicon species. Plant Science Letters 37:177-181.

_____ and Catherine D. Carter. 1984. leaf trichomes and resistance of Lycopersicon hirsutum L. esculentum to spider mites. J. Amer. Soc. Hort. Sci. 109:837-843.

_____ and _____ 1985. Trichomes on leaves of Lycopersicon hirsutum, L. esculentum and their hybrids. Euphytica 34:53-64.

Catherine D. Carter and John C. Snyder. 1985. Mite responses in relation to trichomes of Lycopersicon esculentum X L. hirsutum hybrids. Euphytica 34:177-185.

S-9 Regional Project Report
December, 1985

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803

Genus (species): Aeschynomene falcata
Nature of Research: Not active at this time.
Publications: Thro, A. M. and C. C. Shock. 1985. Summer forage legume
introduction in Louisiana, USA. Proc. XVth Int. Grassl. Cong.
Kyoto, Japan. Two add'l ms. submitted for publication.

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803

Genus (species): Alysicarpus vaginalis
Nature of Research: Not active at this time.
Publications: Thro and Shock, 1985. Two additional ms. submitted for
publication.

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803

Genus (species): Desmodium (barbatum, canadense, heterocarpon, sandwicense,
canum, intortum uncinatum)
Nature of Research: Not active at this time.
Publications: Thro and Shock, 1985. Two additional ms. submitted for
publication.

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803

Genus (species): Centrosema virginianum
Nature of Research: Not active at this time.
Publications: Thro and Shock, 1985. Two additional ms. submitted for
publication.

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803

Genus (species): Galactia (jussiaeana, striata, sp.)
Nature of Research: Not active at this time.
Publications: Thro and Shock, 1985. Two additional ms. submitted for
publication.

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803

Genus (species): Lespedeza (cuneata, stipulacea, striata)
Nature of Research: Not active at this time.
Publications: Thro and Shock, 1985. Two additional ms. submitted for
publication.

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803
Genus (species): Leucena leucocephala
Nature of Research: Not active at this time.
Publications: Thro and Shock, 1985. Two additional ms. submitted for
publication.

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803
Genus (species): Lotononis bainesii
Nature of Research: Continued observation; development of tissue culture
methods.
Publications: Thro and Shock, 1985. Two additional ms. submitted for
publication.

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803
Genus (species): Neonotonia wightii
Nature of Research: Not active at this time.
Publications: Thro and Shock, 1985. Two additional ms. submitted for
publication.

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803
Genus (species): Rhynchosia minima
Nature of Research: Not active at this time.
Publications: Thro and Shock, 1985. Two additional ms. submitted for
publication.

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803
Genus (species): Stylosanthes (erecta, guianensis, hamata)^{humilis}
Nature of Research: Not active at this time.
Publications: Thro and Shock, 1985. Two additional ms. submitted for
publication.

Accession User: A. M. Thro
Address: Department of Agronomy, Louisiana State University, Baton Rouge, LA
70803
Genus (species): Zornia (brasiliensis, diphylla, sp.)
Nature of Research: Not active at this time.
Publications: Thro and Shock, 1985. Two additional ms. submitted for
publication.

1985

S-9 TECHNICAL COMMITTEE REPORT

Agency: Mississippi Agricultural and Forestry Experiment Station
Submitted by: C. E. Watson, Jr.
Address: Agronomy, Mississippi State University, Mississippi State,
MS 39762
Page 1 of 2

* * * * *

Accession User: C. E. Watson, Jr.
Address: Agronomy, Mississippi State University, Mississippi State,
MS 39762
Nature of Research: Evaluation of tall fescue (Festuca arundinacea
Schreb.) for rust resistance
Progress to Date: Evaluation of several tall fescue cultivars for
stem rust (Puccinia graminis) resistance revealed that
mediterranean types were good sources of resistance. These
include 'Fortune' (derived from PI 231563 and PI 231564)
and 'Oregon 1000' (derived from several Algerian introduc-
tions). These two lines also possess good resistance to
crown rust (P. coronata), but both lack winter hardiness
which severely limits their utilization.
Publications: None
Cultivar Releases: None

Accession User: G. A. Pederson
Address: USDA-ARS, Crop Science Research Lab., P. O. Box 5248, Mis-
sissippi State, MS 39762
Nature of Research: Allelopathic effects of tall fescue (Festuca arun-
dinacea Schreb.) on white clover (Trifolium repens L.) geno-
types
Progress to Date: White clover genotypes (40 PI accessions and varie-
ties) were evaluated for germination and root length in agar
containing extracts of Kentucky 31 tall fescue leaves. PI's
121084, 184936, 204788, 214207, 234679, 239979, 249872,
257808, 282380, and 315543 along with 3 varieties showed no
significant reduction in germination and root length in the
tall fescue extract agar. If these differences are heritable,
white clover populations with tolerance to tall fescue allelo-
pathy could be developed to aid in white clover stand estab-
lishment in tall fescue pastures.
Publications: Pederson, G.A. 1985. Allelopathic effects of tall fes-
cue on germination and seedling growth of white clover geno-
types. Proc. XV International Grassland Congress (accepted
5-10-85)
Cultivar Release: None

Accession User: W. P. Williams and F. M. Davis

Address: USDA-ARS, Crop Science Research Laboratory, P. O. Box 5248,
Mississippi State, MS 39762

Nature of Research: Evaluation of maize germplasm for resistance to damage by the southwestern corn borer (Diatraea grandiosella (Dyar)) and fall armyworm (Spodoptera frugiperda (J. E. Smith))

Progress to Date: Several hundred maize genotypes obtained from CIMMYT (International Center for Maize and Wheat Improvement) have been evaluated for resistance to damage by the southwestern corn borer and the fall armyworm. Five germplasm lines with resistance to leaf feeding by both insects have been developed and released.

Publications: Williams, W. Paul and Frank M. Davis. 1980. Registration of Mp703 germplasm line of maize. *Crop Sci.* 20:418.

Williams, W. Paul and Frank M. Davis. 1982. Registration of Mp704 germplasm line of maize. *Crop Sci.* 22:1269-1270.

Williams, W. Paul and Frank M. Davis. 1984. Registration of Mp705, Mp706, and Mp707 germplasm lines of maize. *Crop Sci.* 24:1217.

Cultivar Releases: Mp703, Mp704, Mp705, Mp706, and Mp707 maize germplasm lines

S-9 TECHNICAL COMMITTEE REPORT

Agency: North Carolina State University

Submitted by: W. T. Fike

Address: Crop Science Department, North Carolina State University, Raleigh, NC
27695-7620

Accession User: Dr. J. R. Ballington

Address: Horticulture Department, North Carolina State University, Raleigh, NC
27695

Nature of Research: Collection of Vaccinium species in the Pacific Northwest

Progress to Date: Although weather patterns are abnormal, collecting should be excellent

- Publications: 1) Ballington, J.R., et. al., 1984. Ripening Period of Vaccinium Species in Southeastern North Carolina. *J. Amer. Soc. Hort. Sci.* 109(3):392-396.
- 2) Ballington, J.R., et. al., 1984. Fruit Quality Characterization of 11 Vaccinium Species. *J. Amer. Soc. Hort. Sci.* 109(5):684-689.

Accession User: Dr. Tommy Carter

Address: Crop Science Department, North Carolina State University, Raleigh, NC
27695

Nature of Research: Maintenance of Group 7 PI collection of Glycine max. Also, maintaining about 50 PI's of other maturity groups for use in research program initiated to develop soybean genotypes with improved ability to yield under periodic water stress.

Progress to Date: 220 soybean PI's and cultivars were evaluated for rooting depth and distribution. 10 were found which rooted more extensively than the check cultivars.

Publications: None

Accession User: Dr. Wanda Collins

Address: Horticulture Department, North Carolina State University, Raleigh, NC
27695

Nature of Research: Breeding sweet potatoes for high dry matter and disease resistance.

Progress to Date: The following PI's are maintained in the breeding program, however, are not used for crosses at this time: 153908, 399162, 134413, 324885, 296116, 324885, 344124, 344140. In addition, 25 accessions should be out of quarantine soon and will be available as PI's to be used for breeding.

Publications: None

Accession User: Dr. Dave Timothy

Address: Crop Science Department, North Carolina State University, Raleigh, NC 27695

Nature of Research: Development of a variety of flaccid grass (Pennisetum flaccidum) adapted to the Southeast.

Progress to Date: A new variety fo flaccidgrass will be released in the near future. The variety was developed by direct selection from material tracing to PI 220606, an introduction from Afghanistan.

Publications: None

Accession User: Dr. Todd Wehner

Address: Horticulture Department, North Carolina State University, Raleigh, NC 27695.

Nature of Research: Improved cultivar development from cucumber PI accessions. Possibility for collection of cucumber, muskmelon, and watermelon in India.

Progress to Date: Have received over 700 PI's from Ames Iowa in the past 5 years. Presently maintaining 2 populations developed by intercrossing all of the PI lines, one for pickling cucumber type and the other selected for slicing cucumber type. The following lines were also selected and maintained for various outstanding traits: PI222783 X PI22985 progeny for excellent low-temperature germination; PI280096, PI197088, and PI163216 for resistance to Rhizoctonia fruit rot and PI279463, PI401732 and PI171612 for ability to regenerate plants from cotyledon callus culture. All are being crossed with adapted lines, inbred and selected to develop improved lines of cucumbers for the USA.

Accession User: Drs. H. T. Stalker and J. C. Wynne

Address: Crop Science Department, North Carolina State University, Raleigh, NC 27695

Nature of Research: Improved cultivar development from Arachis PI accessions.

Progress to Date: The program maintains approximately 300 Arachis species collections and ca 3600 cultivated entries. Approximately 120 of the Arachis collections are propagated annually in the field. The following is a list of entries which have been used during 1984 and 1985 in biosystematic and introgression hybridization programs. Most collections are currently being evaluated for disease and insect resistance.

	<u>Collection</u>	<u>PI</u>	<u>Species</u>	
1.	410	338280	<u>A. stenosperma</u>	Leafspot resistance
2.	7988	219823	<u>A. duranensis</u>	Stunt virus resistance
3.	9484	338312	<u>A. batizocoi</u>	Insect resistance

4.	9530	331193	<u>A. correntina</u>	Spider mite resistance
5.	9548	331194	" "	"
6.	10017	262141	<u>A. cardenasii</u>	Leafspot resistance
7.	10038	262133	<u>A. sregazzinii</u>	--
8.	10602	276235	<u>A. chacoense</u>	Leafspot resistance
9.	22585	298636	<u>A. villosa</u>	--
10.	30001	468141	<u>A.</u> sp.	
11.	30005	468142	"	
12.	30006	468150	"	
13.	30008	468152	"	
14.	30011	468154	"	
15.	30017	468159	"	
16.	30034	468167	"	
17.	30035	468168	"	
18.	30061	468198	<u>A. duranensis</u>	
19.	30064	468200	"	
20.	30068	468203	"	
21.	30073	468319	"	
22.	30076	468322	<u>A. ipiensis</u>	
23.	30079	468325	<u>A. duranensis</u>	
24.	30081	468327	<u>A. batizocoi</u>	
25.	30082	468328	"	
26.	30085	468331	<u>A.</u> sp.	
27.	30091	468336	<u>A. spinaclava</u>	
28.	30093	468338	<u>A.</u> sp.	
29.	30097	468340	<u>A. batizocoi</u>	
30.	30099	468342	<u>A. spinaclava</u>	
31.	30102	468345	<u>A.</u> sp.	Leafspot resistance
32.	30106	468354	"	
33.	30108	468356	"	
34.	6351	476108	"	
35.	6352	476109	"	
36.	6536	None	"	
37.	7762	"	"	
38.	35001	475873	"	
39.	35003	475875	"	

Materials will be obtained from South America, especially in section Arachis of the genus, as they are collected. There is an active germplasm collection program in Arachis and the materials are introduced through Don Banks, USDA, Oklahoma, and Charles Simpson, Texas A & M University. Although lists of the NCSU germplasm has been forwarded to both Drs. Simpson and Banks, I have been able to obtain a list of available accessions from them.

1985
S-9 TECHNICAL COMMITTEE REPORT

AGENCY: Oklahoma Agricultural Experiment Station
SUBMITTED BY: James S. Kirby
ADDRESS: Department of Agronomy, Oklahoma State University,
Stillwater, OK 74078

Page 1 of 4

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ACCESSION USERS: J.A. Webster, K.J. Starks, R.L. Burton and O.G. Merkle, USDA-ARS
ADDRESS: USDA-ARS, Plant Science Laboratory, P O Box 1029,
Stillwater, OK 74076
NATURE OF RESEARCH: 1. Evaluation of sorghum [Sorghum bicolor (L.) Moench], and sorghum relatives for insect resistance, particularly greenbugs, yellow sugarcane aphid, chinchbugs, sorghum midge and fall armyworms. 2. Evaluation of new introductions of small grains, especially wheat and wheat relatives, for insect resistance. Particular emphasis is being placed on greenbug and yellow sugarcane aphid resistance.
PROGRESS TO DATE: Sorghum and small grain germplasm (plant introductions and breeding lines) are continuing to be evaluated for insect resistance. Particular emphasis in sorghum is being placed on collections from Yemen and Ethiopia.
SELECTED PUBLICATIONS: Ullah, I. 1985. Variability in greenbug biotypes. Ph.D. dissertation. Okla. State Univ. 166 p.
Starks, K.J., and Z.B. Mayo. 1985. The biology and control of the greenbug attacking sorghum. Proc. Int. Sorghum Insect Pests Workshop (In press).
Webster, J.A. and C. Inayatullah. 1985. Aphid biotypes in relation to plant resistance: a selected bibliography. South-west. Entomol. 10:116-125.
Merkle, O.G. and K.J. Starks. 1985. Resistance of wheat to the yellow sugarcane aphid (Homoptera: Aphididae). J. Econ. Entomol. 78:127-128.
Boozaya-Angoon, D., K.J. Starks, D.E. Weibel, and G.L. Teetes. 1984. Inheritance of resistance in sorghum, Sorghum bicolor, to the sorghum midge, Contarinia sorghicola (Diptera: Cecidomyiidae). Environ. Entomol. 13:1531-1534.
Merkle, O.G., J.H. Hatchett, and E.L. Smith. 1984. Registration of two hessian fly resistant hard red winter wheat germplasms. Crop Sci. 24:1220.
Tyler, J.M., J.A. Webster, and E.L. Smith. 1985. Biotype E greenbug resistance in wheat streak mosaic virus-resistant wheat germplasm lines. Crop Sci 25:686-688.
Webster, J.A. and K.J. Starks. 1984. Sources of resistance in barley to two biotypes of the greenbug Schizaphis graminum (Rondani), Homoptera:Aphididae. Protect. Ecol. 6:51-55.
Webster, J.A., and C. Inayatullah. 1984. Greenbug (Homoptera: Aphididae) resistance in triticale. Environ. Entomol. 13:444-447.
Smith, D.H. Jr., J.A. Webster, and J.E. Grafius. 1984. Registration of two cereal leaf beetle resistant barley germplasms. Crop Sci. 24:828.
CULTIVAR RELEASES: Cereal leaf beetle resistant barley lines; Hessian

fly resistant wheat lines. See publications above.

ACCESSION USER: D.E. Weibel
 ADDRESS: Dept. of Agronomy, Okla. State Univ., Stillwater, OK 74078
 NATURE OF RESEARCH: Sorghum Breeding
 PROGRESS TO DATE: Virtually all our materials can be classified as plant introduction material. Specifically, we are studying six introductions from Yemen that are bloomless.
 PUBLICATIONS: None
 CULTIVAR RELEASES: None

ACCESSION USER: C.M. Taliaferro
 ADDRESS: Dept. of Agronomy, Okla. State Univ., Stillwater, OK 74078
 NATURE OF RESEARCH: Evaluation of old world bluestem (Bothriochloa spp.) germplasm for forage quality indices.
 PROGRESS TO DATE: A total of 394 old world bluestem accessions were recently evaluated for dry matter disappearance (DMD), neutral detergent fiber (NDF), and crude protein (CP) concentrations. The analyses were made on regrowth forage samples collected from a single row plot of each accession. Regrowth samples were taken at 3, 6, and 9 weeks of age. Analyses were made by near infrared reflectance spectroscopy. The ranges in mean DMD, NDF, and CP of the accessions were, respectively, 600-528, 658-521, and 146-98 g/kg.
 PUBLICATIONS: None to date. Will be published soon in an Oklahoma Agricultural Experiment Station research report.
 CULTIVAR RELEASES: None

ACCESSION USER: James S. Kirby
 ADDRESS: Dept. of Agronomy, Okla. State Univ., Stillwater, OK 74078
 NATURE OF RESEARCH: Peanut Breeding
 PROGRESS TO DATE: Continue to evaluate peanut breeding material for leaf-spot resistance (crosses with PI 109839) and for early maturity (utilizing Chico as the source of earliness). Considerable effort has also gone into the development of a runner peanut variety for Oklahoma. The Florunner cultivar has performed well in Oklahoma, however, an earlier maturing variety is needed. Florunner was hybridized several years ago with the Spanish cultivars Spanhoma and Comet. Three lines have been selected from these two crosses that are now being tested more extensively for possible release.
 PUBLICATIONS: None
 CULTIVAR RELEASES: None

ACCESSION USER: D.J. Banks and R.N. Pittman
 ADDRESS: USDA-ARS, Department of Agronomy, Oklahoma State University, Stillwater, OK 74078
 NATURE OF RESEARCH: Peanut Introduction, Increase, Maintenance and Evaluation
 PROGRESS TO DATE: 1) During March 6-17, 1985, a peanut collecting expedition was conducted in Peru along the sandy arid coastal area between Lima and Paijan (north of Trujillo) with emphasis on collecting rare genotypes of the primitive "hirsuta" botanical variety of Arachis hypogaea spp. hypogaea. The trip was sponsored by the International Board for Plant Genetic Resources

(IBPGR), FAO, Rome, Italy, and the respective organizations of the team members. Team members were Donald J. Banks (Oklahoma), Manuel Delgado P. (Peru), and Gabriel del Carpio R. (Peru). As a result, 35 accessions (and several subsamples) were introduced into the U.S. with at least 5 collections consisting of "hirsuta" types. In addition, 3 collections of rhizobia were made from the roots of growing peanut plants. The peanut accessions are being increased in Oklahoma and Texas where preliminary evaluations are being made. Distribution of seeds grown from these selections to other scientists will probably take place next year. 2) Field increases of selected A. hypogaea accessions from South America were made and distributed to the Southern Regional Plant Introduction Station. 3) A new CRIS (no. 6217-20160-001) titled "Peanut Germplasm Maintenance and Evaluation" has been developed and is being processed. Objectives of the CRIS are to: Maintain Arachis accessions for future peanut germplasm enhancement efforts and develop procedures to facilitate short- and long-term preservation. Evaluate and document Arachis collections for their taxonomic, biosystematic, and genetic characteristics. In addition, during February 25-27, 1985, Charles Simpson (Texas AES), Gil Lovell (S-9), and Don Banks (USDA-ARS) met at Stephenville, Texas, to formulate plans for long range Arachis maintenance and preservation procedures to insure the survival and distribution of all Arachis genetic resources that are presently available in the U.S. and to provide for other resources that may become available in the future. The plans are continuing. 4) Vegetative collections of wild Arachis accessions and hybrids maintained in greenhouses at Stillwater were inventoried and number approximately 4770. More than 878 different genotypes are represented in the collection. Total seed stocks of wild species, wild hybrids, cultivated peanuts, and breeding lines total about 5500. A complete inventory of Arachis accessions at Stillwater is being conducted. Computerization of accession records and evaluation data is underway. 5) Plant selections were made for developing early-maturing, large-seeded peanut breeding lines and for leafspot resistant germplasm. 6) Genetic markers for flower color (yellow vs orange), leaf form (krinkle vs normal), and leaflet size (narrow vs medium) were used in a study to assess the potential for utilizing honey bees to increase outcrossing under field conditions.

PUBLICATIONS: Banks, D.J., R.N. Pittman, and C.M. Heald. 1984. A wild Arachis nursery in south Texas. Proc. Am. Peanut Res. Educ. Soc. 16:38.

Banks, D.J., K. Eskins, and R.N. Pittman. 1985. Analysis of the chloroplast pigments of chico (Arachis hypogaea L.), a wild peanut (Arachis chacoense Krap. et Greg. nom. nud.) and their triploid and hexaploid hybrids. Oleagineux 40:29-31.

Pittman, R.N., B.B. Johnson, and D.J. Banks. 1984. In vitro differentiation of a wild peanut, Arachis villosulicarpa Hoehne. Peanut Sci. 11:24-27.

Pittman, R.N., D.J. Banks, and B.B. Johnson. 1984. In vitro culture of peanuts and preliminary field evaluation of cloned material. Proc. Am. Peanut Res. Educ. Soc. 16:30.

CULTIVAR RELEASES: None

ACCESSION USER: H.A. Melouk
ADDRESS: USDA-ARS, Department of Plant Pathology, Oklahoma State University, Stillwater, OK 74078
NATURE OF RESEARCH: Peanut disease resistance and germplasm development.
PROGRESS TO DATE: Peanut germplasm is being evaluated for resistance to verticillium wilt, peanut mottle virus, peanut stripe virus, and to both early and late leafspot. Sources of resistance to PMV have been identified and were listed in last year's report. The three experimental runner lines being evaluated and considered for release in Oklahoma appear to be more resistant to leafspot than Florunner. The three lines and their parental lines are being evaluated in 1985 near Bixby, OK and Yoakum, TX where the leafspot infection is severe. One of the experimental lines, OK-FH14 has been compared with the leafspot susceptible cultivar Pronto. Although OK-FH14 is more resistant to "infection", the sporulation per necrotic area is about the same as Pronto.
PUBLICATIONS: Sanborn, M.R., and H.A. Melouk. 1983. Isolation and characterization of mottle virus from wild peanut. Plant Disease 67:819-821.
CULTIVAR RELEASES: None.

ACCESSION USER: D.L. Ketrings, USDA-ARS
ADDRESS: Agronomy Department, Oklahoma State University, Stillwater, OK 74078
NATURE OF RESEARCH: Evaluation of peanut (Arachis hypogaea L.) for heat tolerance and traits to escape drought.
PROGRESS TO DATE: Peanut germplasm (plant introductions and breeding lines) are continuing to be evaluated for traits (root growth, soil moisture extraction, leaf water potential components, and stomatal resistance) to escape and/or tolerate drought. They are also being evaluated for membrane thermostability to estimate heat tolerance. OK-FH15, a selection from Comet x Florunner was found to be intermediate in drought tolerance between the more tolerant Comet parent and the less tolerant Florunner parent.
PUBLICATIONS: Erickson, P.I. and D.L. Ketrings. 1985. Evaluation of peanut genotypes for resistance to water stress in situ. Crop Sci. 25:870-876.
Ketrings, D.L. 1984. Membrane thermostability of peanut genotypes. Proc. Amer. Peanut Res. and Educ. Soc., Inc. 16:30.
Erickson, P.I., D.L. Ketrings, and Ming-Teh Huang. 1984. Water relations and yield of peanut genotypes grown under irrigated and rainfed conditions. Proc. Amer. Peanut Res. and Educ. Soc., Inc. 16:33
Ketrings, D.L. 1985. Evaluation of peanut genotypes for membrane thermostability. Peanut Sci. (In Press, Jan-June Issue).
Huang, Ming-Teh. 1985. Physiological aspects of drought and heat tolerance of peanut (Arachis hypogaea L.). PhD Dissertation. Oklahoma State University.
CULTIVAR RELEASES: None.

1985

S-9 TECHNICAL COMMITTEE REPORT

AGENCY: University of Puerto Rico
College of Agriculture
Agricultural Experiment Station

SUBMITTED BY: Oscar D. Ramírez
College of Agriculture
University of Puerto Rico
Agricultural Experiment Station
Río Piedras, Puerto Rico 00927

ROOT CROPS: O. D. Ramírez and M. Santiago
Corozal Agricultural Research and Development
Center, Agricultural Experiment Station,
Río Piedras, Puerto Rico 00927

NATURE OF RESEARCH: To obtain, through plant introduction and selection, better root crops with high yielding ability, resistant to the prevalent maladies and adapted to our conditions.

PROGRESS TO DATE: Cassava (Manihot esculenta) cvs. (30) are being evaluated at two sites. White fleshed cvs. with the highest yields were Jamaica 18, Serrallés, PI 12900, SD-1, Mayaguez and PI 12902 with an average yield of 311, 302, 281, 269, 250, and 242 cwt/A, respectively. The most promising cvs. with yellow flesh were Jamaica 48 and Cubana, with an average yield of 366 and 244 cwt/A, respectively. In northwestern Puerto Rico cassava cvs. were evaluated for three years. The highest yielders during this period were cvs. PI 12902, Jamaica 18, PI 9570 and PI 12003 with an average yield of 305.67, 266.16, 238.92 and 219.68 cwt/A. Yams (Dioscorea sp.) cvs. (30) are being evaluated. Data show that the highest yields were obtained with the rotundata cvs. The alata cvs. are all very susceptible to a fungus disease known as "Candelilla". Taniers (Xanthosoma sp.) None of the 17 cvs. in our collection has shown any resistance to "Mal Seco", a fungus disease which is a limiting factor in the yield of this crop.

PUBLICATIONS: Badillo, J. (1984) Performance of cassava cultivars in an oxisol in Northwestern Puerto Rico, J. Agric. Univ. P.R. 68(4) 375-81.

CULTIVAR RELEASES: None

BANANAS AND PLANTAINS: O. D. Ramírez and M. Santiago, Corozal Agricultural Research and Development Center, Agricultural Experiment Station, Río Piedras, Puerto Rico 00927

NATURE OF RESEARCH: To obtain, through plant introduction and selection, better banana and plantains cvs. with high yielding ability, resistant to the prevalent maladies and adapted to our conditions.

PROGRESS TO DATE: Results obtained from previous years point out cv. Maricongo as the best of the plantain collection. Results obtained from the banana collection show that the most promising cvs. are: 1A, 2A, and 4A, three local selections, and Grand Nain, an introduction from Honduras. The average weight per bunch of these cvs. is 54.00, 49.00, 50.00, and 49.00 lb, respectively.

PUBLICATIONS: None

CULTIVARS RELEASES: None

FRUITS: O. D. Ramírez, F. H. Ortiz, L. Avilés, C. J. Torres, Adjuntas Substation and Fortuna Agricultural Research and Development Center, Agricultural Experiment Station, Río Piedras, Puerto Rico 00927

NATURE OF RESEARCH: To obtain, through plant introduction and selection, better fruit trees with high yielding ability, resistant to the prevalent maladies and adapted to our conditions.

PROGRESS TO DATE: The various fruit collection were properly managed. Best cvs. serve as source of selected material for experimentation as well as for propagation. An experiment was planted with 8 selections of soursop (Anona muricata) chosen previously from the variety collection.

PUBLICATIONS: Semidey, N. and Ramírez, O. D. (1985), Preliminary evaluation of 21 certified virus free citrus clones. J. Agr. Univ. P.R. 69(3).

CULTIVAR RELEASES: None

COFFEE: O. D. Ramírez and E. Boneta, Adjuntas Substation, Agricultural Experiment Station, Río Piedras, Puerto Rico 00927

NATURE OF RESEARCH: To obtain, through plant introduction and selection, better coffee cvs. with high yielding ability, resistant to coffee rust and adapted to our conditions.

PROGRESS TO DATE: Evaluation of coffee lines resistant to various races of coffee rust (Hemileia vastatrix) continues. Data on yield is being recorded.

PUBLICATIONS: None

CULTIVAR RELEASES: None

FORAGES: D. Vera de Saldaña, Corozal Agricultural Research and Development Center, Agricultural Experiment Station, Río Piedras, Puerto Rico 00927

NATURE OF RESEARCH: To obtain, through plant introduction and selection, better forages in regard to seasonal yield, nutritive value and adaptability to the various climatic and soil conditions of Puerto Rico.

PROGRESS TO DATE: Results obtained from an experiment with 5 Napier grass cvs. and one interspecific cross of pearl-millet and Napier grass are presented in table 1. The interspecific cross is the most productive. New introductions under evaluation are presented in tables 2 and 3.

PUBLICATIONS: Vélez-Santiago, J., Arroyo-Aguilú, J. A., Fuentes, F., and Torres, A. 1984. Evaluation of eight alfalfa cultivars in a cumelic haplustolls of Southern Puerto Rico, J. Agri. Univ. P.R. 68(2): 120-30.
 Vélez-Santiago, J. and Arroyo-Aguilú, J. A., 1984. Comparison of six Stylosanthes cultivars and Digitaria milanjiana in the humid mountain region of Puerto Rico, J. Agri. Univ. P.R. 68(4): 355-64.
 Vélez-Santiago, J. and Arroyo-Aguilú, J. A., 1984. Influence of two fertilizer levels on forage and crude protein yields of seven tropical grasses. J. Agri. Univ. P.R. 68(4): 471-8.

Table 1. - Dry forage yields (kg/ha) of 5 dwarf elephant grasses and one interspecific cross of dwarf pearl millet X elephant grass hybrid planted in November 22, 1982 at Corozal, Puerto Rico.

P.R.P.I. Number ^{1/}	Tifton Georgia Number ^{2/}	Number and date of harvest			Total dry forage
		1rst. 8-4-83	2nd. 10-4-83	3th. 11-29-83	
13558	N-75	9,951	14,542	8,785	33,278
13559	N-76	13,896	13,841	8,019	35,756
13560	N-113	12,420	14,470	8,649	35,539
13561	N-114	8,780	13,163	10,402	32,345
13562	N-116	5,439	10,630	8,089	24,158
13563	SC-444	22,844	18,025	10,988	51,857
\bar{X}		12,222	14,112	9,155	35,489

¹ U.P.R. Agricultural Experiment Station plant introduction number.

² Tifton, Georgia accession number.

Table 2. - List of tropical grasses to be preliminary evaluated in different regions of Puerto Rico

Scientific, Common and/or Variety Name

- Calamagrostis pseudophragmites 220584
- Cenchrus ciliaris
Assorted buffelgrass accessions (5-100 for 1984)
- Cenchrus myosuroides (S, TX) PI: 216375, 216378, 216382, 228843
Big Sandbur
- Ixphorus unisetus 283478
Mexicangrass
- Panicum virgatum PI. 422006
'Alamo' Switchgrass
- Paspalum hiero-ny-mfi 310108
- Paspalum nicorae T 30590, T 30591
Brunswick grass
- Eragrostis lehmanniana PI 106088
- Cynodon dactylon Bo. Abras, Corozal

Table 3. - List of new grass species introduced to be preliminary evaluated
in the Southern part of Puerto Rico

Scientific, Common and/or Variety Name

- Gatton panic
- Eragrostis lehmanniana x Etrich = Cochise
- Eragrostis lehmanniana = lehman's levegrass
- Panicum antidotale = Blue panic
- Puhuima
- Kiwato
- Green panic
- Rhode gayanus - A 68
- Calamagrostis pseudo phragmites MS 3361, PI 220584
- Panicum virgatum

1985

S-9 Technical Committee Report

Agency: Clemson University
Submitted by: D.W. Bradshaw
Address: Department of Horticulture, Clemson University, Clemson, SC
29634-0375
Page 1 of 1

* * * * *

Accession User: B.B. Rhodes
Address: Edisto Research and Education Center, P.O. Box 247,
Blackville, SC 29817
Nature of Research: Variety development-cucurbits
Progress to Date: Watermelon lines with good wilt resistance but only
fair anthracnose resistance have been developed from lines
incorporating genes from PI 18922 and PI 299379. Resistance genes
in these two PI's appeared to be identical
Publications: PhD Dissertation: Resistance of watermelon to race 2
Calletotrichum lagenarium. Stephen Lloyd Love
Cultivar Releases: 1984

Accession User: W.C. Stringer
Address: Department of Agronomy and Soils, Clemson University, Clemson,
SC 29634-0359
Nature of Research: Evaluation of potential perennial pasture legumes
Progress to Date: First harvest of the first full year has been made
Publications: None
Cultivar Releases: None

Accession User: R.L. Fery and J.M. Schalk
Address: U.S. Vegetable Laboratory, ARS, USDA, 2875 Savannah Highway,
Charleston, SC 29407
Nature of Research: Evaluation of cowpea (*Vigna unguiculata*) accessions
for resistance to the southern green stink bug (*Nezara viridula*)
Progress to Date: A total of 128 cowpea accessions (PI's, breeding
lines, and cultivars) were evaluated in outdoor screen cage tests
during the four year period 1981-1984. The following accessions
exhibited potentially useful lines of resistances: PI 293476, PI
293557, PI 293570, PI 353074 and PI 35480. PI 293557 and PI 293570
were studied in detail in 1983 and 1984; tolerance appears to be
the mechanism of resistance
Publications: Fery, R.L., and J.M. Schalk. 1984. Southern green
stink bug: Identification of resistance in cowpea. HortScience
19(2):211. (Abstr)
Schalk, J.M., and R.L. Fery. 1984. Sources of resistance in cowpea to
the southern green stink bug. Ann. Plant Resistance to Insects
Nwsltr. 10:41

1985

S-9 TECHNICAL COMMITTEE REPORT

Agency: Tennessee Agricultural Experiment Station
Submitted by: D. L. Coffey
Address: Department of Plant and Soil Science, University of Tennessee,
P. O. Box 1071, Knoxville, Tennessee 37901,
Page 1 of 3.

* * * * *

Accession User: H. A. Fribourg
Address: Department of Plant and Soil Science, University of Tennessee,
Knoxville, TN 37901-1071
Nature of Research: Evaluation of the hyacinth bean (*Lablab purpureus* (L.)
Sweet) as an annual warm-season forage.
Progress to Date: A series of trials was started in 1974 to ascertain the
potential value of 'Tift-1' hyacinth bean as a warm-season annual
forage in a region with a humid mesothermal climate, when grown on
well-drained soils at elevations of 300 m or less. The dry matter
forage produced during hot dry weather ranged between 2 and 5 Mg ha⁻¹.
The concentrations of crude protein, and of acid- and neutral-detergent
fibers, were at an acceptable level for a forage legume. The forage
produced was very leafy in both the first growth and in the regrowth
stages after cutting or grazing. Regrowth took place when a stubble
of 10 cm was left. Hyacinth bean was established easily in either
broadcast or row arrangements on prepared seedbeds, using 20 to 25
kg of seed ha⁻¹, or with no-till methods. Trailing vines rapidly
covered interrow spaces. Hyacinth bean was susceptible to feeding
by bean beetles (*Epilachna corrupta*), but was tolerant of the
insecticide carbaryl (1-naphthyl methylcarbamate) as well as of the
herbicide trifluralin (α,α,α -trifluoro-2,6-dinitro-*N,N*-dipropyl-*p*-
toluidine). Over 900 kg ha⁻¹ of clean Tift-1 hyacinth bean seed were
produced. Dairy cattle refused to consume hyacinth bean in two trials,
but beef cows and calves grazed it readily in five different location-
year trials. Calves creep-grazing hyacinth bean gained 840 g day⁻¹
during a 90-day grazing season begun in early July. Hyacinth bean,
an annual in the mid-South, appears to have considerable potential
as a pasture for growing animals during hot, dry periods.
Publications: Fribourg, H.A., Joseph R. Overton, Walker W. McNeill, E. W.
Culvahouse, Monty J. Montgomery, Marshall Smith, R. J. Carlisle, and
N. W. Robinson, Evaluations of the Potential of Hyacinth Bean as an
Annual Warm-Season Forage in the Mid-South. *Agron. Jour.* 76:905-910.
1984.
Cultivar Releases: None

Accession User: D. L. Coffey and R. D. Walters

Address: Department of Plant and Soil Science, University of Tennessee,
P. O. Box 1071, Knoxville, Tennessee 37901.

Nature of Research: Nutritional composition of (*Amaranthus* spp.) as influenced by nitrogen fertilization and harvest date.

Progress to Date: Seven species: *tricolor*, *dubius cruentus*, *hypochondriacus*, *hybridus*, *blitum*, *paniculatus*, *gangeticus* from PI accessions and commercial cultivars of amaranth were evaluated for carbohydrate, mineral and non-proteinaceous nitrogen content as influenced by three levels of nitrogen fertilization (0, 150, 300 kg/ha ammonium nitrate) and five dates of harvest (25, 35, 45, 55, 65 days after germination). Leaf crude protein content fluctuated more during the growing season in accessions with indeterminate than in those with determinate growth habits. Attempts to predict leaf crude protein content as a function of fertilizer inputs and harvest dates were more difficult for smooth leaved than for coarse leaved accessions. Leaf tissue from early harvests had higher contents of crude protein and potassium and lower content of fiber than leaf tissue from late harvests. Crude protein content was not significantly enhanced by addition of nitrogen fertilizer. Nitrate nitrogen did not exceed 239 mmol/kg dry weight from any level of nitrogen fertilizer at any harvest date. Nitrate nitrogen content was highest at first harvest and decreased rapidly thereafter. Carbohydrate composition in four grain accessions was not influenced by nitrogen fertilization. Grain calcium content in three accessions declined as nitrogen levels increased.

Publications: Walters, R. D. 1985 Nutrient composition of *Amaranth* species as affected by nitrogen fertilization and harvest date.

M. S. Thesis, University of Tennessee, Knoxville, Tennessee.

Cultivar Releases: None.

Accession User: B. V. Conger

Address: Department of Plant and Soil Science, University of Tennessee,
P. O. Box 1071, Knoxville, Tennessee 37901.

Nature of Research: Evaluation of orchardgrass (*Dactylis glomerata* L.) germplasm for persistence under East Tennessee conditions. Evaluation of diploid species of *Dactylis* and subspecies of *D. glomerata* for their response to in vitro culture techniques and as possible parents for interspecific hybridization.

Progress to Date: From a total of 5184 plants established from 216 accessions in 1978, 160 have been selected for further observation. A genotype from one of these accessions (PI 315416) is being maintained in the greenhouse for cell and tissue culture experiments. This genotype has produced somatic embryos from cultured leaf segments. Plants from 12 diploid *Dactylis* species and subspecies of *D. glomerata* were established from 17 accessions obtained from the Western Regional Plant Introduction Station and from 10 accessions obtained from the Welsh Plant Breeding Station at Aberystwyth. Plants are being maintained in both the greenhouse and the field. One *D. glomerata* subspecies (*ibizensis*) obtained from Aberystwyth is very small, has fine leaves and probably will not survive under East Tennessee field conditions. Work is in progress to confirm the chromosome numbers of these plants. Their response to in vitro culture will be tested during the next year.

Publications: None.

Cultivar Releases: None.

Accession User: B. N. Duck

Address: School of Agriculture, University of Tennessee at Martin, Martin, Tennessee 38238

Nature of Research: Evaluation of *Vicia* spp. for agronomic adaptation

Progress to Date: Some 440 accessions of *Vicia* spp. (largely *V. sativa* L.) were planted in the field in September, 1984. Observations were recorded on germination and emergence, seedling vigor, canopy development under cool fall temperatures, and winter hardiness. The winter of 1984-85 was unusually harsh for the area and provided a good "test winter" for evaluating hardiness. Some 50 accessions survived the winter and will be evaluated further during the 1985-86 season.

Publications: None

Cultivar Releases: None

Accession User: J. M. Stewart

Address: USDA, ARS, Cotton Physiology, Department of Plant and Soil Science, P. O. Box 1071, Knoxville, TN 37901-1071

Nature of Research: Acquisition, characterization and utilization of *Gossypium*.

Progress to Date: Two germplasm collection trips were made. The first was with Dr. Ed Percival, USDA, ARS, College Station, TX, to the Yucatan Peninsula of Mexico for "dooryard" cottons. Approximately 40 accessions of *Gossypium* were obtained, mostly various races of *G. hirsutum* including *yucatenense*. The second was with Dr. Paul Fryxell, USDA, ARS, College Station, TX to Australia for wild diploid species. About 70 accessions of *Gossypium* were obtained, including all the known species in Australia and several variants of unknown classification. A number of other genera were collected also, including *Glycine*.

Transfer of the nuclear genome of semigamy *G. barbadense* into wild *Gossypium* cytoplasms was continued. Caducous bract and red anther traits are being transferred from *G. amourianum* into cotton. Cytogenetic observations on hybrids between the "Kimberley" cottons and the other Australian *Gossypium* species support the genomic distinction of the Kimberley cottons from the C group.

Publications: Umbeck, P. F. and J. M. Stewart. 1985. The development of cotton (*Gossypium* spp.) cytoplasms from wild diploid species for cotton germplasm improvement. *Crop Sci.* 25: In press.

Cultivar Releases: None

1985

S-9 Technical Committee Report

Agency: The Texas Agricultural Experiment Station
Submitted by: Oliver E. Smith
Address: Soil and Crop Sciences Department
Texas A&M University
College Station, Texas 77843
Phone: 409-845-5389

Page 1 of

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Accession User: Raymond D. Brigham & Keith Young
Address: Texas A&M University Agricultural Research and Extension
Center - Route 3, Lubbock, Texas 79401; phone: (806) 746-6101.
Nature of Research: Breeding soybean for insect resistance.
Progress to Date: Soybean plant introductions 171451, 200449, 206503,
227555, 227687, 229358, 323558, and 340029 are being screened for
insect resistance.
Publications: None.
Cultivar Releases: None.

Accession User: Mark A. Hussey
Address: Texas A&M University Agricultural Research and Extension
Center; 2415 East Highway 83; Weslaco, Texas 78596; phone: (512)
968-5585
Nature of Research: Field evaluation of Leucaena leucocephala plant
introductions for forage, seed and biomass production.
Progress to Date: Assessed and visual values have been recorded. The
Leucaena plant introductions used in the evaluations were: 281607,
281784, 288044, 304650, 322552, 331797, 415703 and 443614.
Publications: None.
Cultivar Releases: None.

Accession User: Mark A. Hussey
Address: Texas A&M University Agricultural Research and Extension
Center; 2415 East Highway 83; Weslaco, Texas 78596; phone: (512)
968-5585
Nature of Research: Field evaluation of Setaria species for livestock
forage and seed production for game birds.
Progress to Date: The following species represented by plant
introduction numbers are being evaluated: Setaria halstii- 209208,
209210, and 283986. Setaria macrostachya - 216573, 217229, 229129,
229131, and 240727. Setaria sphacelata - 153675, 209012, 209214,
209251, 225004, 225586, 271611, 275953, 282707, 285307, 299079,

314858, 314859, 314871, 314872, 314874, 314877, 314878, 315740,
315741, 325933, and 325934.

Publications: None.

Cultivar Releases: None.

Accession User: Steven Kresovich

Address: : Texas A&M University Agricultural Research and Extension
Center; 2415 East Highway 83; Weslaco, Texas 78596; phone: (512)
968-5585

Nature of Research: Hybridization studies to enhance salt and cold
tolerance in commercial sugar cane (Saccharum spontaneum) germplasm.

Progress to Date: The study has been initiated using sugar cane plant
introduction numbers 160342, 230848, 230855, 232976, 269389, 271606,
286695, and 318789.

Publications: None.

Cultivar Releases: None.

Accession User: Steven Kresovich

Address: : Texas A&M University Agricultural Research and Extension
Center; 2415 East Highway 83; Weslaco, Texas 78596; phone: (512)
968-5585

Nature of Research: Genetic analysis of plant cell culture studies with
sugar cane (Saccharum officinarum).

Progress to Date: The study has been initiated using sugar cane plant
introduction numbers 106275 and 237365.

Publications: None.

Cultivar Releases: None.

Accession User: Steven Kresovich

Address: : Texas A&M University Agricultural Research and Extension
Center; 2415 East Highway 83; Weslaco, Texas 78596; phone: (512)
968-5585

Nature of Research: Development of sweet sorghum as a biomass source
for South Texas.

Progress to Date: Plant introduction 154844 (MN1500) is being
considered for joint release by the U.S.D.A. and the Texas
Agricultural Experiment Station. This cultivar can be grown for
ethanol and/or methane production.

Publications: None.

Cultivar Releases: None.

Accession User: Steven Kresovich

Address: : Texas A&M University Agricultural Research and Extension
Center; 2415 East Highway 83; Weslaco, Texas 78596; phone: (512)
968-5585

Nature of Research Sweet sorghum for sugar and biomass production in subtropical regions.

Progress to Date 'Cowley' sweet sorghum was released for sugar and biomass production in South Texas in 1984. The following plant introductions are included in the pedigree of 'Cowley': 152857, 152965, 152967 and 152971.

This high quality, high tonnage cultivar of sweet sorghum has been developed through the joint efforts of the Texas Agricultural Experiment Station at Weslaco, the U.S. Agricultural Products Quality Research Laboratory at Weslaco and the U.S. Sugar Crops Field Station at Meridian, Mississippi.

The cultivar was named 'Cowley' in honor of W. Raymond Cowley, a pioneer in the production of sugar from sweet sorghum in Texas, and the Resident Director of Research at the Texas Agricultural Experiment Station at Weslaco from 1948 to 1974.

Publications: L-2125 Cowley.

Cultivar Releases: Cowley A New Cultivar of Sweet Sorghum for Sugar and Biomass Production in Subtropical Regions - January 1985.

Accession User: George Tereshkovich

Address: Texas Tech University; College of Agricultural Sciences; Department of Plant and Soil Science; Box 4169; Lubbock, Texas 79409-4169; phone: (806) 742-2837

Nature of Research Cultural studies with Chili, Cayenne, Jalapeno and Paprika peppers.

Progress to Date The following 14 plant introductions were selected from a planting of 55 for further testing based on plant type, yield and fruit characteristics: 138563, 140373, 162605, 167361, 172775, 176892, 179200, 204685, 256056, 288958, 357467, 357566 and 357625.

Publications: None..

Cultivar Releases: None.

Accession User: Edward D. Wernecke

Address: P.O. Box 1009; Kingsville, Texas 78363

Nature of Research Grazing trials with Charlois cows on Cenchrus ciliaris and Pennisetum species accessions.

Progress to Date A grazing trial was conducted using Charlois cows to determine animal preference and selectivity of introduction Cenchrus and Pennisetum cultivars. The trial was conducted over a two week period. The introductions listed as 'Selected' were grazed to the ground.

The introductions listed as 'Variably Selected' were not grazed during the first week. They were grazed only after the 'Selected' introductions were grazed to the ground during the second week of the grazing trial.

<u>Selected</u>	<u>Variably Selected</u>	<u>Not Selected</u>
153671	409610	409205
409420	409160	409179
409462	409504	415651
414471	409500	409262
409459	409434	409216
409154	409425	409240
414506	409278	409205
414455	409515	409359
414466	409174	409268
414449	409244	409266
409170	409369	409229
409497	409338	409232
409149	414503	409264
253728	409234	409221
414776	409683	409254
409176	409276	409433
409220	266185	409373
414447		409704
409248		414514
409185		409227
414478		409302
414486		409282
409231		
409250		
409236		
409157		
409702		
Common		
Nueces		
Llano		
Pogue		
415646		
415641		
409171		
409487		
415644		
266185		
271594		
271593		
284834		
269961		
314994		
248534		
409454		
409153		
271596		
409242		
219610		
B-1s		
F-1		
Sexual X's		
271595		

Publications: None.

Cultivar Releases: None.

1985
S-9 TECHNICAL COMMITTEE REPORT

Agency: Virginia Agricultural Experiment Station
Submitted by: Richard T. Johnson
Address: Department of Horticulture, VPI & SU, Blacksburg, VA
24061

Page 1 of 4

Accession User: M. Rangappa

Address: Dept. of Life Sciences, Virginia State University,
Petersburg, VA 23803

Nature of Research: Dr. Rangappa has been involved for several years in screening Phaseolus vulgaris lines for resistance to air pollution. Ozone and sulfur dioxide in particular are under consideration. This project is a joint effort of the USDA, NCSU and VSU. The work at VSU involves preliminary field screening of accessions, followed by chronic dose response evaluation in open-top field chambers. VSU is ideal for field screening due to heavy industrial pollution in near-by Petersburg. The Phytotron at NCSU is used for acute dose response trials.

Identification of ozone tolerant bean lines is necessary if this tolerance is to be incorporated into cultivars suitable for farm acreage near urban centers.

Progress to Date: In 1985, Dr. Rangappa received 4666 accessions of Phaseolus vulgaris for his ongoing trials. Prior to this time approximately 5000 lines had been evaluated for ozone resistance, and about 80 selected lines were evaluated for sulfur dioxide resistance. There is a low but significant correlation between field reaction to ambient ozone, and greenhouse or growth chamber studies. No clearly insensitive (no injury) lines were found, but many relatively insensitive lines have been identified: these lines exhibit less than 35% foliar injury when exposed to 0.6 ppm ozone for 2 hours. It appeared that bush-habit lines were less sensitive than vining accessions. No patterns appeared among flower or seed color groups, but many of the insensitive accessions originated in South and Central America.

This project also identified many highly sensitive lines, demonstrating 98-100% foliar injury.

Two masters students have earned degrees through this project and several undergraduates have received research training.

Table 1. Ozone sensitivity of Phaseolus vulgaris plant introductions.^Z

Plant introduction	Origin	Injury ^Y (%)	Injury range ^X (%)
164093	Switzerland	32	14-41
164094	Switzerland	29	11-49
164274	India	30	14-45
164300	India(1)	26	
164306	Indi	31	21-49
164927	Turkey(2)	29	24-32
165438	Unknown	24	12-42
167382	Turkey	29	21-38
169735	Turkey	18	13-21
169852	Turkey	27	23-30
201374	Mexico	16	1-36
201380	Mexico	34	28-40
201489	Mexico	29	23-34
205211	Turkey	25	23-30
205218	Unknown	18	16-21
205359	Guatemala	34	25-49
205362	Guatemala(2)	28	20-37
206003	Sweden	23	9-38
206006	Unknown	31	23-46
206970	Turkey	37	20-46
206971	Turkey	23	6-50
206978	Turkey	28	11-43
206981	Turkey	32	30-36
206982	Turkey	10	6-13
206983	Turkey	28	15-44
207127	Colombia	31	24-33
207151	Colombia	32	13-38
207428	Colombia	33	31-35
207568	Colombia	18	15-20
310711	Guatemala	23	18-33
310864	Nicaragua	34	16-50
312029	Mexico	26	14-38
325718	Mexico	32	24-34
347842	Unknown	32	25-40
349846	France	34	13-73
353479	South Africa	23	13-50
361321	India	30	18-53
370569	Yugoslavia	17	9-29
370581	Yugoslavia(1)	16	
376211	Brazil	15	11-23
379430	Yugoslavia	28	21-35
379451	Yugoslavia	37	31-41
379460	Yugoslavia	35	24-35
379502	Yugoslavia	18	11-23

390771	Peru	19	13-22
390775	Peru	35	28-40
414831	Hungary	30	20-51
414841	Hungary	23	16-31
415927	Ecuador	28	18-46
415966	Italy	20	8-41
416084	Iran	35	26-48
416522	Turkey	41	28-60
416683	Rhodesia	30	16-48
417804	Mexico	34	31-35

^ZThree plants of each line were screened, one plant in each of 3 exposure chambers. A 4th plant of each line was placed in a charcoalfiltered air chamber.

^Y% injury is the average whole plant injury (average of 2 unifoliate and 2 trifoliate leaves) of 3 plants unless otherwise shown (number in parenthesis following the country of origin).

^XThe injury range is the range of whole plant injury (average of 2 unifoliate and 2 trifoliate leaves) for the 3 plants of each line exposed to O₃, except for numbers in parenthesis when 1 or 2 plants were used.

Publications: Reinert, R.A., J.A. Dunning, W.W. Heck, P.S. Benepal and M. Rangappa, 1984. Screening of bean (Phaseolus vulgaris) for sensitivity to ozone. HortScience 19(1):86-88.

Cultivar Releases: None

Accession User: D. Morris Porter

Address: USDA, ARS, Peanut Research Center, Suffolk, VA
23437

Nature of Research: Dr. Porter is involved in peanut cultivar development, particularly in discovering and incorporating resistance to Sclerotinia blight, Cercospora leaf spot, and Cylindrocladium black rot in Peanut.

Progress to Date: The use of PI accessions is too recent for progress to have been made.

Publications: None

Cultivar Releases: None

Accession User: Jeffrey H. McCormack

Address: Southern Exposure Seed Exchange, P.O. Box 158,
North Garden, VA 22959

Nature of Research: This firm is involved in breeding and selection of various plants of horticultural interest, Allium cepa and Helianthus annuus, in particular. Efforts on the latter species are directed at (1) screening for a black oilseed line having high oil content and desirable horticultural characteristics, and (2) screening for ornamental traits.

Progress to Date: Several Allium cepa and A. c. aggregatum lines obtained last year are in field tests this year. One A. c. aggregatum line appears very promising and is being considered for release in the next year or two. The Helianthus accessions are in preliminary field testing.

Publications: None

Cultivar Releases: None

1985 Report of the
National Seed Storage Laboratory
to the
National Plant Germplasm Committee
and to the
Regional Technical Committees on Plant Germplasm
by
Louis N. Bass, Director

The National Seed Storage Laboratory experienced another very busy year in 1984 with the receipt and distribution of numerous seed samples, many requests for tours of the Laboratory, and talks by members of the professional staff. Over 320 visitors from 31 states and 21 foreign countries toured the Laboratory. This included grade school, high school, and college classes. Several representatives of various news media, including the National Geographic, Associated Press, Farm Journal, Denver Post, and Chicago Tribune, visited the Laboratory.

PLANT GERmplasm PRESERVATION

Seed samples are received from the Plant Introduction Stations, curators of special collections, and individual plant breeders as part of the CSSA requirement for crop registration. Samples are also received from foreign sources under an agreement between ARS and the IBPGR which commits the NSSL as the site for a duplicate of the world base collection of several crops. Research is also conducted on methods of extending seed-storage life and improved laboratory germination test procedures including number of seeds required for accurate viability monitoring. Number of seeds required for seed multiplication to insure maintenance of genetic diversity is also investigated on a species-by-species basis. In addition, viability testing is handled for the Regional Plant Introduction Stations.

During 1984, 6,707 accessions were added to the base germplasm collection, bringing the total cataloged accessions in storage to 190,111. In addition, 5,558 rice samples which were not cataloged were received from IRRI and 1,725 seed-increase samples were received. Arrangements were made for seed increase of about 270 cataloged accessions and about 400 sweet corn inbred lines that required a seed increase before they could be cataloged into the collection. Approximately 21,000 germination tests and 250 special viability tests were made to monitor the viability of stored and incoming germplasm accessions. Seed of 1,019 accessions were sent to 70 scientists in 16 countries. Computer printouts or microfiche listings of seed available of the desired crops were sent to scientists upon request. The computer-assisted information system was modified as needed to meet changing requirements. Cooperation with GRIN continues with entry of some of the NSSL database into the Beltsville computer. Barley genetic stocks maintenance, distribution, and associated studies carried out under an extramural CRIS consisted of growing 170 genetic, 78 trisomic, and 15 multiple genetic stocks to study characteristics and to increase fresh seeds. Various mutant stocks were crossed with primary trisomics for linkage studies. To develop more multiple genetic stocks, 9 F₁ hybrid, 8 F₂, and 57 F₃ lines were grown. Twelve genetic and 7 multiple genetic stocks were received and increased.

A new mutant stock, haploidy initiator (hap) was introduced and crossed with shin Ebisu 16 (SE 16) to establish hap line in SE 16 background. Seeds of 80 genetic and 35 trisomic stocks were distributed. The telocentric chromosome for the short arm of chromosome 5 (the 11th telotrismic) was obtained and identified by Giemsa banding technique. Telotrismics for 3S, 5S, 6S, and 7S were crossed with various multiple marker stocks for those chromosome arms. DDT resistant gene (ddt) was associated with the short arm of chromosome 7(7S). Four acrotrisomic lines ($1L^{1S}$, $5S^{5L}$, $1S^{6L}$, $7S^{7L}$) were used for genetic linkage mapping in barley chromosomes. Some seed regeneration was carried out by the NSSL staff either in the greenhouse or at the horticultural research farm. Datura seed increase work was carried out at CSU through an extramural project as was a seed multiplication planting of 300 sweet corn inbred lines.

Because of their genetic nature and seed age, difficulties were encountered with both the datura and sweet corn which resulted in limited or no seed increase for some samples while others produced adequate seeds. Seed multiplication of carrot and onion accessions was carried out under an extramural project with Texas A & M. Seed production was good in most cases but a few accessions had to be replanted. Germination testing for the Regional Plant Introduction Stations was carried out under two extramural projects, one at Colorado State University and one at Iowa State University. At CSU, over 13,600 samples were tested and at ISU, an additional 5,500 germplasm accessions were tested for germination to monitor longevity of the germplasm in the working collections. During 1984, no germination tests were scheduled on research samples in long-term studies on effects of environmental conditions on seed longevity. Personnel limitations precluded conducting studies on number of seeds required for accurate viability monitoring and for seed multiplication to insure maintenance of genetic diversity in germplasm accessions.

Acquisition, documentation, germination testing, and regeneration of germplasm accessions progressed at about the same rate as in recent years. With the cooperation of the coordinators of the Regional Plant Introduction Stations and other germplasm curators, a reasonably good job of acquisition, preservation, viability testing, and regeneration of introduced germplasm was accomplished. Because of constraints imposed by implementation of the Murphy report, the NSSL cannot do an adequate job of acquisition of domestic germplasm. According to the Murphy report, the NSSL--after 25 years of operation and becoming nationally and internationally recognized as the collection site for domestic seed propagated plant germplasm--can no longer actively solicit or accept for storage the kinds of germplasm it has been seeking out and acquiring. Because of this restriction much of our germplasm heritage, varieties developed from early introductions which are no longer available, is also being lost because no one has a responsibility to seek out and preserve either old cultivars going out of production or new nonhybrid cultivars currently being developed.

The NSSL will continue to acquire suitable germplasm for inclusion in the base collection. Viability of the stored germplasm will be monitored as nearly on schedule as possible with the limited personnel available. Seed multiplication will be arranged for on a timely basis and the information system will be continuously monitored and revised as necessary to meet changing needs. Research on viability--testing methods, suitable seed numbers for viability testing and regeneration, and the effects of environmental conditions on seed longevity--will be continued and expanded as resources and personnel permit.

1. Bass, L. N. 1984. Report of the seed storage committee 1980 - 1983. Seed Sci. & Technol. 12:227-231.
2. Bass, L. N. 1984. Storage of seeds of tropical legumes. Seed Sci. & Technol. 12:395-402.
3. Bass, L. N. 1984. Germplasm preservation. Crop Sci. (in press)
4. Bass, L. N. 1983. Longevity of cataloupe seed. J. Seed Technol. 8(1). (in press)
5. Bass, L. N. Plant Germplasm Preservation and Utilization in (Major Contributor) Agriculture. (to be published by CAST)
6. Bass, L. N., C. R. Gunn, and O. B. Hesterman. Seed Physiology and Seedling Performance. Chapter 31 for second edition of ALFALFA SCIENCE AND TECHNOLOGY. (in peer review)
7. Bass, L. N. Cultivar differences in longevity of lettuce seed. (in preparation)
8. Bass, L. N. Longevity of mountain-mahogany seed. (in preparation)
9. Bass, L. N. Symposium Presentation. Germplasm resources, conservation, and utilization. Information presented is being published as "Germplasm Preservation."
10. Tsuchiya, T., R. J. Singh, A. Shahla, and A. Hang. 1984. Acrotrisomic analysis in linkage mapping in barley. Theor. Appl. Genet. 68:433-439.
11. Hang, A. and T. Tsuchiya. 1984. New telocentric chromosome in chromosome 4 in barley. Barley Genet. Newsletter 14:41-42.
12. Shahla, A. and T. Tsuchiya. 1984. Additional information on genetic analysis with acrotrisomic 1L^{1S} and four marker stocks. Barley Genet. Newsletter 14:8-9.
13. Shahla, A. and T. Tsuchiya. 1984. Genetic studies with acrotrisomic 5S^{5L} in barley. Barley Genet. Newsletter 14:9-10.
14. Shahla, A. and T. Tsuchiya: 1984. Additional information on the association of zbc_2 for zoned leaf with chromosomes 5 in barley. Barley Genet. Newsletter 14:10-11.
15. Shahla, A. and T. Tsuchiya. 1984. Telotrisomic for the short arm of chromosome 5 (5S) in barley. Barley Genet. Newsletter 14:11-12.

16. Shahla, A. and T. Tsuchiya. 1984. Acrotrisomic 5L^{5S} in barley. Barley Genet. Newsletter 14:24.
17. Shahla, A. and T. Tsuchiya. 1984. Telotrisomic analysis in Triplo 7S in barley. Barley Genet. Newsletter 14:52-53.
18. Shahla, A. and T. Tsuchiya. 1984. Telotrisomic analysis of the gene f8 (chlorina) in barley. Barley Genet. Newsletter 14:53-54.
19. Shim, J. W., A. Shahla, and T. Tsuchiya. 1984. Additional information on the primary trisomic analysis of sf (female sterile or gigas) in barley. Barley Genet. Newsletter 14:42-43.
20. Tsuchiya, T. 1984. Zebra striped leaves: Problems in gene and stock designation and proposed new symbols for zoned or zebra mutants in barley. Barley Genet. Newsletter 14:21-24.
21. Tsuchiya, T. 1984. Inheritance of cu⁴ for curly 4 (spiral neck) mutant in barley. Barley Genet. Newsletter 14:51-52.
22. Tsuchiya, T. 1984. Linkage maps of barley (Hordeum vulgare L.). Barley Genet. Newsletter 14:81-84.
23. Tsuchiya, T. 1984. List of genetic stocks with BGS numbers. Barley Genet. Newsletter 14:100-139.

1985 S-9 Technical Committee Report

Agency: Soil Conservation Service
Submitted by: H. Wayne Everett
Address: Fort Worth Federal Center
P.O. Box 6567
Fort Worth, Texas 76115

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Accession user: Brooksville Plant Materials Center
Address: 14119 Broad Street
Brooksville, Florida 33512
Nature of research: Development of new conservation plants for Major Land Resource Areas (MLRA's) 138, 151-155, and 270-273 (emphasis on cropland erosion problems).
Progress to date: 275 warm season and 150 cool season introductions were planted in 1984 to determine the most promising cover crop species. No individual accessions were singled out, but species have been selected for assembly and collection. The warm season species are: Crotalaria lanceolata, Crotalaria grantiana, Indigofera hirsuta, Indigofera pilosa, and Cassia fasciculata. Several promising accessions of Phaseolus atropurpureus and Dolichos lablab exhibited good performance and are available for distribution in small quantities. The cool season standards of comparison, notably 'Lana' woolypod vetch, 'Woodford', and 'Latimer' bigflower vetch, performed better than any accession under evaluation. However, Lathyrus cicera and Melilotus albus came through a second unusually cold winter in good shape and will be reassembled and collected further. Thirty accessions of bamboos are still being evaluated at Brooksville and DeFuniak Springs for gully erosion control. Few of the accessions show any promise for stabilization quickly enough to warrant consideration even of a species. Field evaluation of PI-299648, Digitaria macroglossa, for coastal dune stabilization is continuing. PI-262817, Arachis glabrata, was released as 'Arbrook' in cooperation with the University of Florida.

Publications: 1

Cultivar releases: 1

Accession user: Americus Plant Materials Center

Address: Route 3, Patton Drive
Americus, Georgia 31709

Nature of research: Development of conservation plants for MLRA's 128-130, 133, 136, and 137.

Progress to date: PI-490363, PI-490364, PI-310131, and PI-202044, Paspalum nicorae, continue to be evaluated for forage and critical area planting purposes, particularly peach orchard cover and grassed waterways. Seed production problems and potentials need to be worked out, yet, before a release can be planned. PI-166400, 'Selection 75', Panicum coloratum, and PI-301477, 'WW-477', Bothriochloa ischaemum, have been performing well in the Black Belt area of Alabama for critical area and forage purposes.

Publications: 1

Cultivar releases: None

Accession user: Quicksand Plant Materials Center

Address: Quicksand, Kentucky 41363

Nature of research: Development of improved plant varieties for the protection and improvement of soil and water resources in the Appalachian region.

Progress to date: 46 accessions of Lotus tenuis have been under evaluation since 1982 and 1983. PI-283631, which originated from Turkey, winter-killed early in the first winter (1982). However, it had been rated as an attractive and outstanding accession for low-growing cover, and may do better further south. From the assembly of the 45 remaining accessions, seven were selected in the fall of 1984 for advanced testing. Two of these are PI-numbered material. PI-246734 is from Spain; and PI-316269 was collected in Australia, but formally came from Hungary. PI-316269 was noted for its excellent spread and early spring growth. It stayed greener and free of disease longer into the summer than most other

accessions and put on good fall growth. Three other selections were T-06954, T-06957, and a clonal selection of T-06955. These were provided by the National Plant Materials Center at Beltsville, Maryland. Information on their origin is not known, as of this writing. 'Los Banos', PI-G22523, a strain selected by the California Plant Materials Center, was also in the evaluation, but did not perform well. It had been placed into commercial trade a number of years ago, but was dropped because of difficulty in seed production. It will not be tested any further at Quicksand.

Two other Lotus tenuis collections from naturalized stands in the United States, will be compared with the five selections mentioned above. These are local collections, with some use being made by farmers of the local areas. One is from Garrett County, Maryland, and the other from Verona (Augusta County), Virginia. They have performed well in their respective locations and were compatible with forage management programs in those areas. Both have been around for a number of years. Whether or not they are as equally well adapted in the rest of the Appalachian region is questionable. They did not do as well as expected at Quicksand due to poorer resistance to diseases when compared to the other five selections.

120 introductions of Arrhenatherum elatius and 38 introductions of Dactylis glomerata are still being evaluated for potential forage use and cover on eroding hillside pastures in the region. Selections will be made at the end of 1985.

PI-325489, Trifolium ambiguum, was selected in 1975 from an assembly of 21 T. ambiguum introductions, as the most disease and insect resistant accession at Quicksand. This strong rhizomatous, persistent perennial selection is now being field-tested as a pasture legume. The plant appears to have a wide tolerance to soil drainage conditions and to be adapted to diverse climatic situations. The Quicksand Plant Materials Center produced 100 pounds of PI-325489 seed on $\frac{1}{2}$ -acre in 1984. An additional $\frac{1}{2}$ -acre was seeded in May 1984 for breeder seed production. PI-325489 will be released as a named variety in 1986 or 1987. Research currently under way with PI-325489 include establishment management, yield, and herbicide studies. It is under investigation by at least eight State Agricultural Experiment Station participating in the NE-114 Regional Project in addition to several others in the south. PI-325489, kura clover, appears in the day-length sensitive and, to date, all fall seedings have done very poorly, or have been complete failures. Recommended seeding rate is 8 pounds/acre PLS or 10-12 pounds/acre bulk.

PI-286452, Lespedeza cuneata, which was released as 'Appalow' sericea lespedeza in 1978 by Quicksand, is now becoming available commercially. About 1,200 pounds were produced by a grower in Tennessee in 1984. In 1982 and 1983, about 20 acres were established by seed growers, with another 75 or more being established this past spring. Quicksand produced a little over 2,500 pounds of foundation quality on five acres in 1983. One field exceeded 600 pounds/acre seed production. In addition to being a good plant for critical area stabilization, PI-286452 appears to have potential as a pasture legume, with better animal acceptability because of its finer stem size than 'Interstate' or other tall-growing sericea lespedezas.

PI-78758, Bothriochloa caucasica, has continued to show promise for critical area plantings, especially where summer forage is needed or usable. Though the plant was informally released by Kansas many years ago, seed has not been as available through commercial channels as desired. The plant is beginning to gain wider use and acceptance in the northeastern United States. It will be formally released by Quicksand in 1986 and an effort will be made to promote wider seed production to meet the demand for seed. Seed is presently selling for \$20 to \$30 per PLS pound.

PI-434285, Salix X cottetii, was released for streambank stabilization in 1983 as 'Bankers' dwarf willow. Limited quantities of rooted and unrooted cuttings were available commercially for the first time this past spring. In 1983 and 1984, twenty nurseries had responded to an article in the American Nurseryman Magazine and were provided material to establish foundation cutting blocks.

PI-421739, Castanea pumila, was released in 1983 as 'Golden' chinquapin for wildlife food purposes. Thirty-five nurseries have received from 25 to 100 seedlings each to establish seed orchards. Color foldout brochures were published for both 'Bankers' willow and 'Golden' chinquapin in the fall of 1984.

PI-168939, Quercus acutissima, is a small fruit strain (150 seeds per pound) of sawtooth oak that has wildlife potential in the eastern United States. Because it is capable of acorn production at an early age (8-10 years), and is a high yielder (100-200 pounds/tree at maturity ... 15 years and older), several wildlife agencies have been interested in it. PI-168939 will be released as 'Gobbler' sawtooth oak this fall by the Quicksand, Kentucky, and Coffeerville, Mississippi,

Plant Materials Centers. About 25,000 seedlings of PI-168939 were produced by the Kentucky State Division of Forestry in 1984. A Technical Report, covering work conducted at Quicksand from 1980 through 1983, was published in 1984.

Publications: 3
Cultivar releases: None

Accession user: Coffeetown Plant Materials Center
Address: Route 3, Box 215-A
Coffeetown, Mississippi 38922
Nature of research: Development of conservation plants for MLRA's 118, 131, 133, 134, and 135.
Progress to date: PI-163453, Glycine soja, has been the best accession tested for wildlife food and it has good potential as a warm season cover - green manure crop. It is a better seed producer and has better reseeding qualities than does 'Bobwhite.' Plans to release this accession, as a variety, are underway.

PI-220584, Calamagrostis pseudophragmites, is in the field-testing program. It has good erosion control potential and can be propagated year-round vegetatively. Tests relating to fertilizer requirements and clipping recovery are underway.

Publications:
Cultivar releases:

Accession user: East Texas Plant Materials Center
Address: Agriculture Building, SFASU
P.O. Box 13000, SFA Station
Nacogdoches, Texas 75962
Nature of research: Development of conservation plants for east Texas.
Progress to date: About 45 warm season grasses and legumes of foreign origin are being evaluated for adaptation to east Texas climatic conditions. This Center is just beginning to evaluate plant materials and, as a first step, many named varieties with commercial availability were

planted to determine their usefulness to east Texas conditions.

Publications: None

Cultivar releases: None

Accession user: Knox City Plant Materials Center

Address: Route 1, Box 155
Knox City, Texas 79529

Nature of research: Development of conservation plants for MLRA's 70, 77, 78, 80, 81, 82, 84, and 85.

Progress to date: Windbreak evaluations are continuing at Knox City and four off-Center sites where a number of introduced Afghanistan pine, scotch pine, and one Austrian pine are being rated. Selections have not been made to date.

Introduced warm season grasses of a number of genera are being evaluated from range, pasture, and critical area stabilization purposes. PI-469254, Eragrostis superba, may be released for use in central Texas for forage and critical area plantings.

Publications: None

Cultivar releases: None

Accession user: South Texas Plant Materials Center

Address: Caesar Kleberg Wildlife Research Institute
Texas A&I University
P.O. Box 218
Kingsville, Texas 78363

Nature of research: Development of wildlife and rangeland plants for south Texas.

Progress to date: Warm season grasses and legumes of foreign origin are being evaluated for adaptation. No selections have been made. In addition, 'Nueces' buffelgrass and wilman lovegrass were planted to act as base grasses and different cool and warm season forbs and legumes will be interseeded.

'Corto', Australian saltbush Atriplex semibaccata, PI-432439, was planted for seed production and will be a multiple use project in that seed will be used for revegetating saline areas while the stand will be studied for wildlife useage.

Publications: None

Cultivar releases: None

Accession user: Hawaii Plant Materials Center

Address: P.O. Box 236
Hoolehua, Hawaii 96729

Nature of research: Development of new conservation plants for Hawaii.

Progress to date: PI-490365, Erythrina variegata, was released as 'Tropic Coral' in 1985 by SCS, the University of Hawaii, and the Honolulu Botanical Gardens. 'Tropic Coral' is a leguminous tree with an erect or columnar growth form and was tested and released primarily for windbreaks. T-37919, Desmodium heterophyllum, and T-37926, Desmodium ovalifolium, show promise as ground covers in orchards and other erosion-prone areas. T-37869, Pennisetum purpureum, shows promise for windbreak use.

Publications: 2

Cultivar releases: 1

The National Plant Germplasm System (NPGS)

Report of Acting Assistant to Deputy Administrator to Regional Technical Committees

July 1985

Charles F. Murphy

This report is being submitted after the 1985 meetings of IR-1, NC-7, and W-6. More significantly, it is being submitted just after the retirement of Quentin Jones. Quentin and Charlie Lewis visualized the kind of structured germplasm system which has emerged. It would be difficult to overstate Quentin's personal role in the emergence of the NPGS as a highly respected entity representing one of the major thrusts of our Government. He is the first though, to recognize the importance of the System's components and, in particular, the Regional Technical Committees.

The brief comments which follow address some of the currently important issues and activities within the NPGS.

Germplasm Budgets

The two attachments summarize germplasm support (through ARS) since 1980. The 1986 budget has not been finalized by Congress, but the Administration budget called for a \$1.2 million increase for plant germplasm and a shift of \$1.0 million for clonal repository operation from CSRS to ARS. It is not anticipated that the proposed shift of clonal money would have any impact on the high level of State/Federal cooperation essential to success of the clonal concept.

Working Components of NPGS

The biggest news relating to NPGS working components is the general recognition that NSSL is rapidly reaching its capacity. Serious efforts are now underway to obtain budgetary authorization for a major addition/expansion of NSSL.

Advisory Components of NPGS

There are three major advisory components within the NPGS. The National Plant Genetic Resources Board (NPGRB) advises the Secretary of Agriculture on broad policy matters. The National Plant Germplasm Committee (NPGC) offers advice, through the National Coordinator, to the working components of the System. And the Crop Advisory Committees (CAC's) offer technical, crop specific, advice to the entire system.

The importance of the CAC's quickly becomes apparent to all who become involved in the NPGS and that realization is sometimes followed by an unrestrainable urge to influence their operation. Therefore, both the NPGRB and the NPGC have devoted appreciable time to discussions of CAC guidelines, accountability, etc. In the meantime, the CAC's have been active and have been maturing. They will indeed have an increasingly significant input to the NPGS.

International Germplasm Activities

The last 2 years have been a period of turmoil on the international scene. The International Board for Plant Genetic Resources (IBPGR) (now 10 years old) has grown into a respected and effective organization of worldwide importance to the preservation and utilization of plant germplasm. At the same time, it has found itself at the center of bitter controversies in FAO. I would judge IPBGR to be an innocent victim of a series of conflicts including FAO vs. CGIAR, developed vs. developing countries, Marxist vs. capitalistic philosophies, and finally, internal FAO politics. The end result is that IPBGR has been distracted from its technical mission, but its chances for continued growth and influence are still good. There is real doubt, however, that IPBGR can continue to function effectively in FAO.

2 Enclosures:

Recap of ARS Funding for Plant Germplasm, 1980 through 1985
Use of Germplasm Funds by Function

Recap of ARS Funding for Plant Germplasm
1980 through 1985

1980 - \$ 8,242,000

1981 - \$ 8,642,000 (\$ 400,000 increase)

1982 - \$ 9,302,000 (\$ 660,000 increase)

1983 - \$13,102,000 (\$3,800,000 increase)

1984 - \$13,937,000 (\$ 835,000 increase)

1985 - \$13,937,000 (no increase)

Budget has increased \$5,695,000 from 1980 through 1985 for an annual average increase over the last 5 years of \$1,139,000.

The present annual budget of \$13,937,000 includes approximately \$2,000,000 of narcotics and new crops research funds; so our base funding of plant germplasm per se stands right at \$12,000,000.

Our long-range plan for plant germplasm reviewed by a number of outside groups, called for an annual budget of \$40 million by the year 1997, not including one-time construction and procurement costs. The projected budget called for \$23.5 million by 1985. We are approximately \$11.5 million behind schedule.

7/9/85

Use of Germplasm Funds
by Function
(\$000)

	<u>Acq.</u>	<u>Maint.</u>	<u>Eval.</u>	<u>Enhanc.</u>	<u>Info Mgmt.</u>	<u>Res. on Gen. Div.</u>	<u>Total</u>
1980	242	5,500			550		6,242
1981	302	5,500	240		550	50	6,642
1982	342	5,500	420	240	700	100	7,302
1983	687	6,030	2,020	965	900	500	11,102
1984	687	6,160	2,490	1,165	900	535	11,937
1985	687	6,160	2,490	1,165	900	535	11,937

7/9/85

S-9 TECHNICAL COMMITTEE REPORT

JULY 1985

Agency: Tropical Agriculture Research Station
Submitted by: Francisco Vázquez
Address: U.S. Department of Agriculture, Science and Education,
Agricultural Research Service, Tropical Agriculture Research
Station, P.O. Box 70, Mayaguez, Puerto Rico 00709

Page 1 of 5

* * * * *

Accession User: A. Sotomayor-Ríos
Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709
Nature of Research: Evaluation of germplasm of 3 varieties of Stylosanthes guianensis (Aubl.) Sw. to determine dry forage yield, protein content, in vitro dry matter digestibility, and presence of procyanidins.
Progress to Date: Plantings were made at Mayaguez and Isabela last fall at two population densities. This spring, cuttings were made at 20-day intervals at each site. The wider spacing (12" vs. 6") gave higher average yield for all varieties at both sites. Isabela over-all average yield for all varieties was 100% higher than that of Mayaguez.

Variety Endeavour had the highest yield for the 3 cuttings at Isabela. The presence of procyanidins in the 3 varieties was confirmed.

Publications: Work and data for the project will be included in a master's thesis of a graduate student in agronomy.

Accession User: A. Sotomayor-Ríos
Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709
Nature of Research: Evaluation of photoperiod sensitive and photoperiod insensitive forage sorghums (Sorghum bicolor (L.) Moench) germplasm.
Progress to Date: Photoperiod sensitive sorghums (ATx623 x Millo Blanco) dry forage yield fluctuated from approximately 3 t ha⁻¹ per harvest from December and January plantings to 7.68 t ha⁻¹ per harvest at June planting. The photoperiod insensitive hybrid dry forage yield (ATx623 x Greenleaf) on the other hand had nearly constant production (3-4 t ha⁻¹ per harvest).
Publications: Agronomic performance of photoperiod sensitive and photoperiod insensitive forage sorghums to daylength in Puerto Rico. Abstract: PCCMCA Annual Meeting, San Pedro Sula, Honduras, April, 1985.
Cultivar Releases: None.

Accession User: A. Sotomayor-Ríos
Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709
Nature of Research: Evaluation of grain sorghum (Sorghum bicolor (L.) Moench) for yield.
Progress to Date: Five sorghum hybrids were evaluated at five N levels. Grain and dry forage yield increased sharply with N fertilization especially with the initial application of 40 kg ha⁻¹. Outstanding

grain yields of over 5.6 t ha⁻¹ resulted from the application of 120 kg ha⁻¹ N.

Publications: None.

Cultivar Releases: None.

Accession User: A. Sotomayor-Ríos

Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709

Nature of Research: Evaluation of grain sorghums (Sorghum bicolor (L.) Moench) for yield.

Progress to Date: Seven grain sorghums were evaluated for yield and other agronomic characters at three locations. The most outstanding hybrid produced over 6 t ha⁻¹ of grain in 110 days growth.

Publications: None.

Cultivar Releases: None.

Accession User: A. Sotomayor-Ríos

Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709

Nature of Research: Increase and evaluation of sorghum collections.

Progress to Date: The Ethiopian Collection consisting of 1500 items was planted, selfed and classified as part of Mr. Gilbert Lovell's germ-plasm program.

Publications: None.

Cultivar Releases: None.

Accession User: A. Sotomayor-Ríos

Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709

Nature of Research: Evaluation of forage sorghums (Sorghum bicolor (L.) Moench).

Progress to Date: Two commercial forage sorghum hybrids (ATx623 x Greenleaf and DeKalb FS25A) are being evaluated for yield, crude protein content (CPC), in vitro dry matter digestibility (IVDMD), and hydrocyanic acid potential (HCN-p) at five harvest intervals at two locations. Dry forage yield (DFY) increased with the harvest intervals but CPC and IVDMD decreased. ATx623 x Greenleaf produced over 4.5 t ha⁻¹ of DFY, CPC of 11% and IVDMD over 55% in a 65-day harvest interval.

Publications: None.

Cultivar Releases: None.

Accession User: A. Sotomayor-Ríos

Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709

Nature of Research: Evaluation of sorghum (Sorghum bicolor (L.) Moench) germplasm for yield and other agronomic characters.

Progress to Date: Eight sorghum genotypes were evaluated during four consecutive 60-day cutting intervals at two locations. Outstanding single crosses produced over 27 t ha⁻¹ of dry forage yield in 240 days growth with IVDMD values of over 58%.

Publications: Agronomic comparison and in vitro dry matter digestibility of eight sorghums at two locations in Puerto Rico. Jour. Agric. Univ. P. R. (submitted for publication).

Cultivar Releases: None.

Accession User: A. Sotomayor-Ríos

Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709

Nature of Research: Evaluation of corn (Zea mays).

Progress to Date: Two field corn hybrids were evaluated at two planting dates and at five N levels. Grain yield increased sharply with N fertilization, especially with the initial level of 40 kg ha⁻¹. Outstanding grain yields of over 6 t ha⁻¹ resulted from the application of 120 kg ha⁻¹ N.

Publications: Response of two corn hybrids to five N levels at two planting dates in Puerto Rico. Abstract: PCCMCA Annual Meeting, San Pedro Sula, Honduras, April, 1985.

Cultivar Releases: None.

Accession User: L. Telek

Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709

Nature of Research: Evaluation of 25 lines of Psophocarpus tetragonolobus (Winged bean) introduced from the Department of Agriculture, Kuala Lumpur, Malaysia.

Progress to Date: The winged beans grown at Isabela were analyzed for crude protein, oil, and procyanidin content.

Publications: In progress.

Cultivar Releases: None.

Accession User: G. F. Freytag

Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709

Nature of Research: Tropical bean germplasm and genetic stocks.

Progress to Date: Seed stocks of wild bean species have been acquired through 2 plant exploration trips and from other germplasm banks and scientists. These collections were planted during the last 2 years and increased seed provided to USDA, RPIS-Pullman. We have 373 accessions of which 112 belonging to 12 species have been increased and are in the RPIS-Pullman collections. This compares with 8 species listed in the 1978 Bean Inventory. There are about 60 wild bean species which need to be evaluated. We have assisted in the planning of two trips for wild germplasm to take place this calendar year: Dr. G. Nabhan, Univ. of Ariz., will be collecting species in the Galapagos; and Dr. D. Debouck, IBPGR, based in CIAT, Cali, Colombia, will collect in Mexico and Guatemala.

Publications: Xerox copy of wild bean accessions at TARS are available on request.

Cultivar Releases: None.

Accession User: F. W. Martin

Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709

Nature of Research: Development of tropical, stress resistant sweet potatoes.

Progress to Date: Sweet potato improvement for the tropics has been based on the use of germplasm from foreign sources. The best germplasm in terms of yield potentials and frequency of economically important characteristics was introduced from a breeding program in the Solomon Islands and the second best from West Africa. Germplasm from the United States is less variable, and less useful for the tropics.

Publications: Martin, F. W. and Rodríguez, E. 1985. Preference for color, sweetness and mouthfeel of sweet potato in Puerto Rico. Jour. Agric. Univ. P. R. 69:99-106.

Martin, F. W. 1985. Differences among sweet potatoes with response to shading. Tropical Agriculture (Trinidad) 62:161-165.

Cultivar Releases: None.

Accession User: F. Vázquez

Address: Tropical Agriculture Research Station, P.O. Box 70,
Mayaguez, Puerto Rico 00709

Nature of Research: Maintenance and evaluation of Tropical Plant Germplasm.

Progress to Date:

Plant Introductions:

Theobroma cacao - Budwood from 64 clones of cacao introduced from the Miami Subtropical Horticulture Station and Glenn Dale were grafted on Amelonado seedlings. Three plants of each clone will be transferred to the permanent field collection. Five hybrids (12 seedlings of each one) supposedly resistant to Monilia rozeri were also introduced from the Miami Station.

Passiflora edulis - Seeds of two hybrids of passion fruit were planted for evaluation at the Isabela Experiment Farm.

Other additions to the germplasm collections:

Litchi chinensis cv. Bengal (PI-094066)

Cynodon spp. - Tifton 79-16

Averrhoa carambola (two cultivars)

Annona sp. (two cultivars)

Rubus sp.

Spathodea campanulata - (Yellow African tulip tree)

Nephelium lappaceum (four cultivars)

Cuphea wrightii

Germplasm Collections:

Fruit, trees, vines, and shrubs - Over 380 species of tropical and subtropical fruits and nuts, ornamental shrubs, and trees are maintained at the TARS grounds.

Dioscorea spp. - Eleven selections of Dioscorea alata, 5 selections of D. esculenta, and 1 of D. bulbifera have been grown in replicated plots in two different locations (Mayaguez and Isabela) for evaluation. Requests for plant material were processed during the months of February and March, 1985.

Musa spp. - Forty four (44) banana and 24 plantain selections were planted for evaluation at TARS.

Legume seed - Seeds of various species of legumes are available in small amounts for distribution:

Canavalia ensiformis - Jack bean
Lablab purpureus - (Dolichos lablab) - Hyacinth bean
Pachyrhizus erosus - Yam bean
Phaseolus vulgaris - Common bean
Psophocarpus tetragonolobus - Winged bean
Pueraria lobata - Kudzu
Vigna unguiculata - Cowpea

Theobroma cacao - In cooperation with the American Cocoa Research Institute (ACRI), TARS maintains a disease-free collection of selected cacao clones which serve as a permanent source of budwood for worldwide distribution. The collection consists of 372 clones with three mature plants representing each clone. The cacao collection provides plant material for continued breeding research, serving also as a source of moderate or large-scale distribution to scientists, cacao breeders, and institutions throughout the world. New clones are added to the collection once these are grafted and achieve the proper size for transplanting.

Passiflora edulis - The five passion fruit hybrids introduced from Miami in 1984 are still under evaluation at three locations in Puerto Rico. Hybrid M-29416 (yellow fruit) continues to show promise due to its high yields and fruit quality. Hybrid M-30140 (purple fruit) also shows promise as a year-round market fresh fruit. Hybrid M-30144 was discarded due to foliar diseases and possible virus infections. Long term research is suggested to evaluate yields, diseases, fruit quality, and nutritional value.

Cuphea wrightii - Seeds of this cultivar were received from the U.S. Water Conservatory Laboratory in Phoenix, Arizona for adaptation trials. Seed harvested will be returned to Phoenix for evaluation on seed quality and dormancy.

Cynodon spp. - Tifton 79-16, introduced from Georgia in 1984, is under evaluation at TARS.

Publications: Soderholm, P. K., and F. Vázquez. Cacao Germ Plasm Collections at Miami, Florida and Mayaguez, Puerto Rico, USA. Proceedings of the 9th International Cocoa Research Conference - 1984.

Germplasm Distribution:

TARS is directed to answering local, national and foreign needs for plant germplasm. Requests for vegetable seeds, tubers, yams, cuttings, trees, fruits, nuts, etc., have been handled throughout Puerto Rico, Virgin Islands, Continental United States, and foreign countries. A summary of these distributions follows:

<u>Germplasm</u>	<u>Packets</u>	<u>No. of persons</u>	<u>Countries</u>
Vegetable seeds	67	31	18
Tubers, yams, cuttings, etc.	457	43	21
Trees, fruits, nuts	79	15	6
Other seeds	130	33	23
Cacao pods	34	5	1
Cacao budwood	50	5	4

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S-9 TECHNICAL COMMITTEE REPORT

Agency: U. S. Department of Agriculture, Subtropical Horticulture
Research Station

Submitted by: R. J. Knight, Jr.
Address: 13601 Old Cutler Road, Miami, Florida 33158
Page 1 of 4

Accession Users: R. J. Knight, Jr and P. K. Soderholm (retired 1 July 1985).
Address: U. S. Department of Agriculture, Subtropical Horticulture Research
Station, 13601 Old Cutler Road, Miami, Florida 33158.
Nature of Research: Introduction, preservation and evaluation of tropical
and subtropical plants.

Progress to date:

During the year ending May 31, 1985, 2,875 distributions were made, 81% of which went to recipients in the United States (Table 1). One major distribution consisting of 36 species was made during July, 1984. A low-chilling thornless blackberry from Brazil (Rubus cv. Ebano, M-28321, developed by an EMBRAPA researcher in Rio Grande do Sul state, is under test in warm areas.

A program of supplying latex from Hevea brasiliensis to a chemist at Purdue University for research on the in-vitro biosynthesis of natural rubber and other hydrocarbon polymers began in 1984, and was expanded in 1985.

47 clones of Theobroma cacao were sent to the Tropical Agricultural Research Station in Mayaguez, PR, where they are grown in the open. We continue with T.A.R.S. to maintain jointly a cacao germplasm collection of 459 different clones, of which 220 are currently kept at USDA/Miami (most in quarantine). One clone here developed Green Point Gall (Calonectria rigidiuscula) and was destroyed.

One passion fruit selection bred at this station and tested in Puerto Rico, M-30709, has a compact growth habit that could eliminate heavy trellises, a major cost item in commercial production of passion fruit. Productivity in sites other than the original plot is to be determined.

Another generation of amphiploid hybrid seedlings of maypop (Passiflora incarnata) x purple and yellow passion fruits (P. edulis forms) was established for evaluation. These should combine the first parent's ability to survive winter in the Southeastern States and the second parents' improved fruit quality. They segregate for fruit characters. All the hybrids are self-incompatible and need cross-pollination to fruit well. Some have enhanced fertility over the previous generation which came from crossing colchicine-treated hybrids.

The 'Demak' carambola (Averrhoa carambola, P.I. 354130) was found to bear a firm, thick-ribbed fruit that appears more resistant to shipping stress than cultivars currently grown. Seedlings of 'Fwangtung' (P.I. 479214, collected in Thailand in 1973) x 'Golden Star' (the most important commercial cultivar at present) show improved flavors. Evaluation toward superior cultivars continues. The carambola is a tropical fruit, star-shaped in cross-section, that is easily grown in Florida and similar warm areas. It is currently increasing in popularity, and production is expanding.

Responsibility for the National Avocado Clonal Repository was assigned to Miami/Mayaguez in a communication received from the National Plant Germplasm Committee in May, 1985.

Publications:

Howard, D. F. and Kenney, P. 1985. Infestation of Averrhoa carambola fruits by laboratory-reared Caribbean fruit flies (Diptera: Tephritidae): interactive effects of fruit ripeness and cultivar. J. Econ. Ent. 79 (In press).

Knight, R. J., Jr., Lamberts, M., and Bunch, J. S. 1984. World and local importance of some tropical fruit crops grown in Florida. Proc. Fla. State Hort. Soc. 97: 351-354.

Knight, R. J., Jr. 1985. Criteria for evaluating important fruit characters in mango (Mangifera indica) germplasm. Proc. Tropical Region Amer. Soc. Hort. Sci. 28 (In press).

Table 1. Distributions of Plant Introductions from USDA Subtropical Horticulture Research Station, Miami, Florida from June 1, 1984 thru May 31, 1985

<u>Destination</u>	<u>Number</u>	<u>Percent of total</u>
Florida	1,882	65.46
California	57	1.98
Rest of Continental U.S. and Canada	407	14.16
Caribbean Region ^{z/}	121	4.21
Mexico and Central America	35	1.22
South America	48	1.67
Europe	116	4.03
Asia	34	1.18
Africa	62	2.16
Pacific Basin ^{y/}	<u>113</u>	<u>3.93</u>
Total:	2,875	100.00

^{z/} Includes Puerto Rico and the Virgin Islands.

^{y/} Includes Australia, Malaysia, Guam, Hawaii, New Zealand, the Phillippines and other Pacific Islands.

Table 2. Germplasm Distribution Material from USDA Subtropical Horticulture Research Station, Miami, Florida from June 1, 1984 thru May 31, 1985

<u>Material</u>	<u>Number of distributions</u>
Miscellaneous ornamentals and shade trees (includes orchids and ferns)	1,703
Tropical and subtropical fruits	810
Cacao	186
Coffee	12
Medicinal, chemurgic, tropical vegetables, others ^{z/}	<u>164</u>
Total:	2,875

^{z/} Includes edible palms, nuts, spices, rubber (incl. latex), sugarcane, beverages other than cacao and coffee, fuel trees.

Table 3. Germplasm Receipts at USDA Subtropical Horticulture Research Station, Miami, Florida from June 1, 1984 thru May 31, 1985

<u>Material</u>	<u>Number of introductions received</u>
Miscellaneous ornamentals and shade trees (includes orchids and ferns)	59
Tropical and subtropical fruits	136
Cacao	113
Coffee	1
Medicinal, chemurgic, tropical vegetables, others ^{z/}	<u>18</u>
Total:	327

^{z/} Includes edible palms, nuts, spices.

REPORT OF THE
GERMPLASM RESOURCES LABORATORY
TO THE
REGIONAL TECHNICAL COMMITTEES ON PLANT GERMPLASM

June 1985

"We should think of our resources
not as having been left to us by
our parents, but as having been
loaned to us by our children."

Kenyan Proverb

LAB CHIEF'S OFFICE

J. A. Duke

At the request of administration, I terminated my long standing CRIS project, Economic Botany of World's Plant Resources. The new CRIS project, Ecogeographic Distribution of Wheat and Wild Relatives on the Anatolian Plateau, was finally approved May 2, 1985. Culminating the Economic Botany project, several books or their drafts were finalized for three different publishers. Apparently a new precedent was set in letting royalties revert to the USDA in the form of books for distribution by the USDA. Previously, royalties had been waived for such public domain documents. Approval was obtained to publish, as an Encyclopedia of Economic Plants, the hundreds of information summaries accumulated over the years. Negotiations were begun with two proposed publishers. Shifting to a new CRIS, we have begun to accumulate ecogeographic data on the Middle East. Under cooperative agreement with Oregon State University, we were represented by Harvard's Calvin Sperling, who studied Turkish Triticum and Aegilops in the herbarium in Edinburg, and visited with our ecogeographic collaborators in Israel. During his first field year, Sperling prepared dozens of Turkish minifloras, each miniflora including: (1) citation of a recently annotated Aegilops collection; (2) location of Aegilops collection and miniflora; (3) altitude; (4) habitat; (5) grid square location used in The Flora of Turkey; (6) collection date; (7) nearest meteorological data point in AEGIS, and (8) associated species as best determined. In some cases a climatic data point is not given when a miniflora locality is too distant from a known meteorological station to accurately represent local flora. We are attempting to relate the occurrences of the wild relatives of wheat with natural vegetation, e.g. oak chaparral and with climatic parameters, in the Middle East. As of this writing (June 1985), Mr. Sperling is working with Drs. Didar Eser and Osman Tosun at the University of Ankara, preparing for an expedition to eastern Turkey. Back in the office, we are assembling data systematically on the wild species of Triticum, Aegilops, and Amblyopyrum.

We were pleased to learn from the Plant Exploration and Taxonomy Laboratory that funds have been requested to revise Hitchcock's "Manual of the Grasses of the United States" (AH 200, 1951). Three taxonomic botanists, hired by cooperative agreement with the University of Maryland, have been at work since September 1, 1984 on updating their nomenclature file containing 36,000 scientific names of vascular plants introduced by USDA. These data will go into the GRIN database.

ECOGEOGRAPHIC INVESTIGATIONS
USING ARTIFICIAL INTELLIGENCE AND
ADVANCED ANALYTICAL TECHNIQUES

A. A. Atchley

During the past year, these investigations departed from pre-existing methodology while focussing on wheat and its wild relatives. This is in accordance with the new CRIS structure; ideas from a draft document originated by the present author in collaboration with Dr. Weldon Lodwick, Professor of Mathematics, University of Colorado/Denver, have been incorporated into the current CRIS draft.

Computer graphics and statistical work have been explored in an effort to improve search strategies for germplasm collection. The statistics sources most recently reviewed in the literature with specific reference to germplasm collection are over twenty years old and do not mention techniques which seem clearly relevant.

Beyond this, the present author and his support staff have begun work aimed at construction of an expert system, or other applications of Artificial Intelligence, to the question of thoroughness in germplasm collection. The techniques of Artificial Intelligence have been applied successfully to "search problems" (e.g., prospecting for mineral deposits) analogous to those of the National Germplasm Program. A Symbolics™ computer programmable in one of the languages underpinning Artificial Intelligence has been made available to a number of ARS scientists on a trial basis. We hope to produce an application of its resources to the problem of wheat germplasm collection, mindful that this model computer was designed for only one or two operators per machine. Training was funded to facilitate this application.

EVALUATION OF SMALL GRAIN GERmplasm

L. W. Briggles

Systematic evaluation of accessions in the USDA-ARS National Small Grain Collection (NSGC) was initiated in 1983. Funding was obtained specifically for this purpose.

A set of descriptors appropriate for each of the crop species - wheat, barley, oats, and rice - has been determined in collaboration with the appropriate Crop Advisory Committees (CAC's).

A total of 5,000 wheats and 2,500 oats were grown for evaluation at Aberdeen, Idaho, in 1983. An additional 5,000 wheats, 2,500 oats, and 2,000 barleys were evaluated at Aberdeen in 1984. Field data were recorded on such descriptors as number of days from planting to anthesis, plant height, spike (or panicle) type, spike (or panicle) density, straw lodging, straw breakage, awn and glume characteristics. Spikes or panicles were collected from each accession at maturity. Seed and more precise spike (or panicle) data on the 1983 material were obtained this past winter in the laboratory. Each row was harvested and the grain weight recorded. Grain was returned to Beltsville for storage and further evaluation (disease and insect resistance, quality factors, etc.). Similarly, seed and spike (or panicle) data on the 1984 material will be obtained during the 1984-85 winter.

Approximately 2,000 additional wheats were evaluated at Mesa, Arizona in 1983 and another 2,000 at Maricopa, Arizona in 1984, and handled in much the same manner as that grown in Idaho, except that laboratory data have not been obtained.

A total of 7,500 small grain accessions will be similarly evaluated at Aberdeen, Idaho as well as approximately 3,000 additional wheats at Maricopa, Arizona in 1985.

Evaluation for disease and insect resistance was initiated during 1983, expanded in 1984, and further expansion is planned for 1985. Growth habit (winter or spring type) determination is also underway. Locations for these evaluations are listed below:

1983		1984	
St. Paul, MN	Wheat & Oat Stem Rust	St. Paul, MN	Wheat & Oat Stem Rust
Manhattan, KS	Wheat Leaf Rust	Manhattan, KS	Wheat Leaf Rust
Ames, IA	Oat Crown Rust	Pullman, WA	Wheat Stripe Rust
Urbana, IL	Oat BYDV	Ames, IA	Oat Crown Rust
Lafayette, IN	Wheat Hessian Fly	Urbana, IL	Oat BYDV
Bozeman, MT	Wheat Growth Habit	Lafayette, IN	Wheat Hessian Fly
		Corvallis, OR	Wheat Common and Dwarf Smut
		Bozeman, MT	Barley & Wheat Growth Habit

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St. Paul, MN	Wheat and Oat Stem Rust
Manhattan, KS	Wheat Leaf Rust
Pullman, WA	Wheat Stripe Rust
Ames, IA	Oat Crown Rust
Urbana, IL	Oat BYDV
Lafayette, IN	Wheat Hessian Fly
Corvallis, OR	Wheat Common and Dwarf Smut
Bozeman, MT	Barley, Oat, and Wheat Growth Habit
Davis, CA	Wheat, Barley, and Oat BYDV
Fargo, ND	Barley Net Blotch and Spot Blotch

An extremely valuable part of the NSGC is that of the related species. Some are misclassified. About 250 Aegilops accessions were grown and classified in the greenhouse at Columbia, Missouri, in 1983-84. Six hundred accessions of the Triticum species were grown in the greenhouse at Beltsville in 1983-84 for classification and seed increase. We expect to process another 1,200 at Beltsville in 1985. Chromosome counts on 250 particularly perplexing accessions are planned at Columbia, Missouri, in 1985.

NEW CROPS RESEARCH

T. A. Campbell

Sodium azide and ethyl methane sulfonate, when applied to non-germinating seeds of Cuphea toluhana and C. wrightii, did not produce any macromutations in the M_2 generations. In a second experiment, there was no significant increase in damage when germinating seeds were treated with the mutagens; the M_2 generation will be evaluated in the field in 1985. Anthers from C. toluhana, C. wrightii, C. liminuligera, and C. lutea are being cultured; haploid callus tissue will be treated with mutagens. Methods for culturing protoplasts of these species are also being developed.

In an in situ evaluation of Asclepias syriaca, leaf and stem polyphenol+oil (P+O) were highest at the mature seed stage. Leaf polymeric hydrocarbon (PH) was highest at the mature seed stage, while stem PH reached a maximum at the full-bud stage. Rhus glabra leaf P+O was generally highest at the full flower stage, while stem P+O was highest at the seed set stage. A temperature of 35°C stimulated growth of Asclepias syriaca under short days but repressed growth under long days. Phytolacca americana dry matter were obtained in Experiment, Georgia and yields of 3.1 Mg ha⁻¹ (in 1982) and 5.8 Mg ha⁻¹ (in 1983) were obtained in Beltsville, Maryland. At Beltsville, Maryland, second year Rhus glabra yields from two harvests were highest at population of 36,000 plants ha⁻¹ [2.66 mg ha⁻¹ (dry weight) leaves and 0.98 mg ha⁻¹ stems].

Recurrent selection for seedling vigor in Stokesia laevis in the growth chamber resulted in an increased rate of emergence in the field and a better final stand. Mature Stokes aster plants were tolerant of chilling based on measurements of chlorophyll delayed light emission and fluorescence.

Approval for the release of the Crambe (Crambe abyssinica Hochst. ex R.E. Fries) cultivars BelAnn and BelEnzian was requested. In 1984, BelAnn or BelEnzian produced yields greater than those of 'Indy', or 'Meyer', or 'Prophet' at Ames, Iowa, and Prosser, Washington. In 1983 trials, both had higher % oil than Indy and Meyer and higher % erucic acid (22:1) than Indy, Meyer, or Prophet. Approval for the release of the Crambe lines C-22, C-29, and C-37 Crambe was also requested. They were developed at Beltsville, Maryland as high yielding sources of erucic acid for the chemical industry.

PATHOLOGY RESEARCH

M. J. O'Brien

In our update of Agriculture Handbook 165, we searched: "Plant Disease Reporter" (23 vols. searched, 9 remain), "Phytopathology" (18 vols. searched, 12 remain), "Review of Applied Mycology" (19 vols. searched, 11 remain), "Mycologia" (21 vols. searched, 9 remain), and "Journal of Nematology" (1 vol. searched, 15 remain). A 450-page computer printout of smuts, rusts, and polypores from the herbarium records of the Mycology Laboratory was received.

We reviewed, marked, and filed the following State Extension Reports: California (Virus Index), Utah Plant Diseases, Iowa Plant Diseases, New Hampshire, and Index of Plant Diseases in Florida. Three check lists were completed: South Dakota Diseases of Grasses and Cereals, South Dakota Diseases of Non-grass Plants, and Arkansas Smut Fungi List. The Georgia State Extension Report (massive Plant Clinic Reports for 1975 through 1981) remains to be completed.

We were unsuccessful in getting Cercospora beticola perfect state on substrate of sterilized sugarbeet when subjected to 14 separate light regimes at constant temperature of 21°C. The perfect state experiment is being repeated using sterilized apple twigs in 14 slightly different light regimes. Several commercial varieties of sugarbeet which are to be used for inoculation trials of Cercospora are currently growing in the greenhouse. Several Alternaria-resistant P.I.'s of eggplant and Crambe are to be grown for seed increase in the greenhouse this summer. Cultures in the lab are regularly recultured to keep them in the sporulating form, rather than allowing them to progress to the mycelial state.

NATIONAL SMALL GRAIN COLLECTION (NSGC)

D. H. Smith, Jr.

The numbers of accessions currently held in the seven different genera making up the collection are shown below.

1984 Totals in the NSGC	
Wheat	40,068
Barley	25,382
Rice	20,021
Oats	19,726
Rye	2,307
Triticale	928
<u>Aegilops</u>	574
 TOTAL	 109,006

The following table details distribution activities of the NSGC. Numbers include seed packets used for evaluation and those sent to domestic and foreign requestors.

Distributions from the National Small Grain Collection in 1984

<u>CROP</u>	<u>TOTAL</u>
Wheat	129,352
Barley	19,189
Oats	38,037
Rye	29
Rice	4,186
<u>Aegilops</u>	269
Triticale	82
 TOTAL	 191,144

PLANT INTRODUCTION AND EXCHANGE

George A. White

The Plant Introduction Office (PIO), as usual, had a very busy year in 1984, and 1985 shapes up as more of the same with travel, meetings, extensive interactions with GRIN, turnover of support personnel, etc.

Exchanges during 1984 - A total of 111,122 items were sent to 119 countries in 2096 shipments. Of these, cereal nurseries accounted for 48,118 items. The most significant impediment to exchanges proved to be our inability to meet many of the importing countries' quarantine requirements.

PI documentation - Corn and sorghum made up about 65% of the 11,031 PI numbers assigned. Some of the more notable groups of PIs follow:

CROPS	SOURCE/ORIGIN, OTHER INFORMATION	PI NUMBERS
<u>1984</u>		
<u>Amaranthus</u> spp.	Peru Dr. Sumar's collection, Cusco. Mostly <u>A. caudatus</u> , grain type	490663-490751
<u>Zea</u>	Mexico CIMMYT - deposited at NSSL	483470-485519 487636-489684
	Bolivia Cooperation of IBPGR & Centro de Pairumani	486430-487193
	Argentina Cooperation of IBPGR & INTA, Pergamino	491674-493095
<u>Vigna</u> (cowpea)	Botswana de Mooy collection	491443-491504
<u>Sesamum</u>	Thailand, Korea, Sudan, India Bedigian collection, Univ. of Illinois	490024-490272
<u>Lactuca</u> , other species	Turkey, Greece Whitaker/Provvidenti 1982 collection	490992-491263
<u>Sorghum bicolor</u>	Yemen Voigt collection	485721-486126
<u>1985</u>		
<u>Astragalus cicer</u> , <u>Trifolium</u> spp., others	Romania Rumbaugh/Taylor collection, 136 accessions, 14 <u>Trifolium</u> species	494615-494750

<u>Eragrostis tef</u> (teff)	Ethiopia Leese and Debre Zeit Station collections	494188-494495
<u>Helianthus</u> spp. (wild)	United States Sailer collection	494566-494614
<u>Medicago</u> spp. (annuals)	Canada K. A. Lesin's collection	495165-495593
<u>Sorghum bicolor</u>	Yemen Voigt collection	495517-496250

Over 16,000 additional samples were received from foreign sources. Many of those will be returned to PIO for documentation after identification, organization, quarantine and/or establishment. USDA Plant Inventory No. 191 for 1983 was published; No. 192 for 1984 was submitted in early April for publication. In cooperation with GRIN and PE&TL, the number of scientific names in the database was expanded from 6000 to 7200. An additional 600 names have been added through May 1985. Reidentification report No. 62 covering 1980-1983 was issued. Considerable effort has been put into the GRIN enhancements including redesign of the PI record format and PI data entry procedures.

AID project - Through the Plant and Seed Materials Project funded by Agency for International Development, the PIO distributed 3901 items in 116 shipments to 38 countries. Oilseeds comprised over 75% of items supplied. In addition, 981 coffee plants representing 40 accessions were shipped to Costa Rica after quarantine propagation and inspection at Glenn Dale.

Informational material on the project was sent to missions to which little or no plant material had been recently supplied. Feedback on the performance of material previously supplied was solicited from a large number of missions; as a result, many reports were received and forwarded to appropriate researchers and suppliers.

In September George White and Peggy Paciotti visited the Southern Regional Plant Introduction Station, Experiment, Georgia; the Subtropical Horticulture Research Station, Miami, Florida; the Tropical Research and Education Center, Homestead, Florida, and other locations in Florida. These visits familiarized them with the programs and policies of researchers upon whom PIO relies heavily in determining and providing suitable plant materials for missions. New contacts were established, for example, with winged bean and tropical fruit and spice researchers in Homestead, and germplasm listings were obtained.

George White gave a presentation on "Plant Introduction and Quarantine - A Marriage of Necessity" at the Symposium on Plant Genetic Resources at Valdivia, Chile in November. New contacts were established in Chile, Bolivia, and Peru, and several exchanges arranged.

Quarantine - The inability to fully comply with foreign import requirements continues to delay or halt an increasing number of experimental shipments. Certification for freedom of disease and official field inspection of the parent plants are the most troublesome, and yet most important, requirements. Current alternative procedures include seeking special import authorization, sending the material without any certification to a plant protection agency to request quarantine handling, administering special treatments, or, all too often, returning the samples to the supplier. These special handling procedures must be arranged on a case by case basis and create considerable delays or denial. To minimize the spread of diseases and insects worldwide and continue the free exchange of plant germplasm, PIO encourages curators and scientists to arrange for official (state or federal) inspection whenever possible. A statement of inspection for specific pests signed by a scientist is helpful but the official document is greatly preferred. Shippers of any vegetative plant materials should be particularly aware of inspection needs and foreign import requirements.

There were some recent quarantine changes. The seed treatment requirement for seeds of soybean, Phaseolus, Vigna, and Lablab from several countries was dropped. The concern was soybean rust (Phakopsora pachyrhizi). Imports of vegetative propagules of all grasses are now prohibited except under permit because of the danger of introducing exotic viruses. Arachis spp. from People's Republic of China and Thailand are now prohibited because of peanut stripe virus. The Philippines will be added immediately.

Simple dos and don'ts of plant quarantine are presented in Diversity 6:12 (1984).

Personnel - Sharon Kenworthy and family left on June 21 for 6 months in Australia. Bill, a soybean geneticist at the University of Maryland, will work on wild soybeans (Glycine) during his sabbatical leave. Phyllis Gulick, who worked for many years at the Washington Inspection Station and the BARC Plant Germplasm Quarantine Center (PGQC), retired in early May.

Future plans - Automate information and electronically link PIO, PGQC, and the Glenn Dale Station relative to prohibited items that are virus-indexed at Glenn Dale.

- Automate AID distributions as a forerunner to complete exchange automation.
- Work closely with GRIN, W-6, PE&TL, and others with the crop species priority assignments.
- Prepare publication(s) about AID project.

Planting rice is never fun;
Bent from morn till set of sun;
Cannot stand and cannot sit;
Cannot rest for a little bit.
- From an old Filipino song

PUBLICATIONS

- Abbott, J.A. and Campbell, T.A. 1984. Delayed light emission and fluorescence responses to chilling in Stokes aster. *Agron. Abstracts*, p. 97. (abstract)
- Atchley, A.A. 1984. Nutritional Value of Palms. *Principes* 28(3): 138-143.
- Atchley, A.A. 1984. Climatic analogs and germplasm collection strategies. *Agron. Abstracts*, p. 10. (abstract).
- Briggle, L.W. 1984. Barley Yellow Dwarf Virus (BYDV) Research Program in the United States. Proceedings of the CIMMYT (International Corn and Wheat Research Center, El, Batan, Mexico) Barley Yellow Dwarf Workshop. pp. 141-144.
- Briggle, L.W. and Siegenthaler, V. 1984. Distribution of the Classes and Varieties of Wheat in the U.S. *Agron. Abstracts*, 1984 Annual Meetings, p. 59 (abstract).
- Briggle, L.W. and Curtis, B.C. 1984. Wheat Worldwide. Chapter I In Wheat Monograph. American Society of Agronomy, Madison, WI.
- Campbell, T.A. 1984. Responses of stokes aster achenes to chilling. *J. Amer. Soc. Hort. Sci.* 109: 736-741.
- Campbell, T.A. 1984. Mutation breeding in Cuphea: A progress report. *Agron. Abstracts*, p. 60.
- Campbell, T.A. 1984. Agronomic and chemical evaluation of smooth sumac, Rhus glabra. *Econ. Bot.* 38: 218-223.
- Campbell, T.A. 1984. Inheritance of seedling resistance to gray mold in kenaf. *Crop. Sci.* 24: 733-734.
- Duke, J.A. 1984. The Chilean Connection. *Curran's Ginseng Farmer* 4(3): 5-6.
- Duke, J.A. 1984. Properties of the Groundnut. *The International Permaculture Seed Yearbook 1984*, pp. 27-29.
- Duke, J.A. 1984 (Nov.). Alternative Approaches to Gout. *Herbalgram* 1(4): 10-11.
- Duke, J.A. 1984. Apios as an Experimental "Animal." *The International Permaculture Seed Yearbook 1984*, p. 29.
- Duke, J.A. 1984. Parallels in Amerindian and Chinese Phytotherapy. *The Botanical Grower* 2(2): 4-5.

- Duke, J.A. 1984. Preventing Cancer: Botanical and Nutritional Chap. 8, pp. 97-114, in Heinerman, J., ed., Basic Natural Nutrition. Woodland Books, P.O. Box 1422, Provo, Utah 84602.
- Duke, J.A. 1984. Folklore vs. Mathematics. U.S. Medicine. May 15, 1984, p. 21. (letter).
- Duke, J.A. 1984. The Heirloom Gardener (Book Review). Econ. Bot. 39(2): 215-216.
- Duke, J.A. 1984. Chemistry and Biochemistry of Legumes (Book Review). Econ. Bot 39(2): 212.
- Duke, J.A. 1984. Encyclopedia of Shampoo Ingredients (Book Review). Econ. Bot. 39(2): 212-213.
- Foy, C.D. and Campbell, T.A. 1984. Differential tolerances of Amaranthus strains to high levels of aluminum and manganese in acid soils. J. Plant Nutrition 7: 1365-1388.
- Oakes, A.J. 1984. Leucaena bibliography. 95 pp. (Processed) July.
- Simons, M.D. and Briggie, L.W. 1984. Reaction to Puccinia coronata of Strains of Avena fatua and of Cultivated - Type Oats Derived from A. fatua. Abstract. Phytopathology 74(10): 1271.
- Sanchez, F. and Duke, J.A. 1984. La Papa de Nadi. El Campesino 115(4): 15-17.
- White, G.A. and Bhella, H.S. 1984. Ornamental Plant Introductions - 1978. Plant Propagator 30(4): 5-7.
- White, G.A. and Drexler, S. 1984. USDA Plant Inventory No. 191, 761 pp.
- White, G.A. and Kenworthy, S. 1984. Plant Quarantine Alert. Diversity 6:12.

GERMPLASM RESOURCES INFORMATION NETWORK

J. D. Mowder

The GRIN has been functioning as a production database since March 1984. Data preparation and loading continues to be our major priority. An enhancement effort is in progress to implement new features and modify existing procedures requested by the user community. The major portion of the enhancement effort will be completed by January 1986. We are currently loading data from the National Seed Storage Laboratory, Ft. Collins, Colorado, and the Northeastern Regional Plant Introduction Station, Geneva, New York.

A GRIN Progress Update is to be circulated to anyone on our mailing list. This includes all of the participating sites and any scientist who has contacted us with an interest in GRIN. You may contact the following office to have your name placed on our mailing list, to request access to the database, or to obtain more information:

USDA-ARS-BA-PGGI-DBMU/GRIN
Beltsville Agricultural Research Center-West
Building 001, Room 130
Beltsville, Maryland 20705

GRIN has three important functions to fulfill. First, it serves as a central repository for valuable germplasm information that is accessible by the entire germplasm community. Second, it is a means for the Crop Advisory Committees (CAC's) to begin standardization of crop descriptors. Third, it provides a mechanism for each of the Regional Plant Introduction Stations (RPIS) and other sites to handle daily inventory.

Anyone who can justify a need for accessing the GRIN database can obtain permission to use it. Access to the database can only be gained by submitting a request to the Database Management Unit (DBMU) and having a logon and password assigned for the Prime computer. In addition, a password is also required to access the database.

The database is designed to permit flexibility to the users in storing and retrieving the information. GRIN uses a network database design which allows multiple paths to the data but has linkages that connect all the data together. This provides maximum flexibility to the users.

Retrieving information from the database is accomplished by executing a Prime procedure called DISCOVER. All information stored in the database is accessible; however, access to some data is restricted to the site-owner.

Plant Introduction Office (PIO) has sole responsibility for maintaining accurate passport data (Accession-Record), geographic acquisition, and geographic origin and the Plant Exploration and Taxonomy Laboratory (PETL) will maintain the taxonomy data. Only PIO and PETL can modify this information in the database; however, any user possesses retrieval access. Public users are permitted to retrieve information only, while participating sites have owner update and modification rights.

Each RPIS is the owner of the inventory and characteristic data for its respective site. Collectively, the RPIS' are responsible for maintaining accurate characteristic and inventory information. They also have the system procedures available for ensuring data integrity. The public users have permission to retrieve information from the database for all data except inventory; this can only be accessed by its owner.

As stated earlier, the information residing in the database is owned and maintained by sites within the NPGS, while the DBMU acts as the caretaker of the system. The DBMU maintains all application computer software (programs), the database management system (DBMS), liaison with the computer operations (Prime minicomputer), and volume data loading. The DBMU also provides technical assistance to users in preparation of software that is unique for a specific site. Database access and system security are also important system management tasks.

GLENN DALE

B. J. Parliman

Seventy-five Malus, 71 Pyrus, 32 Citrus, 150 Prunus, 168 Solanum, 25 Ipomoea, nearly 40 miscellaneous fruits and ornamental genotypes, 139 coffee seedling populations and several dozen post-entry items were established in quarantine in 1984. Plants of 60 coffee seedling populations were distributed. Nearly 150 Malus and Pyrus genotypes were shipped to respective repositories. Approximately 200 pome and ornamental genotypes were distributed to nearly 100 researchers and miscellaneous requestors. Approximately 100 older pome fruit accessions were repropagated to prevent germplasm loss. Solanum, Malus, Pyrus, and Prunus inventory/virus-index-status inventories' computerization has been completed. Ornamental, etc. inventories and virus-status-lists are nearly completed. Virus indexing/therapy for quarantined plants is progressing as planned. In vitro and in vivo propagation projects were initiated and completed for several hard-to-propagate, rare, and/or one-of-a-kind genotypes, including Prunus. Data collection and/or analysis progressed for the above projects. A new virology lab was constructed and virology research projects are moving ahead rapidly.

Over the past four years, several hundred ornamental genotypes have been propagated and offered for distribution. This constitutes nearly 85% of all ornamental germplasm that had not been distributed from Glenn Dale previously. Ornamental germplasm remaining to be distributed includes 30 to 50 camellia and a few slow-growing genotypes. As remaining ornamentals are distributed, emphasis will be shifted primarily to virus indexing and therapy of plants in the large fruit and vegetable genotype inventories.

SOUTHERN REGIONAL PLANT INTRODUCTION STATION
Report to S-9 Technical Committee
July 23-24, 1985

This report covers the primary activities of this plant introduction station for the period of July 1, 1984 through June 30, 1985.

Plant Introduction

Germplasm of 1,858 new Plant Introductions (PI's) were added to the regional plant germplasm collections. This total included 40 genera and 64 species from 28 countries. The larger genera groups were Okra (Abelmoschus), 260, Peanuts (Arachis) 779, Gourd (Lagenaria) 107, Sesame (Sesamum) 249, Clover (Trifolium) 147, Cowpea (Vigna) 138.

Seed Distribution

A total of 32,618 seed samples were shipped in all categories of distribution. In direct response to 300 requests 10,055 seed packets were shipped within the S-9 Region, 1,666 to the other three regions (NC-7, NE-99, & W-6) and 3,271 to 50 foreign countries. Shipments in other categories of distribution were: 418 PI's sent to the National Seed Storage Laboratory (NSSL) for long-term storage; 11,746 to NSSL for germination tests; 570 to the other three regions for consolidation of genus collections; 2,932 packets for seed increase grow-outs; and 1,960 cultivar samples for the Forage Legume Variety Field Trials.

Seed Increase

A total of 5,576 PI's are included in the 1985 increase plantings. The major crop groups involved are sorghum, peanuts, sesame, grasses, forage legumes and cowpeas. The P.I. Station is increasing 1,292 new and old PI's which include 49 genera and 175 species. Cooperators in several states (California, Florida, Oklahoma, and Texas) are increasing 2,284 PI's of cucurbits, tropical forage legumes, forage grasses, and peanuts. The Tropical Agriculture research Station (TARS) at Mayaguez, P.R. increased 2,000 PI's of Ethiopian Sorghums in two plantings during the Fall of 1984 and the Winter - Spring period of 1985. TARS also increased 344 Yemen Sorghum which were also added to the S-9 Sorghum collections.

Genetic Studies by Dr. W. Charles Adamson

Watermelon Outcrossing

Outcrossing among watermelon introduction is being evaluated for the second year in cooperation with Dr. Billy Rhodes, South Carolina. It has been established that the marker being used behaves as a genetic dominant despite reports in the literature indicating that the character, or a phenotypically similar one, is cytoplasmically inherited.

Root-Knot Nematode Resistance

A population of peanuts (Arachis sp.) is being screened for resistance to Meloidogyne arenaria using eggs as inoculum. Several cowpea introductions including PI441917, PI441920 and PI468104 were found to have resistance to M. incognita equal or better than the resistance of the 'Iron' cultivar. The introductions above have been crossed with 'Iron', 'Pinkeye Purplehull' and with each other in order to provide material for a genetic study to determine the mode of inheritance of the resistance, whether it is identical with that of 'Iron', and whether it is complementary with the resistance of 'Iron'.

Cold Tolerant Vetch

Vetch (Vicia sativa) selections in 1985 survived their second year of exposure to subzero temperatures. Seed were harvested on an individual plant basis for further evaluation. The population is derived from bulked F2's from crosses of 'Cahaba White' with PI286470, PI289500, PI277369, PI289491 and PI202524.

New Crops for Energy Production

A collection of Rhus glabra from throughout the southeastern U.S. showed no significant difference in acetone extractives on a whole-plant basis. A Eupatorium sp. nursery showed a great increase in yield of extractives in the third year of growth, compared to the first year. Total dry matter yield of Eupatorium sp. was 14.6 Mg/ha and entries, including both species, did not differ. A study using leaf lobe width as a marker indicated that there is no self-pollination or apomixis and that interspecific crossing is common.

Evaluation of the Ethiopian Sorghum Collection

We have proceeded with establishing evaluation projects for the Ethiopian Sorghum Collection as recommended by the Sorghum Crop Advisory Committee (CAC). As the 5,000 PI's in this collection are increased at TARS through a cooperative project between University of Puerto Rico and USDA-ARS they are received into the S-9 inventory for distribution to scientists in various disciplines. Currently evaluations are being carried out at TARS where plant descriptors are collected as the accessions are grown for seed increase. Three entomologists (Georgia, Kansas, Oklahoma) are screening the collection for resistance to Fall Army Worm, Midge, Greenbug Biotype-E and Yellow Sugarcane Aphid. Projects are planned to begin in October, 1985. Another probable project will be the evaluation tolerance to aluminum toxicity.

In addition to the above projects, Jim Strickland, our ARS Research Technician is growing out 1,000 PI's per year (1985-89) at the Southwest Georgia Station, Plains, GA. The Sorghum CAC recommended this was needed to establish the actual accessions in this collection that might mature seed during our long-day growing period of June - October.

APPENDIX I

Southern Regional Plant Introduction Station Budget

<u>Source of Funds</u>	<u>FY-85</u>	<u>FY-86</u>
Regional Research Funds (Pooled)	\$125,206	\$134,078
RRF (Committee of Nine Allocations)	0	?
TOTAL	\$125,206	\$134,078

Expenditures

Personal Services	106,228	115,100
Travel	500	2,500
Supplies & Operations	16,478	14,478
Equipment	2,000	2,000
TOTAL	\$125,206	\$134,078

Source of Funds

ARS Base (recurring Funds)	\$529,200	\$673,000 ^{1/}
Special Allocations (Non-Recurring)		
Plant Explorations	21,000	?
TOTAL	\$550,200	\$673,000

Expenditures

Personal Services	\$201,454	\$236,420 ^{2/}
Travel	7,000	19,000
Construction & Repairs	53,000	145,000
Supplies & Materials	20,946	146,080
Support Equipment	4,000	16,500
Vehicle Operations	2,000	3,000
Extramural Services (Curators, BFCA)	240,800	107,000
Plant Explorations	21,000	?
TOTAL	\$550,200	\$673,000

^{1/}

First draft of ARS budget submitted for review and approval on July 19, 1985 - subject to change by September 15. This figure includes \$89,114 for Dr. John Roberts, ARS, Pathologist, Wheat Rust Project.

^{2/}

This figure includes salary projections for 4 SY vacancies and 1 GS-5 Technician. The vacancies cover a Plant Pathologist, Sweet Potato Curator, Horticulturist, Agronomist, and Ag. Res. Technician.