File

M I N U T E S

of the

MEETING OF THE S-9 TECHNICAL COMMITTEE

"NEW PLANTS"

The Introduction, Multiplication, and Evaluation of New Plants for Agricultural and Industrial Uses and the Preservation of Valuable Germ Plasm

Plant Materials Center
Americus, Georgia

and

Georgia Experiment Station
Experiment, Georgia

July 21-22, 1970

AGENDA
S-9 TECHNICAL COMMITTEE MEETING
AMERICUS and EXPERIMENT, GEORGIA
JULY 21-22, 1970

1. Roll call

2. Introduction of visitors

3. Welcome

4. Additions/deletions to and approval of Agenda

5. Appointment of Committees
   a. Nominations
   b. Time and place of next meeting
   c. Resolutions

6. Regional Station Report

7. State Reports
   a. Alabama
   b. Arkansas
   c. Florida
   d. Georgia
   e. Kentucky
   f. Louisiana
   g. Mississippi
   h. North Carolina
   i. Oklahoma
   j. Puerto Rico
   k. South Carolina
   l. Tennessee
   m. Texas
   n. Virginia

8. Federal Reports
   a. Soil Conservation Service
   b. Utilization Research & Development Division
   c. New Crops Research Branch
   d. Cooperative States Research Service

9. Administrative Advisor

10. Disposition of negetative stocks and late maturing species

11. Regional Station Budget

12. Status of project outline and supporting projects

13. Plans for new crops research in 1970-71

14. Requests for new plant explorations

15. Regional publication status

16. Committee reports

17. Field trips
   a. Plant Materials Center
   b. Regional Plant Introduction Station

18. Adjourn

Roll call and introductions

The meeting of the S-9 Technical Committee was called to order by Dr. John L. Bowers, Chairman, at 8:20 am at the Plant Materials Center, Americus, Ga., July 21, 1970. The meeting was called to order by the Chairman at Experiment, Ga. at 8:00 am July 22, 1970. Those attending the 1970 meeting were as follows:

S-9 Committee Members

C. R. Jackson	Administrative Advisor
W. R. Langford	Regional Coordinator, Georgia
C. S. Hoveland	Alabama
J. L. Bowers, Chairman	Arkansas
H. W. Bennett	Mississippi
R. E. Sigafus	Kentucky
W. T. Fike	North Carolina
J. Velez Fortuno	Puerto Rico
J. A. Martin	South Carolina
W. E. Roever	Tennessee
E. L. Whiteley, Secretary	Texas
C. I. Harris	Cooperative State Research Service Washington, D. C.
W. H. Tallent	Northern Utilization Research & Development Division, Peoria, Ill. ARS - USDA
H. L. Hyland	New Crops Research Branch, ARS Beltsville, Md.
W. C. Young	Soil Conservation Service Ft. Worth, Texas

Others in Attendance

John D. Powell	Plant Materials Center, Americus, Ga.
Grover Sowell, Jr.	Regional Plant Introduction Station Experiment, Ga.
W. O. Hawley	U.S. Plant Introduction Station Savannah, Ga.

G. R. Lowell	Soil Conservation Service Americus, Ga.
T. A. Brown	Soil Conservation Service Jackson, Miss.
W. L. Corley	Regional Plant Introduction Station Experiment, Ga.
H. J. Haynsworth	Soil Conservation Service Athens, Ga.
J. H. Massey	Regional Plant Introduction Station Experiment, Ga.
N. G. Vakili	Crops Research Division, ARS Mayaguez, P. R.
A. J. Oakes	New Crops Research Branch, ARS Beltsville, Md.

The Chairman called for additions or corrections of the 1969 minutes. There were no additions or corrections so the minutes of the 1969 meeting were declared approved as written.

Welcome

John D. Powell welcomed the committee to the Plant Materials Center. He gave a brief history of the center and discussed the type of work carried out at the center.

Appointment of Committees

The following committees were appointed by Chairman Bowers:

Nominating Committee	Time and Place	Resolutions
C. S. Hoveland, Chm.	J. A. Martin, Chm.	W. T. Fike, Chm.
H. W. Bennett	H. L. Hyland	W. E. Roever
W. H. Tallent	C. I. Harris	R. E. Sigafus

State and Federal Agency Reports

Committee members and visitors presented reports on New Crops research in the following order. These reports are appended hereto as Appendix B.

Soil Conservation Service	W. C. Young
Northern Utilization Research & Development Division	W. H. Tallent
Cooperative State Research Service	C. I. Harris

Alabama	C. S. Hoveland
Arkansas	J. L. Bowers
Florida (Killinger absent)	Grover Sowell, Jr.
Georgia	W. R. Langford J. H. Massey W. L. Corley
Kentucky	R. E. Sigafus
Mississippi	W. H. Bennett
North Carolina	W. T. Fike
Puerto Rico	J. Velez Fortuno
Tennessee	W. E. Roever
Texas	E. L. Whiteley
Regional Station	W. R. Langford
Administrative Advisor	C. R. Jackson
A.I.D. New Crops Research	N. G. Vakili
New Crops Research Branch	A. J. Oakes
Savannah Station	W. O. Hawley
Oklahoma (Matlock absent)	W. R. Langford

Soil Conservation Service

W. C. Young presented a very comprehensive report on SCS work with plant introductions in the S-9 region. Several Arachis species (PI's 118457, 262839, and 263393) have looked good as ground cover, forage production, wildlife food, and beautification plants. About 50 other Arachis accessions are under study. Other genera under study include Brachiaria, Castanea, Echinochloa, Elaeagnus, Eragrostis, Glycine, Hemarthria, Lespedeza, Malus, Panicum, Paspalum, Pistacia, Phyllostachys, Quercus, Salix, and Trifolium. The report includes a table of all plant introductions under test, in production, or maintained at the Plant Materials Centers in the S-9 region. The materials in the table are listed so that the status of the plant can be easily determined.

Northern Utilization Research & Development Division

W. H. Tallent reported on the work conducted at NURDD. He reported that crambe is attracting increased attention as a source of long-chain acid for industrial use. Japanese companies have indicated a desire to buy substantial quantities

of either crambe oil or seed from U. S. sources. Canada is growing about 7,000 acres of crambe. No. U. S. processor is interested in processing crambe. Current research involves the preparation of nylon 1313, the ozonolysis step, new thermosetting resins, and removal of thioglucosides from crambe meal.

A large number of Brassica lines are being analyzed for oil and C_{22} acids. Several lines have had as much erucic acid as is found in crambe. Brassica meal will be analyzed for glueosinolate content.

Lesquerella oils continue to look promising in the laboratory. Lithium salts of the hydroxy acids will be prepared for evaluation as grease thickeners.

A research contract of 3-1/2 years duration has been negotiated with the Herty Foundation, Savannah, Ga., to demonstrate the technical and economic feasibility of pulping kenaf and using it for paper making.

Work on Tephrosia has been continued with emphasis on analytical methods. A new approach to the preparation of deguelin is being tried.

Chemicals for anti-tumor activity are being prepared and a search for new sources was begun in June.

Dihydroxyphenylalanine (L-dopa) (Effective in treating Parkinson's disease) has been found in the genus Mucuna (including Stizolobium).

Other genera studied include Crepis, Cichorium, Briza, Borago, Vernonia, Hemarthria, and Lathyrus.

Cooperative State Research Service

C. I. Harris, CSRS, USDA, reported briefly on the CRIS system and listed the states that had contributing projects. CRIS forms are on file from Arkansas, Georgia (three projects), North Carolina, Oklahoma, and South Carolina. Form 20 is on file from Texas, Florida, and Puerto Rico.

Alabama

C. S. Hoveland reported that O. L. Chambliss and D. R. Strength are screening the entire collection of Vigna for protein and amino acid content of the seed. W. L. Greenleaf reported Capsicum frutescens L. resistant to Tabasco-etch virus and ripe rot of the fruit. Two PI's of C. sinense (152225 and 159236) are resistant to Tabasco-etch virus. PI 272735 (Lycopersicon esculentum) from El Salvador was outstanding for flavor, crack resistance, and ability to set fruit during high temperatures. PI 273444 (L. esculentum) is being used as a source of concentrated fruit set and uniform maturity. Dwarf Italian is being used as a source of stiff stems. J. D. Norton is using PI 140471 as a source of resistance to gummy stem blight in cantaloupes.

Arkansas

J. L. Bowers presented the Arkansas report. A. E. Einert reported three of the six original plants of Iris sp. (PI 317237) overwintered, one flowered

and set seed at Fayetteville. Other plants that survived 0° temperatures were Lagerstromia subcostata (PI 324994), Ilex 'Wm Cowgill' (PI 331203) and Ilex 'Howard Dorsett' (PI 331204).

Several grape accessions were evaluated by J. N. Morre. Those accessions which looked good were PI's 321353, 247592, and 247590.

A number of lupines were evaluated by J. P. Jones for resistance to Phytophthora Megasperma var. Sojac, only L. texensis was resistant.

Progenies of southern peas involving PI 221781 continue to show a concentration of pod set which is needed for mechanical harvesting.

Florida

In G. B. Killinger's absence, Grover Sowell, Jr. presented the Florida report. N. R. Lake reported that Rapanea nerifolia (PI 227998) showed good cold tolerance. W. M. Morton reports several promising ornamentals - Wallaceondendron celebricum (PI 101452), Jasminum odoratissimum (PI 238775), Cornus sanquinea (PI 293777), Bougainvilla spp. (PI 292972 and PI 292982) and Viburnum sargentri koehne (PI 316681).

J. M. Crall reported tolerance to infection with watermelon mosaic virus in PI 255137. J. M. McCaleb, L. S. Dunavin, and F. T. Boyd are working with several grass accessions. Among the promising accessions are: Digitaria milanjiana (PI 299655), Hemarthria altissima (PI 299994), Paspalum notatum (PI 310149), Panicum antidotale (PI 308603), and Chloris (22 under test for resistance to sting nematodes). G. B. Killinger is evaluating Cajanus cajan and PI 218066 shows promise. Several kanaf varieties produced 7 to 12 tons per acre in tests. Rex Smith is evaluating the Panicum maximum collection for sexual reproduction.

Georgia

The Georgia report was presented by W. R. Langford, J. H. Massey, and W. L. Corley. Spancross, the first peanut variety in the world to be developed by interspecies breeding was released by USDA, ARS, and the Georgia and Oklahoma stations. It is a cross from Arachis hypogaea (PI 121070-1) X A. monticola (PI 210553). 'Tifspan' released by the above agencies is also the result of intervarietal crosses, PI 121070-1 is one parent. PI's 329225 (green foliage and white testa) and 329226 (purple foliage and purple testa) may have use as genetic markers reports R. O. Hammons.

Ian Forbes, Jr. is using Dolichos lablab (PI 316899) as a source of earliness. Lupinus albus (PI 177456) is being used as a source of low-alkaloid content. G. W. Burton reports two Cynodon PI's 320876 and 315904 are the most winterhardy available.

J. H. Massey summarized a 3-year sunflower study involving spacing within the rows and rates of nitrogen. Closer spacing (6 in.) within the row increased yields. Spacing studies with Crambe abyssinina, Brassica carinata and Hibiscus cannabinus were reported.

W. L. Corley reported on a number of woody ornamentals and several annual accessions that showed promise as ornamentals. (See appendix for notes).

Kentucky

R. E. Sigafus presented the Kentucky report. A number of accessions in the genera Lycopersicon, Lactuca, Bothriochloa, Dactyloctenium, Trifolium, Medicago, and Cornnilla are being evaluated. Work by R. C. Buckner on fescue is being continued using crosses of Fescue gigantea.

Mississippi

W. H. Bennett presented the Mississippi report. Four Trifolium subterraneum and four T. resupinatum accessions were promising. Paspalum introductions (451) were evaluated for cold tolerance. Ten Cynodon introductions were tested with common Coastal under 3 levels of nitrogen. PI 290814 produced 15% more forage than Coastal.

North Carolina

Six cooperators received 129 accessions for evaluation. Among 26 sweetpotato PI's, resistance to scurf, Fusarium wilt, and root knot nematode was found. Work is continuing on Pennisetum flaccidum and P. orientale. Preliminary work indicates the plants withstand defoliation and the yields are superior to orchardgrass and fescuegrass.

New crops research was continued on Norman pigeon pea, sunflowers, sugarbeets, kenaf, deer tongue, Digitalis lanata, Nepata cataria, and Tephrosia vogelii.

Oklahoma

Due to absence of a representative from Oklahoma W. R. Langford reviewed the Oklahoma report prepared by Roy M. Oswalt and R. S. Matlock. Mr. Oswalt retired June 30, 1970 after 26 years of service to Oklahoma State University.

More than 100 accessions of Cicer were planted for seed increase and agronomic evaluation. Seed yields of the most productive lines were estimated to be 1000 pounds per acre. Seed of this material will be sent to the Regional Station. Ten of the most promising cowpea introductions were included in tests to determine yield and tolerance to Fusarium wilt.

Introductions of mungbean and Urd bean are being evaluated for resistance to nematodes.

In a test of new chemurgic species planted last fall, 15 Brassica accessions survived the winter and produced a satisfactory seed crop.

Puerto Rico

During the year Puerto Rico received a total of 745 introductions, of which 450 were sugarcanes. Several fruits are being tried with varying degrees of success.

Introductions from the Carribean Region were included in yam variety trials. Selected yam and cassava introductions are now being compared with local varieties

in replicated trials at different locations. Some ornamental introductions have shown good adaptation. Of these, Callicarpa formosana and C. japonica show promise as hedges; and Jasminum odoratissimum, a flowering vine, is being increased.

Last winter 498 Vigna sinensis accessions were grown for observation at Mayaguez.

South Carolina

J. A. Martin reported that 1728 accessions were received in South Carolina in 1969-70. P. B. Gibson reports using several Trifolium species in hybridization studies. W. C. Barnes reports that a cabbage hybrid appears to be resistant to downy mildew. J. A. Martin is testing a large number of pepper accessions to find varieties suitable for mechanical harvest. Kenaf yields were limited by nematode infestations. F. P. Cuthbert, Jr. is studying turnip apid resistance. He reports some resistance in the PI's tested. Several sweetpotato accessions were tested for insect resistance. Some resistance was found in the plant introductions (see appendix for results). R. E. Schoenike reported on a number of ornamentals. Notes on these plants will be found in the appendix.

Tennessee

In work with ornamental plant introductions, two Grysophila spp. were found to be resistant to Phytopthora parasitica, and a yellow Coleus mutant was produced. Rosa rugosa is being tested in pilot plantings. Quercus and Pyrus seed have been distributed to nurserymen, and several PI's are being used in campus plantings. In strawberry breeding, Senga sengana PI 274680, was used in several crosses.

Irradiation is being used on seed of diploid Medicago PI's in an attempt to isolate resistance to the alfalfa weevil. Some 569 Cynodon spp. were evaluated, and after two or three years 100 of these are being maintained. Selections from these will be used in a hybridization program.

Texas

E. L. Whiteley presented the following report from Texas. C. E. Simpson is evaluating 58 peanut accessions. Brassica yields were quite low at College Station (see appendix). W. R. Cowley reported that Brassica carinata has been evaluated as a green vegetable and looks very promising. He also reported that several okra accessions have been used in crosses. 'Clemson' X PI 251500 produced the highest yield in replicates tests. Kenaf yields in East Texas look promising. PI 256038 produced the highest yield, 8.12 t/a in 1969.

New Crops Research Branch

H. L. Hyland made the New Crops Research Branch report. This report is based on the CRIS system format. Considerable progress has been made during the past year in relation to broadening of objectives. The interest of international organizations toward theconservation and wider utilization of germ plasm will result in increased interest in our collections; particularly wheat,

grain legumes, sorghums, and root crops. Good progress is being made on the manuscript of the 20-year Progress Report on Regional Research and it should be in the hands of the publisher by September. Dr. W. C. Adamson, who is conducting kenaf research at the Savannah Introduction Station, has been added to the permanent scientific staff. Dr. C. E. Smith, Jr., Taxonomist, has resigned to take an academic position in Alabama. Dr. Edwin James, Head, NSSL, has retired and Dr. L. N. Bass will serve as Acting Head. Dr. Robert Kahn, Virologist, has accepted a two-year AID assignment in Kenya.

Plant Introduction - During the calender year 1969, 8,204 new plant introductions were collected. The NSSL presently holds 73,000 accessions. Three foreign explorations are planned for FY 1971.

Plant Resources Investigations - Two new species of Agave from Arizona were described. A comprehensive review of grass specimens doubled the number of genera known to have species with liquid or soft endosperm. A monograph dealing with seed of 38 North American vetches has been prepared. The nomenclatural and taxonomic problems of moonflower, a noxious weed, has been resolved. A key and seed description of 32 species in the tribe vicieae will facilitate identification by seed technicians. Screening and testing plants with anti-cancer agents or unique oils continues to show promising results.

Chemurgic Crops - Research with kenaf, Tephrosia, Crambe, Vernonia, Lesquerella, Limnanthes, Briza spicata, and Crepis alpina continues with varying degrees of success.

Plant Materials Investigations - Chinese gooseberry, pistachio, and Persian walnut investigations continue at Chico, California. Various ornamentals and tropical fruits are being tested in seedling population studies. Ornamentals collected from the New Guinea exploration are being propagated for distribution.

Three Regional Plant Introduction Stations are now employing automated techniques for preparing annual seed lists. Alfalfa, red clover, and alsike clover introductions have reported resistance to insects and diseases. Poa and perennial ryegrass clones show promise as turfgrasses. Four genera of warm-season grasses showed desirable characteristics. Ten newly released field crop varieties contained introduced germ plasm.

U. S. Plant Introduction Station, Savannah, Ga. - W. O. Hawley

Seedling selection studies are being carried on for woody ornamental introductions which may yield outstanding individuals. Ilex crenata has produced very dwarf and compact forms and plants with yellow berries. From 300 Pistachia chinensis seedlings, 15 individuals look promising for outstanding fall color. This station is also propagating miscellaneous ornamentals for distribution to cooperators. Approximately 5 acres are devoted to kenaf investigations with emphasis on screening for root-knot resistance. Chinese waterchestnuts are grown annually for seed corm production. Alligatorweed control studies are also underway.

Grain Legumes for Tropical Americas - N. G. Vakili, Mayaguez, P.R.

Grain Legume Improvement Program for Tropical Americas. This program is a joint USDA-USAID effort with main emphasis on Phaseolus vulgaris introductions.

Four hundred and ninety eight PI lines of Vigna sinensis were grown to observe agronomic characters and responses to diseases and insect pests under tropical lowland conditions. Further selection is contemplated for accessions which showed desirable plant stature and resistance to powdery mildew, Cercospora leafspot, Anthracnose, mosaic, bacterial blight, or leaf miner.

Regional Station

Work at the Regional Station was reviewed by W. R. Langford and Grover Sowell, Jr. Seed of 1879 new introductions were received last year. More than 80% of them are Sorghum, Cajanus, and Cucumis. Good seed increases were obtained in 1969 from 750 peanut introductions, 600 grasses, 300 melons, 390 peppers, and 1250 sorghums. Many tropical grasses and legumes failed to flower and produce seed at Experiment. Low viability of original seed was pointed out as a major problem in field evaluation of new chemurgic spp. Plant scientists in the South were supplied with 9984 packets of seed last year. Personnel outside the region were supplied 2151 packets and 941 accessions were placed in the NSSL.

New greenhouse and laboratory facilities were completed at the regional station. Also, the seed storage room was enlarged.

In screening plant introductions for disease resistance 343 accessions of peanuts were screened for resistance to PSV. PI 259610 showed evidence of some resistance. Other disease screening work involved bacterial spot of tomato, Rhizoctonia on peanuts, peanut leafspot, gummy stem blight of watermelon and cantaloupe, WMV-2 on squash, and powdery mildew on cucumber. (See complete report in Appendix for results of this work).

Administrative Advisor

Dr. C. R. Jackson discussed the Regional Station facilities and costs. He reported that the funds for publishing of the twenty-year report on plant introductions have been received. Revision of the S-9 Project should be completed in 1971. He is preparing a 1 page report for the Committee of Nine. Dr. Jackson stressed the importance of public relations in new crops work. The Regional Bulletin was reported ready for publication by the Georgia Station. The importance of the Regional Station to the South was stressed. The bulletin on peppers by W. L. Corley will be published. Funds for technical help are being supplied by the Georgia Station.

Disposition of vegetative stocks and late maturing species

The problem of maintaining vegetative stocks and obtaining seed from late maturing plant introductions was discussed. The regional station now has about 2000 accessions that fall in this category. These materials are listed in Appendices A and B of the 1969 S-9 Minutes. New accessions of these and other late maturing species are added to the S-9 Inventory annually. Some of these are wild progenitors of major Southern crop plants and are used in cytogenetic and plant breeding programs, others are used in host range studies of plant pests. Mr. Hyland stated that more materials of this type will be added to the S-9 Inventory from explorations already planned to Africa.

A motion was made by W. T. Fike and seconded by H. W. Bennett that funds be made available by ARS and the State experiment stations so that arrangements can be made by the regional station to increase seed of these late-maturing species in Puerto Rico. Motion passed. Dr. Jackson suggested the Federal Experiment Station, Mayaguez, P. R., as a site for getting these materials increased.

Regional Station Budget

The Regional Station Budget for 1970-71 was presented by W. R. Langford. The budget was discussed by the committee. A motion was made by E. L. Whiteley that the budget as shown in Appendix A be approved, seconded by W. T. Fike. Motion passed.

Status of Project Outline

The revision of the S-9 Regional Project Outline was discussed by the Committee. Chairman J. L. Bowers appointed a committee to revise the project outline during the spring of 1971. The committee consists of:

W. T. Fike, North Carolina
H. W. Bennett, Mississippi
E. L. Whiteley, Texas
W. R. Langford, Regional Coordinator
C. R. Jackson, Administrative Advisor

Industrial Crops Sub-Committee

The Industrial Crops Sub-Committee met at 8:30 pm, July 20, 1970 in Americus, Ga. The committee recommended the following research for the S-9 region:

1. Continued research on kenaf as an annual source of pulp.

2. Research on Tephrosia vogelii as a source of rotenone be continued and more detailed studies initiated.

3. The following new species were recommended for evaluation at interested locations. Brassica napus, Brassica campestris, Bifora radians, Briza spicata, and Crepis alpinus.

4. Seed of the above plants will be available from W. R. Langford

The committee members are: W. T. Fike, E. L. Whiteley, and R. S. Matlock (absent). Other representatives participating in the meeting were: W. R. Langford, W. H. Tallent, and J. L. Bowers.

A motion that the report be accepted was made by E. L. Whiteley and seconded by W. H. Bennett. Motion passed.

Requests for new plant explorations

Several requests for new plants were made by committee members. J. L. Bowers requested collections of lupines and blackberries be made. Tomatoes from

Central America were requested by several workers. Dwarf peach stocks and low chill requirement plums were requested.

H. L. Hyland announced that J. L. Creech will collect ornamentals, grasses, and forbs in Russia.

Report of Nominating Committee

Chairman Hoveland nominated J. Velez Fortuno for Chairman and R. E. Sigafus for Secretary. A motion was made by E. L. Whiteley that the nominations be closed and the two men be declared elected by acclamation. W. H. Tallent seconded the motion. Motion passed.

Time and Place of Next Meeting Committee

Chairman Martin announced that the committee had selected Beltsville, Md. for the 1971 meeting and Auburn, Ala. for the 1972 meeting. The date of the 1971 meeting is to be determined by the host committee and the Administrative Advisor. A motion was made by W. T. Fike that the report be accepted. A second was made by E. L. Whiteley. Motion passed.

Resolutions Committee Report

Chairman W. T. Fike made the following report:

The S-9 Technical Committee wishes to express thanks to the following persons for the fine arrangements, services, and facilities provided for the annual meeting of the committee:

> Mr. John D. Powell, Superintendent of the Americus Plant Materials Center, and his staff, and to H. J. Haynsworth and W. C. Young of the Soil Conservation Service for showing the many activities conducted at the center.
>
> W. R. Langford, Grover Sowell, Jr., J. H. Massey, and W. L. Corley of the Regional Plant Introduction Station for their many hospitalities.
>
> Director C. R. Jackson of the Georgia Station, Experiment, Ga. for his valuable contributions to S-9 through funds made available to the Plant Introduction Station and his public relations work in behalf of the new crops program. Also, special thanks go to Dr. Jackson for his most informative tour of the Andersonville Prison Park and National Cemetary.

The meeting was adjourned at 12:00 noon by Chairman Bowers.

BUDGETS

Regional Station Budget 1969-70

Source of Funds		
Regional Research Funds (Pooled)		$ 30,000
Regional Research Funds (Ga. Sta.)		32,749*
USDA, New Crops Research Branch (est.)		48,300
	TOTAL	$111,049
Expenditures		
Salaries and labor		$ 97,149
Equipment		1,634
Operating supplies		9,889
Travel		1,467
Domestic exploration		64
	TOTAL	$110,203

Regional Station Budget 1970-71

Source of Funds		
Regional Research Funds (Pooled)		$ 38,000
Regional Research Funds (Ga. Sta.)		26,048**
Hatch Funds		2,000
State Funds (Ga. Sta.)		3,304
USDA, New Crops Research Branch (est.)		47,500
	TOTAL	$116,852
Proposed Expenditures		
Salaries and labor		$104,352
Operating supplies		9,800
Travel		1,200
Publications		1,500
	TOTAL	$116,852

* Excluding land and office space furnished by the Georgia Station

** For support of 2 Georgia Station Projects contributing to Regional Project S-9

APPENDIX B

State & Federal Reports

Regional Plant Introduction Station

Alabama
Arkansas
Florida
Georgia
Kentucky
Mississippi
North Carolina
Oklahoma
Puerto Rico
South Carolina
Tennessee
Texas

Soil Conservation Service
Northern Utilization Research & Development Division
New Crops Research Branch
Cooperative State Research Service

U. S. Plant Introduction Station, Savannah, Georgia
Grain Legumes for Tropical Americas, Mayaguez, Puerto Rico

Report of Regional Station Activities
to S-9 Technical Committee, 1970

Plant Introduction

Seed or plants of 1879 new accessions were received during the year ending June 30, 1970. This is somewhat above the longtime average for receipt of new materials. With the exception of a collection of Sorghum from Ethiopia, consisting of 1278 accessions, the number of new introductions received last year was among the lowest ever received during a 12-month period. There were 126 new introductions of Cucumis and 103 accessions of Cajanus in the collection received last year. The other material represented 66 plant genera.

Seed Production

1969 was a favorable year for seed production. Good seed increases were obtained from 750 peanut introductions, 600 grasses, 300 melons, 390 peppers, 300 Sorghums and millets, and 125 Vigna. As usual, a large number of summer legumes failed to mature any seed before frost. Among these were several introductions of velvetbeans in which there is renewed interest as a source of a drug for treating Parkinson's Disease. Also there were about 200 tropical grass introductions that failed to flower. These included several highly productive introductions of Panicum, Chloris, Pennisetum, Apluda, and Thelepogon.

Failure of these short-day plants to produce seed at Experiment, Georgia is a continuing problem. I would appreciate recommendations from this Committee on a plan, including financing, for increasing these tropical species under a more favorable climate.

Chemurgic spp.

Forty-two accessions representing 36 spp. that were recommended by NURDD as having chemurgic potential were planted during the spring of 1969. Twenty-seven of them failed to germinate. Germination of others were poor, and several accessions transplanted to the nursery died prematurely. Only one species (Neptunia dimorphantha) matured a good seed crop before frost. Two accessions of Eryngium (PI's 341893 and 341894) Centaurea glaberrima (PI 326547) appear to be biennials and are producing seed now. Indigofera arrecta PI 318808, planted with this collection, produced an abundance of seed and a sample was submitted to NURDD for assay.

Twenty-seven accessions were planted in the fall of 1969. Seven failed to germinate. Briza spicata PI 279704, Xeranthemum annuum PI 312835, and 15 accessions of Brassica survived the winter and produced seed. Seed yields of Brassica were estimated to range from 450 to 2300 pounds per acre. Briza spicata seed production was poor. Many of the glumes were empty. Xeranthemum PI 312835 produced a good seed crop.

Twenty-eight accessions were planted during the spring of 1970. Eight failed to germinate, and some that were transplanted to the field have already died.

Screening Plant Introductions for Disease Resistance

Peanut stunt virus: In cooperation with Dr. Demski and Dr. Kuhn 343 introductions have been screened for resistance to peanut stunt virus. None of the introductions were resistant when we applied our normal criterion of resistance (30% or less infected seedlings) in these preliminary tests. The plants of PI 259610 were not stunted following inoculation and showed clorotic spots rather than the typical symptoms of the disease. This introduction is being retested to determine its possible value as a source of resistance.

Bacterial spot of tomato: The 13 introductions previously reported as resistant to bacterial spot (Clark, R. L. et al. 1969. A Summary of Reports on the Resistance of Plant Introductions to Diseases, Nematodes, Insects and Mites. Lycopersicon spp.) were inoculated with two Florida and one Georgia isolates of Xanthomonas vesicatoria. PI 124235 from India was free of symptoms. This indicates that the evolution of resistance to X. vesicatoria in tomato may have occurred in the same geographical area as the resistance of pepper to this pathogen.

Rhizoctonia on peanut: The reduction of the growth of the peanut hypocotyl by Rhizoctonia solani in petri dish cultures was used as a measure of resistance. Rhizoctonia reduced the hypocotyl length by less than 10% with four introductions. Two of these were tested in a replicated greenhouse test. PI 183289 showed some resistance in a very severe epidemic in flats of soil infested with the pathogen.

WMV-2 on Squash: Eight introductions of Cucurbita pepo were selected for further testing from a test of the time of symptom expression following inoculation. A delay in symptom expression may be significant in the field if it is correlated with differences in the rate of spread of the virus.

Gummy stem blight of watermelon and cantaloupe: All new introductions of Citrullus lanatus were screened for resistance to Mycosphaerella citrullina. Introductions with a disease index of 2 or less were included in a replicated greenhouse test. Five percent of the plants of PI 271778 were killed by the pathogen as compared to 60% for Charleston Gray. All introductions of Cucumis melo which were resistant in preliminary screening tests were included in a replicated test. Cucumis melo PI's 136173 and 161375 were less resistant than PI 140471 but may be useful as additional sources of resistance as new races of the pathogen evolve.

Peanut leafspot: Seven introductions which were resistant to Cercospora arachidicola in preliminary greenhouse screening tests were planted in replicated field test in cooperation with Dr. D. M. Smith. The disease

was present on plants of this introduction and further tests will be necessary to determine whether or not this resistance is adequate to be of value to plant breeders.

Powdery mildew of cucumber: Horizontal resistance to race 2 of Sphaerotheca fuliginea, characterized by a significantly reduced sporulation of the pathogen, was detected in a few introductions and four varieties. This research indicates that most of the cucumber introductions previously reported as resistant to powdery mildew are not resistant to one of the most common powdery mildew fungi in the southeastern United States. It also indicates that the best resistance previously reported in plant introduction has been transferred to some commercial varieties by plant breeders.

The evolution of new races in the fungi

Preliminary research on anthracnose fungi of the Glomerella cingulata (Stonem.) Spauld. and v. Schrenk group indicates that isolates from many different hosts can cause decay of apples and peppers. This supports the conclusion of previous investigators that the large group of morphologically similar isolates of Colletotrichum sp. from a wide range of crop species are all representatives of Glomerella cingulata. Therefore this fungus species is one of the most important fungi to any research in screening plant introductions for disease resistance. Single-ascospore cultures of this pathogen from ripe pepper fruits were highly pathogenic on wounded pepper fruits. They did not exhibit the typical heterothallism previously reported for isolates from other hosts. This work may lead to the development of a technique to screen ripe pepper fruits for resistance to anthracnose and is necessary for accurate screening with other important anthracnose diseases of plant introductions such as race 2 of Colletotrichum orbiculare on watermelon.

Diseases associated with plant introductions

Peanut viruses: Peanut mottle virus (PMV) was present in ten out of ten samples taken from plants which showed symptoms suggestive of a virus disease in the plant introduction nursery. Another virus which produced symptoms similar to those of peanut stunt virus (PSV) was isolated from a single plant. Both PMV and PSV have been reported previously from Experiment, Ga. Most of the new vegetatively propagated introductions collected on the 1968 peanut exploration to South America were indexed for viruses on the following hosts: Chenopodium guinoa, Vigna sinensis 'Early Ramshorn', Phaseolus vulgaris 'Topcrop', and Arachis hypogaea 'Virginia Bunch'. Sap from several introductions produced symptoms very similar to those produced by PMV on bean. Sap from a single introduction produced symptoms on cowpea unlike those produced by PSV and may indicate the presence of another virus.

Anthracnose of Dolichos biflorus: A fungus which apparently belongs to the Colletotrichum dematium f truncata group was isolated from D. biflorus. This is the first time that this host-parasite combination has been found in our nursery.

Distribution of plant materials

Distribution of seeds and plants in the Southern Region is summarized in the following table. Plant scientists in the South were supplied with 7663 lots of seed from Experiment and they received 2321 lots from other regional and federal stations, making a total of 9984 packets distributed in the South. These figures do not include fruit and ornamental plants distributed from Glenn Dale. We supplied 2151 packets to personnel outside the region. Nine-hundred-forty-one samples, consisting largely of castors and sesame, were placed in the National Seed Storage Laboratory.

Distribution of Seed in the Southern Region

State	S-9	NE-9	NC-7	W-6	Miami	Savannah	Total
Alabama	542	---	85	---	---	---	627
Arkansas	---	---	---	---	---	---	0
Florida	662	182	15	190	124	37	1210
Georgia	2055	10	343	127	2	69	2606
Kentucky	11	2	4	500	---	---	517
Louisiana	181	---	---	---	---	---	181
Mississippi	495	22	24	22	---	2	565
North Carolina	64	1	103	95	---	1	264
Oklahoma	403	---	---	---	---	---	403
Puerto Rico	775	---	2	24	---	29	830
South Carolina	1808	90	10	2	---	---	1910
Tennessee	---	2	37	---	---	1	40
Texas	667	---	21	126	2	1	817
Virginia	---	2	11	---	---	1	14
TOTAL	7663	311	655	1086	128	141	9984

NE-9	44
NC-7	601
W-6	315
Beltsville	46
Foreign	1145
TOTAL	2151
NSSL	941

New facilities

The new laboratory building and greenhouses were completed and Dr. Sowell has been using part of it for disease screening studies since last February. The laboratory constructed for insect screening is not yet occupied. The construction contract did not provide for equipment in the entomology laboratory or benches in that section of the greenhouse. Director Jackson recently made funds available to equip a 20'x25' section with benches.

Georgia Experiment Station funds were also made available to enlarge the seed storage room at a cost of $3000 including cooling equipment. This will increase our seed storage space about 60%.

ALABAMA S-9 (New Crops) ACTIVITIES

July 1969 - July 1970

Carl S. Hoveland, Agronomy and Soils Department

Auburn University, Auburn, Alabama 36830

A total of 1,070 accessions were received through the plant introduction program this past year. Of this number, 527 were cowpeas, 412 forage grasses and legumes, 85 corn, and 46 tomatoes. In addition, over 1,200 accessions in the World Sorghum Collection were received directly from the seed production area in Mayaguez, Puerto Rico.

HORTICULTURAL CROPS

Cowpeas

Dr. O. L. Chambliss (Horticulture Department) and Dr. D. R. Strength (Animal Science Department) are currently screening the entire available Vigna P.I. collection for protein and amino acid content of the seed. No results are yet available.

Peppers

Dr. W. L. Greenleaf (Horticulture Department) will release this year a new variety of Tabasco pepper (Capsicum frutescens L.) resistant to the Tabasco-etch virus and to ripe rot of the fruit. In addition, the new variety also has a higher pungency than the current commercial variety which is highly susceptible to "etch" wilt disease which has severely limited the production of the Tabasco variety in Louisiana.

Two P.I.'s of Capsicum sinense, (P.I. 152225 and P.I. 159236) both resistant to the Tabasco etch virus, served as sources of the valuable germ plasm for these improvements.

Tomatoes

Dr. Greenleaf (Horticulture Department) in a survey of tomato (Lycopersicon esculentum) heat tolerance conducted at three south Alabama locations late last summer, found P.I. 272735 (L. esculentum) from El Salvador was outstanding not only for heatset ability but also for its excellent flavor. This P.I. is a small oval fruited primitive cultivar with dark green shoulder, and high crack-resistance. He hopes to improve the flavor of processing tomato types and fresh-market tomato types from this source.

In addition, he is using P.I. 273444 as a source of concentrated fruit set and concentrated maturity with great success. He is also crossing an introduced variety called Dwarf Italian into his lines in the hope that the stiff stems of this variety will help hold the fruit off the ground to prevent ground rot.

Cantaloupes

Dr. J. D. Norton (Horticulture Department) reports that advanced breeding lines with resistance to Mycosphaerella citrullina, gummy stem blight, have produced high yields of fruit with excellent quality. The source of resistance was P.I. 140471. Vines have continued to grow and fruit throughout the summer and fall seasons. Three small fruited lines, AC-67-14, AC-67-17, and AC-67-59 were evaluated in grower trials in 1968 and 1969 for the commercial produce chain store trade. The tests indicated that the three melons were acceptable quality in competition with western grown fruit. Two jumbo size lines will be available for evaluation and grower trials in 1970.

An interspecific cross of Cucumis melo (P.I. 140471) susceptible x Cucumis metuliferous (African horned cucumber, P.I. not available

but obtained from S.E. Vegetable Breeding Laboratory, Charleston, South Carolina), resistant, and subsequent outcross of the F_1 to cantaloupe breeding line, AC-67-14, C. melo, indicates that introduction of resistance to Meloidogyne incognita acrita, root knot nematode, into commercial types is practical.

In field studies, segregation for resistance to M. incognita acrita was observed in the F_2 and outcross populations. The plants that resulted from the outcross of Resistant F_1 x AC-67-14 were vigorous and possessed a high degree of general disease resistance. The plants with resistance to the root knot nematode continued to grow vigorously throughout the growing season. Parental, F_1, F_2, and outcross plants are currently being tested for resistance to M. incognita acrita.

Ornamentals

Dr. Henry Orr (Horticulture Department) reports on several noteworthy introductions.

P.I. No.	Species	Remarks
317235	Ilex crenata f. microphylla Dwarf -	Prostrate growth, good foliage color
239991	Acanthopanax trifoliatus	Good vine growth for ground cover
331206	Ilex "Harry Gunning"	Good foliage color
325008	Photinia sp.	Fast growing-upright
324969	Cunninghamia lanceolota	Good upright growth
317359	Callicarpa formosana	Bushy upright growth
239247	Hedera helix-var. poetica	Fast growing
317286	Spirea fritschiana	Low, spreading growth
226542	Rhod. kiusianum	Very small foliage-flowered heavily
317270	Rhod. mucronulatum	Compact growth
317272	Rhod. yedoense var. poubhanense	Dwarf, compact
316983	Rhod. brathycarpum	Very little growth since planted
325002	Lyonia ovalifolia	Vigorous growth

Peanuts

Dr. A. C. Mixon (Agronomy Department) reports that selections from several peanut introductions had a high degree of resistance to attack by Aspergillus flavus and had a low level of aflatoxin. Selections from P.I. 268893 and 295170 were especially low in aflatoxin production.

Corn

Dr. W. P. Caldwell (Northrup King and Company Breeding Station, Atmore, Alabama) is screening corn P.I.'s for germplasm sources for leaf disease resistance, insect resistance, and root and stalk rot resistance. Helminthosporium is a serious problem on corn in the Gulf Coast area.

Foxtail and Proso Millet

Dr. Caldwell's program to develop a new grain crop for the Southeast is based entirely on P.I. germplasm.

Buffelgrass

Dr. Caldwell is using a number of P.I.'s as male parents in a hybrid breeding program.

Ryegrass

In a large ryegrass breeding program, Dr. Caldwell has found a P.I. source with very good heat tolerance. It shows promise as a 12-month lawn grass in the Lower South.

Pearlmillet

Dr. Caldwell's pearlmillet program at Atmore, Alabama has depended quite heavily on P.I. material as germplasm. They have screened some 400 introductions and have found sources of good combining ability, disease resistance, vigor, and high yield in this material. Two hybrids

on the market now, "Millex 22" and "Millex 23," have P.I. germplasm in their male parents. Several million pounds of seed of these varieties have been planted by farmers in the South in the last two years.

Sudangrass

Dr. Caldwell and co-workers have screened a number of sudan lines from P.I. sources. They will be releasing next year a sorghum sudan cross, "Sordan 70," that contains some of this germplasm in its male parent. This hybrid is resistant to prevailing leaf diseases and is a high yielder.

Tall Fescue and Phalaris

Dr. C. D. Berry (Agronomy and Soils Department) has a large new breeding program based on plant introductions. In the fall of 1969, 6,900 space plants from 121 Phalaris aquatica and 109 Festuca arundinacea were planted in the field.

Individual plant data is being taken to provide information on the potential of the individual plant as well as that of the plant introductions. Data will be collected on forage production and other agronomically important characteristics in the evaluation of these materials. This data will be used to characterize the variability within each population and the potential for forage production in the Alabama environment.

Superior plants in the respective nurseries will be selected and intercrossed for the production of new synthetic varieties. Plant introductions which have apparent adaptation to Alabama conditions will be evaluated further and superior plants selected for the establishment of an improved germplasm base. This germplasm will provide the basis for a recurrent selection program.

Many P. aquatica plant introductions were evaluated by Dr. C. S. Hoveland and 11 of those performing best in Alabama were selected, and 70 seedlings from each were planted. From these, 229 plants superior for winter growth were selected and duplicate progeny rows planted in October 1968. Data on forage production, distribution of production, regrowth, winter injury, time of heading, summer dormancy, rhizomatous growth, survival, seed weight, seed germination, and seedling weight have been collected for two seasons. Based on this data, 20 superior parent clones will be selected and recombined into potential synthetic varieties in the fall of 1970.

Additional plant introductions of Phalaris aquatica are needed which will persist better in the hot, humid climate of Alabama. Early investigation by Dr. C. S. Hoveland indicated that the Morocco type persisted well in Alabama. Consequently, more plant introductions from higher rainfall areas of Morocco and regions with similar climatic conditions likely would be more useful in my breeding program.

In addition, plant introductions of Festuca arundinacea selected for good winter growth are needed.

Fescue and orchardgrass accessions are also being screened by Dr. Caldwell (Northrup King and Company, Atmore, Alabama). Valuable sources of disease resistance and heat tolerance have been found and will be incorporated into breeding lines.

Vetch (Dr. E. D. Donnelly, Agronomy and Soils Department)

'Nova' vetch was released in December 1969. It is a Vicia sativa type with 70 to 90% hard seed. Genes for hard seed come from V. cordata P.I. 121275. Perhaps 100 acres are planted for seed at present. It is a highly preferred feed (seed) for quail and doves, as well as for

grazing and green manure.

P.I. 121275 is a small plant but is non-dehiscent as well as having hard seed. It has 2 n = 10 chromosomes.

Sericea lespedeza (Dr. E. D. Donnelly, Agronomy and Soils Department)

Ten Lespedeza cuneata introductions were planted in the spring of 1968. Two are especially vigorous: P.I. 286450 from Japan and P.I. 300009 from South Africa. These may offer a wider gene base, helping to increase vigor in this crop. They are somewhat coarse stemmed, but might be useful in a breeding program.

Miscellaneous annual legumes (Dr. C. S. Hoveland, Agronomy and Soils Dept.)

Several summer legume accessions were promising the first year: Clitoria ternata 319465 from Tanzania made excellent forage growth and was a good seed producer. Stylosanthes gracilis 319490 from Tanzania--very productive, leafy, prostrate, compact growth--failed to bloom at Auburn.

A number of Trifolium introductions were grown at Auburn but none were as productive as Yuchi arrowleaf clover.

Acreage of Yuchi arrowleaf (from P.I. 233816) clover is growing and rapidly replacing crimson clover. It is estimated that over 50,000 acres were grown for grazing in Alabama this past winter. In Autauga County (formerly the heart of the crimson clover seed growing area in Alabama), acreage of certified crimson clover has declined to 200 acres while certified Yuchi arrowleaf exceeds 2,000 acres.

Yuchi looks promising when planted on bermudagrass sods. In a grazing experiment at the Piedmont Substation, Camp Hill, Alabama, Yuchi persisted well until July in Coastal bermuda sod. Calf daily gains of

over 2.5 lb/day were obtained from April until July when gains dropped to 1 lb/day on bermudagrass alone.

Sorghums

Seed of over 1,200 accessions in the World Sorghum Collection are being screened for digestible dry matter (DDM) by W. B. Anthony and C. S. Hoveland. Seed was produced at Mayaguez, Puerto Rico by Dr. Fred Miller and DDM determined by the in-vivo nylon bag method at Auburn. The first phase of the work has been completed and data are currently at the statistical laboratory. Seed of different sorghum accessions differed considerably in DDM, suggesting that plant breeders may be able to develop varieties for substantially improved animal performance. The next phase of this project is to determine what chemical or physical properties of the seed are responsible for improved digestibility.

PUBLICATIONS ISSUED DURING YEAR:

1. Hoveland, C. S. 1970. Dormancy and seasonal growth of Phalaris species in Alabama. Proc. XI International Grassland Congress. Surfers Paradise, Queensland, Australia. pp. 608-611.

2. Hoveland, C. S., E. L. Carden, W. B. Anthony, and J. P. Cunningham. 1969. Phalaris aquatica - promising cool season grass for Alabama. Auburn University Agr. Exp. Sta. Highlights of Agr. Res. Vol. 16, No. 4.

3. Hoveland, C. S., E. L. Carden, G. A. Buchanan, E. M. Evans, W. B. Anthony, E. L. Mayton, and H. E. Burgess. 1969. Yuchi arrowleaf clover. Auburn University Agr. Exp. Sta. Bull. 396.

4. Norton, J. D. 1969. Incorporation of resistance to Meloidogyne incognita acrita into Cucumis melo. Proc. Southern Agr. Workers Assoc. 66:212.

S-9 Technical Committee Report
Arkansas Agricultural Experiment Station
Fayetteville, Arkansas
Period of July, 1969 to July, 1970

Ornamentals: Dr. A. E. Einert, our ornamental horticulturist, came to the staff in February, 1970, and has submitted this report on the plant introductions set in the field, April 1969.

Three of the six original plants of Iris spp (P.I. 317237) overwintered, one flowered and set seed. Flower color was not recorded.

Lagerstromia subcostata (P.I. 324994), two of the three original plants overwintered. These plants survived during a winter period when temperatures fell below 0°F on three successive days. Of these two plants that survived there is a striking difference in growth habit. One has spreading growth and red stem color and the other has upright growth with more green stem color. Both plants have dark green foliage. Cuttings were taken from both plants and these struck root rapidly (4 weeks) under mist with rootone.

Ilex "Wm. Cowgill' (P.I. 331203), one of two plants survived. Cuttings were made from this plant and these show callus after 4 weeks with rootone under mist. Ilex 'Howard Dorsett' (P.I. 331204), one of two plants overwintered. Cuttings were taken from this plant and the response was similar to that for P.I. 331203.

Small Fruits: Dr. J. N. Moore, horticulturist, supplied this report.

Three plant introductions of grapes were evaluated in 1969. P.I. 321353 was very early, ripe fruit on July 17. The cluster was small and very tight. The berries were small and seedless of dark red color and fair quality. This accession is susceptible to black rot and anthracnose. The grape accession P.I. 247592 bore small berries of blue color in medium to large clusters. It was late, ripening on August 15. The vine is very vigorous and productive and fairly healthy. The berries tend to be crisp and are in tight clusters. Fruit of accession P.I. 247590 were blue in color and with red juice. This one might be a good teinturier wine grape. The plants are very vigorous, productive and healthy.

Fragaria variety Juspa from the Netherlands (Post entry Permit No. 37-26694, was very productive, vigorous and susceptible to leaf spot). Berries were of medium size and absciss from calyx very easily when mature. This variety may be useful as genetic source of the easy capping character.

Lupines: Dr. John P. Jones, plant pathologist, has published the article titled "Reaction of Lupinus Species to Phytophthora Megasperma Var. Sojae in Plant Disease Reporter Vol. 53 #11, November, 1969.

Some plants in all lupine species except L. texensis, the Texas Bluebonnet, exhibited susceptible reactions. Lupinus bicolor, L. elegans, L. rothmaleri and two accessions of L. polyphyllus contained primarily resistant plants and appeared to be heterozygous in reaction. All the remaining species of Lupinus exhibited a marked susceptibility to the fungus.

Dr. Jones has noted that his screening study lends support to the suggestion that P. megasperma var sojae was not simultaneously introduced to North America with soybean, but was endemic on native lupines.

Southern peas: Progenies from the cross involving P.I. 221781 continue to show the concentration of pod set character which is needed in a once-over harvest operation. The best selection of this cross is being grown in a small seed increase plot this season.

Dr. M. S. Offutt, Agronomist, has shown interest in getting lupines from Europe that might possess resistance to Phytophthora to use in a breeding program on lupines. He has observed some herbicidal properties of the incorporation of lupines ahead of a cotton crop.

Dr. J. N. Moore, horticulturist, is especially interested in obtaining large fruited blackberries from South America.

FLORIDA REPORT S-9 'NEW PLANTS'
July 21-22, 1970
G. B. Killinger

Southern Regional Headquarters, Experiment, Georgia

Florida researchers, nurserymen, private citizens, Junior Colleges, schools and other received a wide variety of seeds and plants from Experiment, Georgia, and related plant introduction centers during the 1969-70 period.

The following reports on plant introductions have been submitted by a number of University of Florida personnel:

N. R. Lake, Grounds Superintendent, University of Florida, Gainesville, gives special mention to P.I. 227998, Rapanea nerifolia. The native species Rapanea guianensis has salt tolerance, and R. nerifolia will be checked for this characteristic. P.I. 227998 has shown cold tolerance this past winter with 18°F temperatures in a shade house. Ligustrum ovalifolium argenteum, P.I. 265262, has been as good as L. sinense variegata except it reverts to the green form. The red winter color of Cleyera japonica, P.I. 237916, makes this plant attractive, and it is being increased for landscape development. Mr. Lake notes as outstanding two introductions from Formosa by John Henry Davis, University of Florida Botanist, namely Acer oliverianum, P.I. 302815, and Liquidamber formosaha, P.I. 302822. A number of other ornamentals are noted by Mr. Lake as being in the can stage and still under evaluation.

William M. Morton, Plantation Field Laboratory, Ft. Lauderdale, reports P.I. 101452, Wallaceondendron celebicum, a highly ornamental plant, has great potential for the nursery trade. It is shade tolerant and bears up well under neglect. Jasiminum odoratissimum, P. I. 238775, makes exceptionally good growth and is a potentially marketable plant within one year. Cornus sanguinea, P.I. 293777, is a pest free plant developing into a superior shrub. Morton has seven Bougainvillea under evaluation and notes two as being very attractive, namely B. 'Isabel Greensmith', P.I. 292972, and B. 'Sweetheart', P.I. 292982. Viburnum sargentii koehne 'Susquehanna', P.I. 316681, is very attractive with light green palmate leaves and has trade value. Hibiscus 'Vulcan', a red flowered plant, is superior to H. rosa-sinensis and is excellent as a speciman plant. Taiwania crytomerioides, P.I. 355071, is an evergreen sprucy type of plant, and Kudzura japonica, P.I. 327883, a fleshy evergreen viny plant, may well find a place in South Florida. Morton is most anxious to find a coconut palm resistant to a new disease 'Coconut Yellows' which kills the trees, as well as to collect Portlandia sp. and Anthurium sp. from the wild.

James M. Crall at the Watermelon and Grape Investigations Laboratory, Leesburg, reports tolerance to infection with watermelon mosaic virus

from P.I. 255137 but has failed to get a good melon set from the introduction.

From the Everglades Experiment Station at Belle Glade, R. J. Allen, Jr. reports continued promise and interest in Hemarthria altissima accessions and Digitaria pentzii.

John M. McCaleb at the Range Cattle Station, Belle Glade, notes a number of Hemarthria, Digitaria and Bracharia species under test with the following in grazing trials:

> Hemarthria altissima, P.I. 299994.
> Digitaria sp., P.I. 300935, Slenderstem digitgrass.
> Digitaria decumbens, P.I. 111110, Pangolagrass.
> Cynodon dactylon, P.I. 244152.
> Fla. Agr. Exp. Sta. Circular S-201, September 1969, 'Slenderstem Digitgrass' is the official release circular for P.I. 300935.

From the West Florida Experiment Station, Jay, L. S. Dunavin reports P.I. 278699, Dactylis glomerata, shows promise after three years of testing and P.I. 264766, Festuca arundinacea, the most promising of several fescue introductions. Dunavin notes, following a cold winter, the following warm season grass introductions were making good growth by May 1, 1970, compared to standard pasture grasses: P.I. 299655, Digitaria milanjiana; P.I. 299994, Hemarthria altissima; P.I. 308603, Panicum antidotale; P.I. 310149, Paspalum notatum; P.I. 220606, Pennisetum flaccidum; P.I. 219610, Pennisetum orientale; P.I. 310308, Sorghastrum pellitus; and P.I. 302300, Vetivera zizanioides.

F. T. Boyd at Gainesville reports 22 Chloris gayana introductions had considerable resistance to Sting Nematodes (Belonolaimus longicaudatus). Cold resistance for North Florida temperatures was found in five Chloris sp.: C. caribaea, C. cuculiata, C. canterai, C. petrea, and C. polydactylia. Interspecific crossing of these cold-resistant species with promising C. gayana introductions is being attempted.

G. B. Killinger at Gainesville has received 100 Cajanus cajun introductions from India with seed colors of black, brown, gray, and white. The 'Norman' variety, P.I. 218066, still shows promise; however, insect control at flower and seedpod stage must still be solved. Kenaf, Hibiscus cannabinus, varieties E 41, E 71, C 108, C 2032, G 4, and G 45 yielded from 7 to 12 tons of oven dry stem suitable for paper-pulp. A feeding trial of 60 day old E 41 ensiled gave good animal performance with milking cows. Hemarthria altissima, P.I. 299993, 299994, 299995, and 299039 have cold resistance, and one or more may become grazing crops. The Hemarthria genus has been named "Limpograss", taken from the Limpopo River name and area in Africa where these grasses originated. Coastcross-1 bermudagrass, a Tifton hybrid, continues to look more promising than other bermudas on flat-woods poorly drained soils. Because of rather continuous rainfall throughout the 1970 season all

sunflower varieties and accessions were badly diseased or attacked by insects, and there were no evaluations.

A cold winter has been helpful for S. C. Schank in evaluating introductions and hybrids of *Digitaria sp.* which will be reported later. Perennial peanut investigations are being continued by G. M. Prine. Rex Smith at Gainesville has the USDA collection of *Panicum maximum* accessions under observation hoping to find evidence of sexual reproduction. He would like to get new accessions from Africa for this purpose. A. A. Cook, studying virus diseases of papaya (*Carica papaya*), is trying to find other Carica species for this study.

GEORGIA AGRICULTURAL EXPERIMENT STATIONS
REPORT TO S-9 REGIONAL TECHNICAL COMMITTEE
July 21-22, 1970

W. R. Langford

State and federal scientists and private individuals received propagating stocks of 2607 plant introductions during the past year. Much of this material went to plant breeders who are evaluating it for plant breeding stocks. In addition to the use of plant introductions in breeding programs research with introductions is conducted under two projects contributing to S-9. They are: (1) Hatch 172 - Agronomic evaluation of new plants for the production of oil, gums, drugs, and insecticides; and (2) Hatch 1060 - Evaluation of new ornamental plants.

The following reports were obtained from plant breeders in Georgia:

Dr. R. O. Hammons - Breeding progress: (a) Interspecific breeding -- The Spancross cultivar, released cooperatively on February 1, 1970 by the USDA, ARS, CRD and the Agricultural Experiment Stations in Georgia and Oklahoma, is the first peanut variety in the world to be developed by interspecies breeding. Spancross derives from interspecific hybridization between PI 121070-1 and the wild annual decumbent species Arachis monticola Krap. et Rigoni, accessioned as PI 210553.

(b) Intervarietal breeding -- The Tifspan cultivar, also released cooperatively on February 1, 1970 by the agencies cited above, derives from intervarietal breeding with PI 121070-1 as one parent.

These two varieties are described in Ga. Agri. Expt. Stas. Res. Reports 76 and 77, respectively, 1970.

Agronomic: In replicated yield trials at Tifton in 1969, fifteen (= 11.5%) of 130 peanut introductions exceeded the highest yielding appropriate commercial check varieties. The margin of difference was not great and more testing will be required to determine the value of these PI's.

Genetic markers: Preliminary studies with PI's 329225-226 suggest their utility as genetic markers, especially in natural crossing research. PI's 329225-226 are Hammons-Langford collections 5 and 6 from Campinas, Brazil, and exhibit contrasting genotypes: green foliage - white testa and purple foliage - purple testa, respectively.

Dr. Ian Forbes, Jr. - Dolichos lablab, PI 316899, was used as the early-flowering parent in crosses aimed at combining earlier flowering and thus reliable seed production with the greater vigor and productivity of the Australian commercial variety 'Rongai'. Most

D. lablab introductions, including Rongai, flower too late to produce good seed crops before killing frosts. PI 316899 flowers in June at the Tifton latitude which makes it a good source of earliness.

Lupinus albus, white lupine, PI 177456 from Turkey was used as a winterhardy parent in crosses with commercial European low-alkaloid varieties in an attempt to combine the winterhardiness of PI 177456 with the low-alkaloid content and soft seededness of the European varieties.

Lupinus angustifolius, blue lupine, PI 168535, was the source of the winterhardiness present in 'Frost' blue lupine released in Georgia and Florida in 1969. This introduction also provided the resistance to anthracnose present in 'Rancher' blue lupine and the gray leafspot resistance present in 'Frost'.

Of the many introduced Desmodium species tested, D. uncinatum, PI 284797 'Silverleaf' from Australia has shown the most promise as a perennial summer-growing legume. It is presently being evaluated in association with Coastal bermudagrass and Pensacola bahiagrass.

Dr. Glenn W. Burton - At the moment, we have small plants of Panicum maximum growing in 2-inch pots in the greenhouse that we expect to plant out in the field in the next couple of weeks. We hope to find time to make some assessment of these this summer in a search for parents that might be used in a breeding program. We are not at all sure that we will get involved in very much genetic improvement of this species.

So far as the Cynodons are concerned, we have added evidence to indicate that two of the bermudagrasses that I collected in Europe, PI's 320876 and 315904, are more winterhardy than any bermudagrasses previously available. We are currently hybridizing these with one bermudagrass from Kenya that came from seed that A. V. Bogdan sent to me in 1959. This one carries the PI number 255450.

We have nothing new to add on the Paspalum introductions. These were Paspalum notatums and most of them suffered rather severely from winter injury last winter.

Dr. M. D. Jellum - The fatty acid composition of 144 corn introductions from 5 countries was determined by gas-liquid chromatography. Results showed a wide range in oil composition as compared with that in corn inbreds of U. S. origin. For example the highest stearic acid content in oil of U. S. inbreds was 6 to 7% while oil of some introductions contained 10 to 16%. (Reference: Jellum, M. D. Plant introductions as a source of oil with unusual fatty-acid composition. 1970. Agricultural and Food Chemistry, Vol. 18, No. 3, p. 365).

The same introductions are being evaluated for resistance to corn stunt and maize dwarf mosaic virus. Several have shown some resistance in preliminary tests.

Dr. H. B. Harris - Results from screening sorghum introductions for resistance to anthracnose were published. (Reference: Harris, H. B. and Grover Sowell, Jr. 1970. Incidence of Colletotrichum graminicola on Sorghum bicolor introductions. Pl. Disease Reptr. 54:60-62.)

As a result of this publication seed of anthracnose resistant introductions were requested by numerous sorghum breeders, many of whom work for private industry.

Agronomic Evaluation of New Plants for the Production of Oils and Paper Pulp

John H. Massey
Project Leader Hatch 172 (S-9)

Helianthus annuus - A 3-year sunflower study was completed. Plants were spaced 6, 12, and 18 inches apart within rows and nitrogen was applied at the rates of 0, 50, 100, and 150 lbs./A.

1. Seed yields due to 50, 100, and 150 lbs. of N per acre (Avg. 2,132 lbs./A) were significantly different, but each yielded significantly higher than the check (1.401 lbs./A)

2. N at 50 lbs./A increased grams of seed per head, seed size, head diameter, plant height, and stem diameter as compared to non-treated plots. Plant height and stem diameter were increased by 50 lbs. of N per acre. Further increases did not result from additional nitrogen.

3. Nitrogen did not affect number of leaves per plant.

4. Seed yield for 6-inch (2,358 lbs./A) was higher than for 12- and 18-inch spacing (Avg. 1,163 lbs./A)

5. Yield per head, seed size, head diameter, and stem diameter increased with each 6-inch increase in plant spacing.

6. Spacing did not affect plant height or number of leaves.

Cruciferous CRops - Experiments involving Brassica carinata and Crambe abyssinica, sources of erucic acid, were planted to determine the effects of spring planting time and row width on seed yield and

plant growth. Plantings were made at four weekly intervals, beginning April 11 (one month later than intended). Row widths were 14, 28, and 38 inches for Brassica and 14, 21, and 28 inches for Crambe.

Crambe abyssinica

1. Planting date did not affect seed yield (Avg. 776 lbs./A of unhulled seed).

2. Planting date and row spacing did not affect plant height (Avg. 35 inches).

3. Seed yield in rows 14 inches apart (993 lbs./A) was significantly higher than that in 21- and 28-inch rows (Avg. 668 lbs./A), which did not differ significantly.

Brassica carinata

1. Seed yield decreased sharply from 436 lbs./A for the first planting to none for the fourth planting.

2. Plants seeded the first two weeks were taller than those seeded the last two weeks.

3. Row width did not affect seed yield.

Hibiscus cannabinus - A spacing experiment with kenaf varieties 'Everglades 71' and 'Guatemala 4' was planted June 4. Plants were spaced 3, 6, 9, and 12 inches apart in 20-inch rows.

1. Kenaf dry matter yields (2.9 T/A) were the same for each spacing and variety.

2. Plant heights (9 ft.) were the same for each spacing and variety.

3. Each 3-inch increase in plant spacing increased stem diameter significantly.

Kenaf and roselle (H. sabdariffa) variety test - Kenaf and roselle were planted in a variety test on June 4. Plants were thinned to four per foot in 20-inch rows, or 105,000 plants per acre. Roselle branched more than kenaf.

Yield, height, and stem diameter of kenaf and roselle varieties at Experiment, Georgia 1969.

Variety	Dry matter, T./A.	Height, in.	Stem diameter, mm
Kenaf			
Everglades 71	3.66 c*	102 b	18.8 b
Guatemala 4	2.92 bc	104 b	19.0 b
Roselle			
A59-57	2.18 ab	99 ab	14.8 a
A61-325R	2.00 a	98 ab	14.8 a
THS-12	2.24 ab	91 a	15.0 a
THS-44	2.33 ab	90 a	14.8 a

* Values in each column followed by the same letter are not significantly different at the 5% level according to Duncan's Multiple Range Test.

Work in Progress

1. Effects of planting dates and row widths on seed yield and plant characteristics of Brassica carinata.
2. Effects of planting dates and row widths on seed yield and plant characteristics of Crambe abyssinica.
3. Effects of planting dates and row widths on seed yield and plant characteristics of Brassica napus.
4. Effects of population on yields of two varieties of kenaf.
5. Kenaf yield of four kenaf varieties, as affected by time of planting.
6. Kenaf yield of two kenaf varieties, as affected by time and method of harvest.

Evaluation of New Ornamental Plant Introductions

W. L. Corley
Project Leader Hatch 1060 (S-9)

Rooted cuttings of 27 new woody ornamentals were obtained from the Glenn Dale Plant Introduction Station, National Arboretum, and Northeastern Regional Plant Introduction Station. These are being grown as container stock under lath prior to planting in the field nursery.

Several annual accessions showed promise as ornamentals:

Pennisetum alopecuroides	PI 90191	Dwarf type fountain grass
Pennisetum asperifolium	PI 330679	Vigorous, attractive fountain grass
Tricholaena repens	PI 208025	Attractive, white-flowered ruby grass
Zinnia linearis	PI 319385	Dwarf plant with showy, yellow flowers
Zinnia multiflora	PI 326203	Red flowers, semi-dwarf plant
Solanum nodiflorum	PI 247828	Purple stems with bright red fruit for floral arrangements
Cassia alata	PI 294071 PI 322311	Large, screening plant with yellow flowers in the fall
Phaseolus coccineus	PI 171806	Shows promise as an annual flowering vine
	PI 175855	"
	PI 176655	"
	PI 177048	"
	PI 247303	"
	PI 273666	"
	PI 311920	"
	PI 311950	"
	PI 311953	"
	PI 311997	"
	PI 311981	"

These and other promising accessions are being re-evaluated during the current growing season.

KENTUCKY S-9 (NEW CROPS) TECHNICAL COMMITTEE REPORT

ROY E. SIGAFUS, AGRONOMY DEPARTMENT

KENTUCKY AGRICULTURAL EXPERIMENT STATION, LEXINGTON

JULY, 1969 TO JULY, 1970

Dr. Norman L. Taylor, former committee member, reports that Kentucky workers received 96 accessions during the period:

Lycopersicon esculentum, 48 accessions
Lactuca sativa, 19 accessions
Bothriochloa spp., 9 accessions
Dactyloctenium aegypticum, 1 accession
Trifolium spp., 12 accessions
Medicago sativa, 1 accession
Cornnilla varia, 6 accessions

Mr. Norvel A. Colbert, Quicksand Plant Materials Center, Quicksand, Kentucky reported the performance of the plant introductions he received from Experiment, Georgia:

NAME	PI NO.	DATE PLANTED	EMERGENCE	VIGOR	QUANTITY OF FORAGE
Bothriochloa glabra	209168	5-14-69	Poor	Fair	Fair
B. hassleri	309953	"	Excellent	Good	Fair
B. intermedia	213857	"	Poor	Fair	Fair
B. intermedia	213858	"	Poor	Good	Good
B. intermedia	218060	"	Good	Good	Fair
B. intermedia	239167	"	0	--	--
B. intermedia	240833	"	Good	Good	Good
B. intermedia	241496	"	Fair	Good	Good
B. intermedia	241498	"	Fair	Excellent	Excellent
Dactyloctenium aegypticum	215592	3-13-69*	0	--	--

*Planted in greenhouse

Dr. Robert C. Buckner and co-workers grew plants from seed of giant fescue Festuca gigantea obtained from Mr. S. M. Diety, Pullman, Washington. These plants were hybridized with a highly disease resistant S_3 line of tall fescue out of the Kentucky variety, Kenwell. Of the hybrids obtained, two showed excellent winter hardiness, vigor, and quality, but were sterile. Treatment with colchicine has resulted in a relatively good set of seed. This seed was planted in early July, 1970 for further study. Additional efforts will be made to transfer quality from giant fescue to tall fescue by using the F_1 tall fescue X giant fescue hybrids.

Dr. Dean E. Knavel reported that materials obtained in previous years are being used. The following was reported:

Tomato: PI 251303 was found to resist feeding by red spider mites. Chemical analyses being conducted to determine the nature of the resistance. This strain has been crossed to susceptible varieties to determine the nature of inheritance for resistance.

Cucumber: PI 200815 and PI 200818 have been crossed into dwarf breeding lines for bacterial wilt resistance. Selection has been continued for resistant plants of dwarf habit.

Muskmelon: PI 236355 has been crossed into dwarf breeding lines for bacterial wilt resistance. Selection has been continued for resistant plants of dwarf habit.

PI 164320 has been crossed into dwarf breeding lines for powdery mildew resistance. Chemical flavor studies are being conducted on breeding lines containing resistance from this PI.

Lettuce: The PI lines obtained in 1969 were grown in the greenhouse in the spring of 1970. Of these 19 different lines, only PI 273616 appeared to have commercial potential.

Dr. R. W. Henley observed ten different ornamentals received in 1968. Only two had enough merit to rate comment. An Hibiscus accession was found to be an excellent cultivar with good flower form and substance. The Passiflora appeared to have good potential for a vine in a greenhouse environment.

1969-70 Report

Regional Project S-9 New Plants

Contributing Project 470

Mississippi

Workers with the Mississippi Agricultural Experiment Station, U. S. Department of Agriculture, Junior Colleges, School of Pharmacy, and private individuals obtained 565 PI accessions during the year.

Forty annual clover PI's were evaluated for height, vigor, spread, and yield. Four T. subterraneun and four T. resupinatum accessions were very vigorous, high yielding, made excellent regrowth when cut in full bloom, and warrant further evaluation. Inoculation appears to be a factor in the performance of these species.

From the domestic fruit exploration there are 13 plums, 24 apples, and 9 pears undergoing performance ratings in the State College orchards.

Over 200 accessions of corn have been screened for resistance to corn stunt mycoplasm and 50 for resistance to the southwestern corn borer.

Paspalum introductions (451) have been evaluated for cold tolerance. Breeding work is producing new varieties.

Ten Cynodon introductions have been compared to common Coastal bermudagrass under three levels of nitrogen fertilization. PI-290814 produced 15% more forage than Coastal; the others produced approximately 75% as much.

North Carolina - New Plants Project

Report to S-9 Technical Committee, Experiment, Georgia, July 20-22, 1970

Six cooperators from a total of 29 research personnel who receive PI catalogues and information received a total of 129 lines of ornamental, industrial crops, forages and horticultural crops during the past reporting year. These are just a small part of the total number of plant introductions under test in North Carolina as many hundreds of PI's are in various stages of advanced testing.

I. Plant Introductions of Special Interest

A. Dr. L. W. Nielsen reports on his disease resistance evaluations of 26 sweetpotato introductions. Scurf PI's 318843, 318855 and 318858 had the smallest lesion diameters.
Fusarium wilt: A number of the clones exhibited resistance equal to or better than Centennial. PI 320449 had the smallest wilt index. Root knot: Several clones may possess good resistance. Data on these evaluations appear later in the text.

B. Dr. D. H. Timothy reports on the continued evaluation of Pennisetum flaccidum and P. orientale, species having promise as perennial forage grasses in North Carolina and perhaps in other areas of the southeastern United States. Preliminary grazing and clipping studies near Raleigh indicate that the plants withstand defoliation at approximately three to four week intervals from early May until shortly before frost. Yields are superior to orchardgrass and fescue. Two papers have been published designating the plant introductions evaluated.

II. Domestic Plant Exploration

The domestic collections of Eastern Vaccinium species for use in the Southeast have been summarized and will be reported on by Dr. Langford. Dr. Gene Galletta has this collection established at the Castle Hayne Experiment Station. Cuttings will be available as the various introductions have been catalogued.

III. Evaluation of Potential Industrial Crops, Pulp Crops and Other Crops

A. Norman pigeon pea: The supply of seed of this variety has held up and large scale plantings of the crop have been made. Seed increase plots in Florida have been failures since the 1000 pound plus yield per acre in 1967. Seed quality has also been poor due to damage by the corn earworm. An experimental planting was made in Upper Volta during 1969 and was a success. Seed increase plots are being grown there this year and an abundant supply of seed should be available in 1971.

B. Sunflowers: A yield trial testing 22 varieties was evaluated in 1969 at Rocky Mount. Yields ranged from 765 to 1986 pounds of clean seed per acre. The bird food varieties continue to outyield the oilseed varieties by a wide margin. The oil seed varieties can not be economically

grown in North Carolina at the present contract price of the oilseed. A variety test with 25 entries is being evaluated this year with higher yields expected due to an early planting and adequate growing conditions.

C. Sugarbeets: Sugarbeets continue to look promising. A loan guarantee has been given to a Virginia firm for the development of a raw cane sugar refinery at Portsmouth. Crop comparison trials are being evaluated in the area to see if sugarbeets will be competitive with established crops of the area.

D. Kenaf: Yields are highest from 14-inch row plantings. Weed control and harvest are difficult at these spacings. Kenaf was planted two rows to a 38-inch bed with the highest yield obtained from 14-inch rows on a bed. Yields were one row per bed 5.7 tons, 2-7" rows per bed 6.4 tons and 2-14" rows per bed 6.5 tons per acre.

A single row forage chopper would be more efficient chopping two 7-inch rows than it would be chopping two 14-inch rows. Ten inches of stubble was left in the 14-inch rows which amounted to a .53 ton of dry matter loss per acre. The chopper would not leave this amount of stubble in 7-inch rows.

Nitrogen applications increased yields with a yield of 7.15 tons resulting from an 80 pound rate of applied nitrogen. Yields were not however statistically significant.

Kenaf was chopped green and placed in two snow fence silos; one open but covered, and one air tight. Samples are taken monthly from the silos for analyses.

A John Deere forage chopper cut the green kenaf with ease. The chop was rather ragged however. The chopper would chop the dryer material in January but the blower would clog as the material was so dry and fluffy. A baler was used to make bales for shipment. Each bale weighed from 40-50 pounds.

E. Trilisa odoratissima: A planting of deer tongue looked good. The complete planting winter killed however.

F. Digitalis lanata: Perennial plant growing to three feet with leaves harvested for the drug digoxin. Plants look good at this time.

G. Nepeta cataria: Catnip is very easy to grow and yields well. Usually collected in the wild the demand now exceeds the supply due to a shortage of pickers. Two to three cuttings can be made each year.

H. Tephrosia vogelii: Three plant populations were planted in 20 and 30 inch rows. Yields ranged from 3.0 - 4.1 tons per acre of plants containing from .6 to .7 tons per acre of leaves. Highest yields of leaves were obtained from the 6-inch in-the-row-spacing in 20-inch rows.

I. Briza spicata, Brassica spp., Bifora radians, Crepis alpina: Plantings of these crops were failures and no seed was harvested.

IV. Contributing Project: The North Carolina project was approved in 1969.

V. Work for 1970-71: All of the above crops will be evaluated. Any new species from the screening program will be planted on receipt of seed.

VI. Publications:

Chatterji, A. K. and D. H. Timothy. 1969. Microsporogenesis and Embryogenesis in Pennisetum flaccidum Griseb. Crop Science 9: 219-222.

_____ and _____. 1969. Apomixis and Tetraploidy in Pennisetum orientale Rich. Crop Science 9:796-799.

Disease Resistance Evaluations of Sweetpotato Introductions at NCSU - L. W. Nielsen

Notes on the disease reactions tabulated in the attached table.

Scurf: In general the lesions were larger in '69 than '68. The roots of 3 clones with smallest lesions in '68 had lesions 2 to 3 times larger in '69. Three clones having smaller lesion diameters for the two years are underscored.

Black rot: With the exception of four clones tested both years, lesions diameters varied considerably. PI 320455 developed small lesions when inoculated with New Zealand isolates of Ceratocystis fimbriata.

My confidence in this method for evaluating resistance to scurf and black rot is diminishing with time!

Fusarium wilt: A number of the clones exhibited resistance equal to or better than Centennial. PI 320449 had the smallest wilt index.

Root knot: Several clones may possess good resistance.

PI No.	Average lesion diameter - mm				Fusarium wilt	Root knot larvae in soil (per pint)	Root knot '69 egg masses (per 100 g.)
	Scurf		Black rot				
	'68	'69	'68	'69			
308201	6.3	--	16.7	--	S	1400	4.2
308201*	7.4	13.4	19.8	24.6	S	906	3.2
308208	7.8	11.4	21.9	12.0	S	4212	12.5
318843	6.1	6.5	20.6	20.3	S	275	0.4
318844	7.3	9.8	15.4	31.3	S	--	--
318846	8.9	11.3	16.4	29.6	I	56	0.2
318848	3.5	11.4	11.2	22.3	S	500	3.8
318851	7.4	15.5	16.8	26.3	I	6469	11.3
318852	7.0	14.7	13.2	13.2	I	3500	12.1
318855	5.8	7.7	9.3	21.6	S	3912	24.0
318856	6.8	10.6	13.9	17.4	S	2469	13.3
318858	6.9	7.8	20.1	20.7	I	375	2.1
318859	8.0	13.6	16.7	33.3	S	4100	12.7
318860	3.8	--	12.7	--	I	--	--
318861	5.6	13.2	14.8	14.3	S	4612	10.5
320446	13.6	12.5	13.3	28.9	I	625	0.6
320447	4.0	8.3	16.1	26.8	R	--	--
320448	4.4	11.2	13.0	31.0	I	1156	1.0
320449	--	--	--	--	R	--	--
320451	7.3	9.0	15.7	19.8	S	3112	21.3
320452	--	8.6	--	27.4	I-R	2425	6.6
320453	6.3	11.1	10.4	25.0	S	7212	10.1
320455	--	10.9	--	8.2	S	5150	13.7
324885	6.9	10.0	11.7	25.7	S	2383	5.6
324886	6.2	13.3	17.6	32.6	S	588	0.8
324889	9.4	12.2	17.9	29.3	-	6100	15.4

S-9 Report, Oklahoma Agricultural Experiment Station

Roy M. Oswalt and Ralph S. Matlock

GENERAL

Roy M. Oswalt retired June 30, 1970 after 26 years of service to Oklahoma State University.

PULSE CROPS

Chickpea (Cicer Arietinum)

One hundred thirteen (113) accessions and seven selections with limited seed were planted at the Stillwater Agronomy Research Station April 29, 1970 for observation and increase. Most of these produced some seed and a few produced yields estimated at 1000 pounds per acre. Some of these will be sent to the Regional Station to replinish depleted supply. The list of accessions grown follows:

1970 (Chickpea) Cicer Arietinum
Planted: 4/29/70

Okla. Cp.No.	P.I. No. or Selection	Okla. Cp.No.	P.I. No. or Selection
28	222772	154	310479
33	257584	175	140294
35	257586	182	292005
55	257584	184	297256
57	257586	189	297262
60	244332	190	297263
68	254547	194	297271
70	254549	202	315786
73	253226	205	315789
109	OAE Cp-61-10	206	315790
112	OAE Cp-61-13	207	315791
116	OAE Cp-61-17	208	315792
122	288313	211	315795
122-1	OAE Cp-122-1	213	315797
122-2	OAE Cp-122-2	214	315798
126	305411	218	315802
126-1	OAE Cp-126-1	219	315803
126-2	OAE Cp-126-2	220	315804
142	253227	223	315807

Okla. Cp.No.	P.I. No. or Selection	Okla. Cp.No.	P.I. No. or Selection
225	315809	298	339184
233	315817	304	339190
237	315821	305	339191
240	315824	306	339192
241	315825	307	339193
242	315826	308	339194
249	315833	314	339200
252	338993	315	339201
253	337467	318	339204
254	317468	319	339205
255	317423	320	339206
256	339142	321	339207
257	339143	322	339208
259	339145	323	339209
260	339146	324	339210
262	339148	325	339211
264	339150	326	339212
265	339151	327	339213
266	339152	328	339214
267	339153	329	339215
269	339155	330	339216
270	339156	331	339217
271	339157	332	339218
272	339158	333	339219
273	339159	334	339220
274	339160	335	339221
275	339161	337	339223
276	339162	338	339224
277	339163	340	339226
278	339164	341	339227
283	339169	342	339228
284	339170	343	339229
285	339171	344	339230
286	339172	345	339231
287	339173	346	339232
288	339174	347	339233
289	339175	348	339234
290	339176	349	339235
291	339177	350	339236
292	339178	351	339237
293	339179	352	339238
294	339180	353	339239
297	339183		

120 P.I's & Selections

Cowpea (Vigna sinensis)

The following promising accessions were planted in the Fusarium wilt test (Stillwater) and preliminary yield test.(Perkins)

1970 (Cowpea) Vigna Sinensis
Preliminary Yield Test also in Fusuriam Wilt Test

Okla. C-No.	P.I. No.	Okla. C-No.	P.I. No.
747	165486	760	255765
752	175327	764	293463
754	205141	765	293477
755	208771	767	293552
756	212930	768	293585

34 Cowpea varieties (or types) and Plant Introductions were planted in a fusuriam wilt test.

18 Cowpea varieties (or type) plus the 10 P.I. listed above were planted in yield tests as the most promising new introductions.

Mungbean (Phasealus aureus and mungo)

The mungbean and urd bean accessions grown in observation and increase rows in 1970 are listed below. We are particularly concerned with recording their characteristics under Oklahoma conditions and obtaining sufficient seed to screen for resistance to root knot nematode which is a potential menace to mungbean grown in Oklahoma. This work will be done by Robert Adcock under the supervision of Drs. James Kirby and Charles Russell.

1970 Mungbean & Mungo Tests (Phasealus aureus & P. Mungo)

Okla. M-No.	P.I. No.	Okla. M-No.	P.I. No.
733	211402	898	323282
735	271406	908	323292
736	271407	930	163110
740	211492	931	163113
771	288585	932	164644
915	323799	934	171435
916	323300	936	180311
917	323301	938	183407
918	323302	955	303075
931	163113	957	317463
936	180311	958	317464
938	183407	959	317465

Urd bean (Phasealus mungo)

Observation and increase plantings were made for the new accessions of urd bean this season:

Okla. M-No.	P.I. No.	Okla. M-No.	P.I. No.
909	323293	917	323301
910	323294	918	323302
912	323296	919	323303
914	323298	940	285305
915	323299	941	291365
916	323300	942	298910

1970 Plant Museum Nursery A.F.

159 2 row plots of Special crop Varieties, Strain or P.I.'s were planted in a plant museum nursery on the Agronomy Farm in 1970.

OILSEED CROPS

The new accessions of oilseed crops planted November 11, 1969 and harvested during from May through June 1970 are listed below. Three accessions of Brassica were completely winter killed (5 P-No's. 683, 642, and 654). The remaining Brassica selections (except Sp 672, 673, 674, 675, & 679) and accessions were productive. Aphids had to be controlled once during the season.

Brassica Test

1969-70

Sp-No.	P.I. or Strain	First Harvest	Second Harvest	Gms. Total	5000 Gm. Weight	Plant No.	First Bloom	First Pod	Plant Ht. Ins.
672	Golden	15	60	75		30	4/14	4/20	19
673	Argus	90	100	190	2.0	88	4/16	4/20	21
674	Aphid Resistant	60	35	95		29	4/16	4/20	24
675	Regina		40	40		1	4/14	4/20	
676	Matador	325	45	370		174	4/14	4/20	29
677	Gorezanski	268	110	378	2.3	120	4/14	4/20	23
678	WW521	293	68	361	2.2	168	4/14	4/20	28
679	WW544	110	33	143	2.2	112	4/14	4/20	22
680	Panter	310	50	360		143	4/10	4/18	22
681	Victor	285	50	335		167	4/14	4/20	28
682	Heimer	270	105	375		119	4/14	4/21	26
683	305275					0			
684	305219	355	75	430	2.4	131	4/13	4/19	25
685	305280	334	35	369		119	4/15	4/20	30
686	305281	466	115	581	2.0	144	4/14	4/20	31
687	311727	228	80	308		70	4/17	4/15	24
642	B.Campestris					0			
654	B.Juncea					0			

Okla. Sp-No.	P.I. No. or Strain	
669	279704	Briza spicata
670	312833	Xetantheaum annum
671	319407	Chomaepence afra (emerged in April)

University of Puerto Rico
Mayaguez Campus
AGRICULTURAL EXPERIMENT STATION
Plant Breeding Department
Río Piedras, Puerto Rico

JULY 1969 - JUNE 1970
S-9 TECHNICAL COMMITTEE MEETING
AMERICUS AND EXPERIMENT, GEORGIA
JULY 21 AND 22

During the year a total of 745 introductions were received consisting of 450 sugarcanes, 72 forages, 41 vegetables, 41 fruits, 101 grains, 25 ornamentals, 2 oil crops and 13 miscellaneous.

Fruits

Budwood of thirteen varieties of sapodilla (Achras sapota), was introduced successfully from St. Croix. The survival of the grafts made is high and they are developing satisfactorily. The clones will be planted at Fortuna and Isabela for evaluation.

At Adjuntas macadamia nut is developing well. Fruit production Feijoa was very poor. Moreover, it suffered from severe insect attack which probably caused the low yield. The results accumulated for several years indicate that this fruit introduction does not have any potential for production in Puerto Rico. Therefore, no further work will be done with it.

A small collection of exotic fruits was set out in the Corozal Substation. Included in this collection are: Garcinia mangostana, Psidium ssp., Terminalia spp., Daku langsat, Pili nut, Annona spp., Annona diversifolia, Sandoricum, and Breadfruit (imported varieties).

Root crops

A yam variety trial (edible Dioscorea sp.) including introductions from the Caribbean region, planted at the Corozal Substation, was harvested in April 1970. Observations in this trial indicate that cultivars Oriental, Barbados and Smooth Statia (P.I's. 7625, 7621, 7626) seem to adapt properly to mechanical harvest, judging from the shape and developmental habit of the tubers. The rubers are smooth, regular in shape, and develop close to the surface of the soil.

Cultivars Lisbon, Harper and Coconut Lisbon (P.R. P.I's. 7627, 7622, 7623) produced the highest yields, outyielding the local varieties significantly at the one-percent level.

However, they produce tubers that grow rather deep, at an angle of about 45° away from the center of the plant, and shaped like a baseball globe. This shape appears to be undesirable from the housewife stand point.

These cultivars are now being compared in replicated trials with the local commercial varieties in a split-plot experiment with two in the row distances. These trials were planted on March 24 and March 26, 1970 at Corozal and Isabela Substations.

A replicated trial established in a private farm at Arecibo for the evaluation of introduced cultivars of tannier, Xanthosoma sp. was a complete failure due to drowth. As the yields were so low, it was not worth analizing the data statistically. In spite of all the problems encountered, it seems that cultivar choubuttom, in introduced from Trinidad has potential for high production and tolerance to dry conditions. All central corms were harvested for use as planting material. New trials will be planted this year.

A replicated trial including 10 cassava introductions and 7 local varieties replicated 4 times, was planted at Arecibo on November 5, 1969 and will be harvested next August or September.

A similar trial was established at the Isabela Substation in December 1969.

Ornamentals

The following introductions obtained through S-9 which are being evaluated at the present have shown good adaptation to our environment. Callicarpa formosana, P.I. 324954 and C. japonica, P.I. 317359 indicate promise for use as hedges. Jasminum odoratissimum, P.I. 238775 is a vine with a small, but attractive yellow flower. These are being increased vegetatively.

In addition, two Plumiera sp., P.R.P.I. 11482 and 10245 introduced from Hawaii and Trinidad respectively have very attractive flowers and will certainly become highly demanded ornamentals in the future. The flowers are good sized and attractive in color. Their showy flowers are pink (P.R.P.I. 11482) and intense pink with yellowish tinge (P.R.P.I. 10245).

Contribution of the Federal Experiment Station, Mayaguez, P.R.

Studies on edible legumes and their improvement in the Caribbean, Central and South American countries have been started. Last winter 498 Vigna sinensis accessions were grown for observation. Data on preliminary observations is not available as yet.

Annual Report
New Crops Research in South Carolina
J. A. Martin
July 1969 to June 1970

S - 9 Technical Committee Meeting at Plant Materials Center, Americus, Georgia, on July 21 and at Georgia Agricultural Experiment Station, Experiment, on July 22.

There were 1728 accessions of seeds and plants distributed to cooperators in South Carolina since July 1, 1969. These accessions, along with promising accessions received in prior years are being tested and evaluated. Many accessions have been increased for use as needed in breeding programs. Others such as fruits and ornamentals require many years of testing before a complete evaluation may be expected.

Reports from cooperators are presented as follows:

Dr. Pryce B. Gibson, Clover Investigations, Agronomy & Soils, Clemson University, Clemson, S. C. 29631.

We have received seeds of several Trifolium species which we are using or will use in interspecific hybridization studies and chemical comparisons of species in the section Amoria. Considerable time has been spent in verifying the taxonomy of these species. Type specimens of several species have been placed in the Clemson Herbarium.

Dr. W. C. Barnes, Superintendent, Truck Station, P. O. Box 3158, Clemson University, Charleston, S. C. 29407

I do not have anything new on the PI deal. The first wee spoonful of cabbage hybrid seed was received last year and it appears resistance of the F_1 to downy mildew will be approximately equal to the resistant parent - this, of course, is good news. The same appears to be true of the downy mildew resistant broccoli. We are now feeding the seed company breeders material for test crosses.

Too many good new pickles - at least another year to shake them down before starting release.

Dr. Morris B. Hughes, Professor of Horticulture Edisto Experiment Station, Blackville, South Carolina 29817

I am working with Dr. Luther Baxter on alternaria on Cucumis melo, hoping that we can work out a satisfactory technique for screening for alternaria resistance in the greenhouse or growth chamber so that we can study the genetics of resistance of several PI accessions which have resistance.

Dr. D. M. McLean, Pathologist, U.S.D.A. - A.R.S., U. S. Vegetable Breeding Laboratory, P. O. Box 3348, Charleston, S. C. 29407

As you probably know my program with watermelons is to find resistance to race II anthracnose. We have found some resistance in a PI from South Africa we carry in our file as 1034, also 1106 shows some resistance. Most of the undesirable factors predominant in the citron has slowed us up in releasing the melon.

I have not received any new PI accessions from you for several years. The last I received from you were 252 accessions from various foreign sources. Perhaps you have accumulated many more by this time. I will appreciate receiving any new PI's that you have, particularly PI 271778.

Mr. R. B. Taylor, Greer Nursery, 1501 West Poinsett Street, Greer, South Carolina 29651

Chinese Chestnut: Obtained 1926. We still have some of the original trees and have sold seed from these trees to H. G. Hastings, Atlanta, Ga. and they have been spread throughout the southeast. We have obtained an improved variety from the seed and we have quite a few of these trees for sale this year. The original number of the first plants received: 56392, Castanea mollissima.

We have named the new dwarf holly, "Berries Jubilee" and a patent has been applied for this plant. It is being leased to Monrovia Nursery, Azusa, Calif. who will distribute this plant. This was propagated from the original Ilex Cornuta Chinese Holly No. 24638, the original still growing at our nursery. This is a true dwarf with large leaf and large berry.

Chinese Frienge: No. 22982, Loropetalum Chinense: Introduced in 1938. We have found this plant good for hedges and background and we are selling quite a few from the original plant which is about 15 to 20 feet tall.

No. 91518, Ilex Latifolia (Laurel Leaf Holly). We received this tree in 1938 and I have two trees 20 feet tall, a male and a female, loaded every year with berries. I have been growing these plants for years. It has proved to be a fine ornamental tree. It should be used more as a specimen plant in yards.

We have some other plants which we will report on next year.

J. A. Martin, Associate Professor of Horticulture, Clemson University, Clemson, S. C. 29631

Peppers, okra, and sweet potato PI accessions are being tested and evaluated for plant and fruit characters which may be suitable for mechanical harvesting. Processors of peppers and okra now contracting for these crops in Central American countries where hand labor is plentiful. If we are to continue to produce and process pepers, okra, and sweet potatoes in this country, we must find or develop varieties of these crops which are adopted to mechanized production. Therefore, we are taking a critical look at all available PI accessions of these crops searching for desirable characters which may be valuable in the successful production of these crops in this country.

At this time we have over 1600 PI accessions of pepper at Simpson Experiment Station near Clemson. We believe that it will be possible to harvest peppers by machinery and plans are underway to develop equipment as well as develop or find varieties suitable for this mechanization program.

There are 221PI accessions of okra plus 52 varieties and breeding lines planted for testing and evaluation. An okra harvester has been designed and constructed by Dr. Mel Richardson and other of the Clemson Agricultural Engineering Department. From actual field tests conducted to date it appears that a variety of okra will have to be developed by breeding to "fit" the machine. A pod type, which leans away from the stalk, is needed. Such a character was found in progemies from a multiple cross by Dr. Joe McFurin of the Horticulture Department at the University of Arkansas. Everything is being done to perfect the mechanization of okra production as the commercial growers are looking forward to the day of "turn key" methods of crop production.

The sweet potato accessions do not possess desirable horticultural characters to compete with our domestic and breeding lines of sweet potatoes. However, further testing will be conducted for other characters such as disease and insect resistance. The sweet potato acreage is on the decline in South Carolina. Unless ways and means are found soon to produce and process sweet potatoes at a reasonable cost, the crop will be a thing of the past.

Approximately one-third of an acre was planted to Briza spicata in the fall of 1969 for observation and seed increase. A perfect stand was obtained and the plants survived a very cold winter. However, at harvest time in May the crop looked great, but there was little seed in the heads. The seed stalks were harvested with a lawn mower and grass catcher. An attempt will be made to save as much seed as possible by cleaning. However, the entire bulk material as it was harvested is very light and a real problem is being anticipated in separating the seed from the chaff.

Sixteen Brassicas were grown during the winter of 1969 - 70. Yields, heights of plants at maturity, and harvest dates are listed as follows:

Variety	Heights of Plants (inches)	Harvest Dates	Yield, lbs./acre
Aphid Resistant	48	6/11	1398
W. W. 521	48	6/11	1380
Argus	46	6/8	1525
Matador	48	6/11	1712
W. W.	48	6/11	1766
Victor	48	6/11	2515
Heimer	40	6/11	1593
Golden	48	6/11	1130
Regina	36	6/1	699
Panter	48	6/11	2066
Gorczanski	48	6/11	2247
PI 305275	30	6/11	660
PI 305279	36	6/8	1621
PI 305280	38	6/11	1022
PI 305281	42	6/8	1466
PI 311727	36	6/1	999

All Brassica varieties were planted on October 10, 1969. Rows were spaced 42 inches apart. Seed drilled in row and was left unthinned. Single row plots of 50 feet in length were used. No diseases nor insects were present.

Results of the Brassica test which was planted for observation were very encouraging, especially since the production of this crop can be completely mechanized. It is hoped that this work can be expanded in the future.

The U. S. Regional Sunflower Yield Test was conducted at Clemson in 1969 and the data is presented in Table I. The first planting which was made on April 9, 1969 was completely washed away by heavy rains and a second planting was made on April 30, 1969. The yields were lower than those for past years. The 1970 Sunflower test was set-up at the Edisto Experiment Station at Blackville, but this planting was wiped out by a severe hail and six inches of rain shortly after planting. There will be no data from the sunflower work in 1970.

Results of the 1969 Kenaf varietal test at Clemson are shown in Table II. The planting was made on April 16, 1969 and harvested on November 13, 1969. Root - knot nematode infestation was very severe. Dr. Charles Adamson examined the roots of the Kenaf varieties and established the readings for the degree of infestation. The overall yield of the Kenaf varieties was reduced greatly due to the damage caused by the nematodes.

Cultural research on Tephrosia vogelii is underway at Clemson in cooperation with Dr. Joseph J. Higgins. In 1969, an experiment was initated to determine row widths and in-row spacing for plants for maximum leaf yield early in the season. Plots with 20 and 30-inch row widths and 6", 9", 12", and 18" in-row spacings with four harvest dates were grown to answer some of these questions. Seed from PI 257533 was used. Statistical analysis of data is incomplete at this time. Examination of the root systems showed large numbers of nitrogen nodules and a severe infestation of root-knot nematodes. This test was planted on land where Tephrosia vogelii was grown the previous year and where inoculated seed was used. It appeared from observation that the special inoculum culture that more striking results are noted the second year.

This test is being conducted again in 1970 on another piece of land.

Table I 1969 U. S. Regional Sunflower Yield Test

Location No. 46, Clemson, South Carolina

Cooperator: J. A. Martin

Entry No.	Identity	Height, inches	No. of Heads	Seed yield Lbs./A.	Seed yield Rank
4601	P-21 ms × HA 60	76	18	1700	1
4602	P-21 ms × HA 61	67	14	1028	8
4603	Valley	73	14	1308	2
4604	Peredovik	79	18	1297	3
4605	Peredovik (66)	77	14	1065	7
4606A	VNIIMK 8931	76	13	992	10
4607	VNIIMK 8931 (66)	73	14	1250	4
4608	Krasnodarets	72	18	1093	6
4609	NK HO 1	70	16	1154	5
4610	Majak	76	12	1005	9

Analysis of variance, seed yield in pounds per acre

Source of variation	D/f	Mean square
Total	39	
Replications	3	193,825 N.S.
Entries	9	184,588 *
Error	27	71,527

Coefficient of variation = 22.5%
L.S.D. (5% level) = 388 pounds per acre.

Planted April 30, 1969
Harvested August 25, 1969

Table II Kenaf Varietal Test
Clemson, South Carolina 1969

Variety	Yield lbs./acre	Nematode Resistance	Height (inches)
Everglades - 71	2954	3.2	76
SH/15R	4069	2.9	92
C - 108	3166	3.7	84
THS - 44	3665	1.7	83
A - 61 - 331	3126	2.1	81

* Oven Dry Weight, four row plots used.

Fertilizer - 1,000 pounds per acre of 5 - 10 - 10 broadcasted prior to planting.
Side - dressing - July 20, 1969 - 100 lbs. of N.
August 10, 1969 - 100 lbs. of N. (from Ammonium nitrate)
Planted - April 16, 1969
Row spacing - 20 inches apart and planted thinned to 4 plants per foot or 3 inches apart. Perfect stand obtained.
Harvested - November 13, 1969

Nematode data taken by Dr. Charles Adamson on November 14, 1969

Dr. O. W. Barnett, Department of Plant Pathology and Physiology, Clemson University, Clemson, South Carolina 29631

Several plant introductions of T. repens reportedly possess resistance to certain virus diseases. Ten seedlings of PI 224450, 234450, 234678, 246751, 257495, and 302441 were mechanically inoculated with each of the seven viruses. All ten plants of all PI lines inoculated with RCVMV, CYMV, and WCMV were infected. None of the PI lines were 100% infected by CYVV, AMV, or PSV. None of the plants were infected by the strain of BYMV used. Some, if not all, of the plants not infected by the above viruses by mechanical transimission may be capable of being infected by aphid transmission.

Mr. F. P. Cuthbert, Jr., Research Entomologist, U.S.D.A. - A.R.S., Entomology Research Division, P. O. Box 3187, Charleston, S. C. 29407

The following is a report of results of evaluation of PI material which I have received.

TURNIPS:

Seven PI lines, reported to have resistance to the turnip aphid, were compared with two resistant and a susceptible (Pomeranian) turnip. Each entry was replicated twice in greenhouse flats. After the seeds had germinated, the flats were innoculated with turnip aphids. Survival of the plants was the criterion for resistance. Results are shown in the following table. Our results agreed quite well with those reported by the plant introduction station. It was encouraging to find that the cross between Zwan (a European variety of turnip) and one of Dr. Barnes' breeding lines was about equal in resistance to the best of the PI's. The PI line 171538 was labeled B. napus but it closely resembled B. oleoracea both in appearance and response to the aphids.

Line	Species	No. of plants evaluated	%of plants dead on- 9/30	10/7	10/14
PI 171538	Brassica napus*	56	7	7	16
169059	B. nigra	102	26	44	48
169066	B. Nigra	104	27	38	40
173860	B. nigra	168	10	35	49
169085	B. juncea	108	27	55	66
173865	B. juncea	106	6	10	13
173868	B. campestris	71	98	98	98
Shogoin	B. campestris	70	20	44	54
Pomeranian	B. campestris	79	67	92	92
Zwan X S.C. breeding line	B. campestris	74	13	16	21

*Appears to be B. oleoraces

SWEETPOTATOES:

Twenty-nine accessions received from the U. S. Plant Introduction Station, Glen Dale, Maryland, were screened in the field for insect resistance. All of the entries made good vine growth but a number of them failed to produce roots large enough to rate. During the week ending October 20, 7.6 inches of rain caused severe rotting before the plots could be harvested. Consequently, we were not able to rate several other accessions. Our observations are shown in the table that follows.

P. I. Number	Variety and Source	Resistant	Susceptible to-- 1/ WDS	2/ SFB	3/ G	Remarks
308201	N.Z. 500, 'Owairaka Red'-New Zealand					Too badly rotted to rate
308208	N.Z. 677 - New Zealand	X				Very resistant to rotting
318843	N.Z. 27 - New Zealand	X				
318844	N.Z. 112, 'Gohan' - New Zealand					Did not produce enlarged roots
318846	N.Z. 196 - New Zealand		X		X	
318848	N.Z. 404, 'Kumala Belep' - New Zealand			4/	X	
318851	N.Z. 563 'Hou' - New Zealand		X	X		
318852	N.Z. 606, New Zealand			X		
318855	N. Z. 642, - New Zealand				X	
318856	N.Z. 643, - New Zealand		X		X	
318858	N.Z. 654, - New Zealand	X				
318859	N.Z. 657, - New Zealand			X	X	
318860	N.Z. 672, - New Zealand					Did not produce enlarged roots
318861	N.Z. 673, - New Zealand		X	X	X	Very resistant to rotting
319554	Tainung No. 57 - Tiawan					Too badly rotted to rate
319547	Tiawan 23 - Tiawan					Did not produce enlarged roots
320446	N.Z. 46, 'Sekaiichigo' - New Zealand					Did not produce enlarged roots
320447	N.Z. 99, Tuqqag' - New Zealand	X				
320448	N.Z. 153 'Ginumaneb' - New Zealand					Too badly rotted to rate
320449	N.Z. 452, 'Kumala'tolumahina' - New Zealand					Did not produce enlarged roots
320450	N.Z. 579, 'Arenga riki riki' - New Zealand					Too badly rotted to rate
320451	N.Z. 600 - New Zealand					Did not produce enlarged roots
320452	N.Z. 616 - New Zealand				X	
320453	N.Z. 646 'Liria' - New Zealand				X	Mixed, white skin roots injured by grub
320454	N.Z. 675 - New Zealand					Too badly rotted to rate
320455	N.Z. 694 - New Zealand					Too badly rotted to rate
324885	N.Z. 255 - New Zealand	X				
324886	N.Z. 394 - New Zealand		X			
324889	'Camote Amarillo' - Peru			X	X	

1/ Wireworm-Diabrotica-Systena complex

2/ Sweetpotato flea beetle

3/ Grub--Plectris aliena

4/ Very susceptible

Dr. R. E. Schoenike, Associate Professor of Forestry, Department of Forestry, Clemson, South Carolina 29631

I can report on the following material received in recent years. Background information on various accessions was given in last year's report and are not repeated here.

Accession PI 168939 Quercus acutissima

Good growth this past year and many trees are 4-7 feet tall at 5 years of age. Trees are now in their 6th season, overal survival on an old field site is 48% but losses this past year were small. No diseases noted. Arboretum trees have been pruned for shape. The tree basically is a bushy one and of more value for ornament than for forestry.

Accession PIM 19451 Eucalyptus cinerea

Very cold weather in January 1970 (temps. were near 0° F. for three consecutive nights) top killed all eleven plants, some of which were over 20 ft. in height. Dead tops were cut away in April and plants allowed to resprout. In early summer 1970 some of the sprouts have reached four feet in height. Very precariously hardy for our area.

Accession PI 293810 Pinus stankewiczii

Two plants of four remain alive and are growing slowly in the Arboretum. Hts.: 20" and 24" at 4 years of age.

Accession PI 293809 Pinus nigra pallasiana

One plant of four is alive and growing better this year. Rates as vigorous and is 15" tall at 3 years.

Accession NA 26310 Pinus pinaster maghrebiana

One plant received and at 3 years of age is hardy but growing slowly.

Accession NA 29211 Viburnum obovatum

One plant of three is vigorous and growing well. Two others are rated as weak after some apparent winter damage.

Accession PI 308782 Sambucus siberica

One plant of two survived until August 1969 when it succumbed to heat or drouth.

Accession PI 307591 Sambucus sieboldiana

Two of three plants received in April 1968 are alive and growing vigorously. One plant died in summer 1969.

Accession PI _____ Alnus hirsuta

One plant is alive and growing vigorously. Ht. 4 ft. after 3 years.

Accession PI _____ Alnus inoukumai

One plant is alive and growing vigorously. Ht. 3 1/2 feet after 3 years.

Accession NA 26306 Abies pinsapo marocana

One plant alive in 1969 is now dead. Appears to have been winter damage in 1969-70.

Accession NA 29284 Acer capilles

One plant is alive but growing slowly. Some dieback in late summer 1969 and is now classed as not vigorous.

Accession NA 29285 Acer grosseri

One plant alive and growing vigorously; about 2 ft. in height after 3 yrs.

Accession NA 28521 Cunninghamia konishii

One plant transplanted to open field plot in April 1969. Died in midsummer, seems to have been transplant injury.

Accession NA 29841 Pinckneya pubens

One plant transplanted to shady field plot in April 1969. Is alive and growing slowly.

Accession NA 31623 Pithecallobium flexicaule

One plant died in nursery bed in cold winter 1969-70.

Accession NA 827-S Quercus chenii

Five plants received in 1969. Three largest transplanted to open field plots in February 1970. Growing vigorously.

Accession NA 30152 Sophora tetraptera

Three plants received in 1969. Severely damaged in nursery last winter and doubtfully hardy. They remain in a nursery bed.

The following items were received from USNA in April 1970 and were placed in a nursery transplant bed for observation and outplanting in 1971.

NA 31291 Glyptostrobus lineatus (1 plant)
PI 320525 Larix gmelini var. olgensis (2 plants)
NA 31193 Michelia fuscata (2 Plants)
NA 31200 Rhododendron amogiamanum (1 plant)

Tennessee Report on S-9 "New Plants"

To Technical Committee, July 1969 to July 1970

W. E. Roever

In screening numerous acquisitions of Petunia (81) Gypsophila (10) and Antirrhinum (31) for resistance to Phytopthora parasitica, Dr. H. E. Reed found only two, Gypsophila hispanica Nu 46663 and G. paniculata Nu 45929 to be highly resistant. These were obtained through Dr. H. F. Winters.

H. van de Werken has propagated several hundred plants of Rosa rugosa 227432 that are being tested in pilot plantings by the Reservation Planning Section of T.V.A. He has also produced a yellow mutant of Coleus Pineapple Beauty 249793 using ethyl methanesulphanate (EMS).

Several hundred pounds of seed have been distributed to Tennessee nurserymen over the years from campus plantings of Quercus acutissima 168939 and Pyrus calleryana. The latter was planted in 1928 and the acquisition number has been lost.

R. B. Thompson, landscape architect, in cooperation with the horticultural department, is using several P. I.'s in campus plantings among them being: Acer ginnala 262710, Buxus sempervirens 'Agram' 255075, Cornus paucinervis 294095, Cryptomeria japonica angustata 279746, Ilex X 'Lydia Morris' 267824, Ilex X 'John T. Morris' 267825, Ilex crenata mutchagara 237878, Ilex crenata (yellow fruit) 231948, Osmaraea burkwoodi 242241, Ulmus laevis 290779, Ulmus parvifolia 210841, Crataegus aestivalis 248492, Thuja orientalis 207519 and Chimonanthus praecox 241484.

The popular European strawberry variety Senga Sengana 274680 was obtained from Dr. Dolan at Geneva, New York and used in several crosses. As grown in a greenhouse at Knoxville, Senga Sengana produced soft berries with deeply sunken achenes resulting in a bleedy fruit on handling and suggesting the variety will be unsuitable for commercial use in our area. When used as a female parent only a few flowers set fruit. In contrast, when used as a male parent it produced seed well on several other varieties. It is a prolific pollen producer.

Dr. W. D. Barber is acquiring a number of Medicago P.I.'s for forage breeding research. The primary objective is isolation of resistance to the alfalfa weevil. The anticipated approach involves irradiation of seed of diploid Medicagos and subsequent screening of the R_1 generation for weevil resistance. Many introductions obtained have been classified as diploid by other researchers. Others exhibit some of the phenotypic characteristics of diploid alfalfa, and chromosome counts will be made to determine if they are diploid. Self and cross compatibility and fertility observations will be made prior to the selection of seed for irradiation.

Bermudagrass -- Some 560 plant introductions were obtained from the Regional Plant Introduction Station and from Dr. Wayne Huffine at Oklahoma State University. These introductions have been observed for two, and in many cases three, growing seasons and were visually evaluated for vigor, winter hardiness, forage production, seasonal distribution of forage, and disease resistance. Leading commercial varieties were also grown for comparison. Many introductions have been discarded on the basis of little potential for forage production, but over 100 introductions are being maintained. Selections will be made this season for use in a hybridization program. Major emphasis will be placed upon winter hardiness, yield and seasonal distribution of yield, and forage quality as indicated by dry matter digestibility.

Annual Report from Texas
Agricultural Experiment Station
Regional Project S-9
Prepared by Eli L. Whiteley

Growing conditions at College Station, Texas during the 1969-70 were poor. The fall was cold and wet as was the spring. Night temperatures in April and May were about 10° below normal. Rainfall in late May, June and July was much below normal. All plantings have made very poor growth up to this time.

Researchers in Texas received over 1,000 plant introductions for evaluation. Most of these plants are now growing and evaluations will be made during this growing season.

FIELD CROPS

Dr. Charles E. Simpson reports that he has 58 peanut accessions under study at Stephenville. These accessions include Spanish, Valencia, Virginia, and Jumbo pod types. They are being evaluated for pod type, yield potential, disease resistance, pod shape, pod size, pod set, and uniformity.

Grain sorghums from Ethiopia are being evaluated by Dr. Lynn Courley of DEKALB Ag. Research. Twenty three introductions from high altitude sites in Ethiopia were grown in Puerto Rico in the winter of 1969 and open pollinated selections were made. All accessions were very tall and late. No crosses have been made with U.S. lines.

Work with sweet sorghum is progressing at a normal rate. Pilot plant studies have been delayed due to space and fund limitations.

MISCELLANEOUS PLANTS

A number of potentially useful plants were planted in the fall of 1969 and spring of 1970. Included among these were: Bifora radians (PI 325871), Chamaepeuce afra (PI 319407), Crepis alpina (PI 326551), Indigofera arrecta (PI 318808), Neptunia dimorphantha (PI 257765), Petroselinum crispum (PI 325873), Satureja hortensis (PI 226649), and Vernonia stenolepis (J 69124). No plants were obtained from field plantings.

Several Lesquerellas were planted in the fall of 1969. No plants emerged from these plantings. Lesqurella auriculata (PI 345712), L. angustifolia (PI 344035), L. gracilis (PI 344036) failed to germinate in the field plantings.

Other introductions which failed to germinate in the field were: Briza spicata (PI 279704), Crotoloria leioloba (PI 217907) and C. stipuloria (PI 164076).

OILSEEDS

Several Brassicas that have been more promising agronomically were grown in a replicated test in 1969-70. The results are presented in Table 1.

Table 1. Yields of Brassica introductions in 1969-70 at College Station, Texas.

P. I. No.	Yield in lbs./acre
305275 (B. campestris)	340
305279 (B. napus)	419
305280 (B. napus)	329
305281 (B. napus)	442
312847 (B. campestris)	409

These yields are quite low and would not be profitable for a farmer. Higher yielding plants might be obtained through a selection or breeding program. Several other Brassicas were grown in small plots. The yields are presented in Table 2.

Table 2. Yield of Brassica varieties and plant introductions at College Station, Texas.

Variety or Plant Introduction Number	Yield in pounds per acre
Aphid resistant	490
Galden	206
Argus	208
305275	738
305281	139
311727	172
Victor	16
Heimer	885
WW521	491
WW544	37
Planter	21
305280	68

VEGETABLES

Brassica carinata has been evaluated as a canned or frozen green leafy vegetable suitable for production in the Southwest. The flavor of the cooked, canned, or frozen greens is somewhat milder than collard greens without the pungency of mustrad greens. The percentage of moisture, titratable acidity, pH, Brix, ascorbic acid, protein, ash, and calcium are similar in amounts to that found in collard, cabbage, spinach, and mustard greens. The percentage of oxalic acid is much less than the amounts reported in spinach. Yields in the range of 20

tons per acre can be expected from mid-October plantings in the Rio Grande Valley. The selection of B. carinata used in these tests exhibits an effective level of field resistance to downy mildew but is susceptible to powdery mildew. The work on B. carinata was conducted at Weslaco, Texas by W. R. Cowley (TAES) and T. S. Stephens, G. Saldana, and F. P. Griffiths (ARS).

W. R. Cowley reports the use of several okra plant introductions in the breeding program at Weslaco, Texas. Advanced generations are as follows:

Perkins x 249620 - early, spineless, productive ladyfinger type, strap leaf
Clemson x 251500 - multiple bloom, medium early, extra dark green pod.
Emerald x 174006 - very heavy fruits, low spines, heavy leaf.
Louisana Green Velvet x 164273 - high quality "velvet type" fruits, angular very dark green, plant type medium to large, low spine.

Replicated yield tests were conducted in 1969, harvests were made over a period of 7 weeks. The results are as total marketable yields in Table 3.

Table 3. Yield of okra crosses in 1969.

Variety or Cross	Mean yield (lbs/acre)
Clemson X 251500	19,039
Clemson (Check)	12,912
Perkins X 249620	11,801
Emerald X 174006	11,233
Clemson X Dwarf Long Green Pod	11,319
La. Green Velvet X 164273	9,124
L. S. D. .05-1200	
L. S. D. .01-1659	

In the above test Perkins x 249620 led in the production of Grade 1 fruits in the early harvests, but Clemson x 251500 was the highest yielder of this prime grade thereafter. Characteristics of particular value in these crosses were:

Clemson x 251500 - Dwarfness, multiple bloom, dark fruit color, and superior yields.
Perkins x 249620 - Earliness, reduced foliage, very low spines, and potential as "cut" okra.
Emerald x 174006 - Fruit shape and weight, value as soup stock.
La. Green Velvet x 164273 - Fruit quality.

PLANTS FOR PULP

Work on kenaf in 1969 was reduced to some extent. Several varieties and plant introductions were grown in a variety test in East Texas. The results are presented in Table 4.

Table 4. The yield of kenaf grown in East Texas in 1969.

Variety or P.I. No.	Yield in tons/acre	Variety or P.I. No.	Yield in tons/acre
PI 256038	8.12 a	THS 22	6.00 ab
Guatemala 45	6.97 ab	SH/15 R	5.78 b
THS 12	6.94 ab	THS 17	5.69 b
THS 30	6.79 ab	El Salvador	5.68 b
THS 24G	6.68 ab	PI 256039	5.66 b
PI 265319	6.53 ab	THS 24 R	5.44 b
Everglades 71	6.43 ab	Cuba 108	5.33 b
Everglades 41	6.35 ab	Cuba 2032	5.28 b
ST/11760	6.17 ab	Guatemala 4	4.91 b
THS 44	6.17 ab	THS 2	4.88 b

Other tests conducted on kenaf include fertility, date of planting, date of harvest, and spacing tests on seven varieties of kenaf.

WORK PLANNED FOR NEXT YEAR

Work will be continued on annual plants for pulp. Varietal, fertility, and spacing studies will be continued in 1971. Oilseed plants will be evaluated and some selection work will be carried out on the better Brassica introductions.

PUBLICATIONS

Stephens, T. S., Saldana, G., and Griffiths, F. P. Quality of Brassica carinata as a Green Leafy Vegetable. Jour. Amer. Soc. for Horticulutral Sci. Vol. 95, No. 1, Jan. 1970.

Whiteley, E. L. Kenaf Research in Texas. Dept. Information Report No. 31. March 1970.

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Fort Worth, Texas

The Soil Conservation Service Report on S-9 New Crops for 1969 in its Southern Region, July 21-22, 1970 Americus, Georgia--Griffin, Georgia

By

W. C. Young, Regional Plant Materials Specialist-South

John D. Powell, Center Manager, Americus Plant Materials Center, Americus, Georgia, reports that he received 135 P.I. accessions during the year. He had a total of 388 P.I. accessions on his Center. They were distributed between 53 Genera.

Robert D. Roush, Center Manager, Brooksville Plant Materials Center, Brooksville, Florida, reports that he received 280 P.I. accessions during the year. He had a total of 742 P.I. accessions on his Center. They were distributed between 77 Genera.

B. B. Billingsley, Center Manager, Coffeeville Plant Materials Center, Coffeeville, Mississippi, reports that he received 89 P.I. accessions during the year. He had a total of 273 P.I. accessions on his Center. They were distributed between 51 Genera.

Jacob C. Garrison, Center Manager, James E. "Bud" Smith, Jr. Plant Materials Center, Knox City, Texas, reports that he received 12 P.I. accessions during the year. He had a total of 140 P.I. accessions on his Center. They were distributed between 27 Genera.

The Center Managers and the Field Plant Materials Specialists: Karl E. Graetz, Raleigh, North Carolina; Harry J. Haynsworth, Athens, Georgia; T. A. Bown, Jackson, Mississippi; Arnold G. Davis, Temple, Texas; and Robert D. Lippert, Manhattan, Kansas (serving Oklahoma) have furnished most of the background material that was used to describe the plants listed herein.

No plant materials were released during the year.

Some of the more important plant introductions that have been under test for several years by the Service are briefly discussed.

Arachis glabrata, P.I. 118457, 262839

Perennial rhizomatous peanuts continue to look good as ground covers, forage producers, and for beautification. They are vigorous, apparently disease free, but limited northward in climatic range. Approximately 50 additional accessions are under study to see if more hardiness can be found.

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Arachis monticola, AM 564, P.I. 263393
Continues to be promising as a wildlife plant on sandy soils where turkeys can scratch the nuts out of the ground. It is a reseeder. It is limited by lack of peg strength and seed harvesting is beyond present economic limits.

Brachiaria dictyoneura, P.I. 153053
Continues to show promise as a forage plant in peninsula Florida.

Castanea mollissima, BN 8299
A heavy producer of better than average quality nuts for a Chinese chestnut.

Echinochloa frumentacea, BN 8963
For water fowl, this accidental introduction continues to produce more seed than currently available sorts. It was released as "Chiwapa" and is finding a moderate market.

Echinochloa holubii, P.I. 207924
Slightly rhizomatous, fresh water marsh type plant. It shows promise for helping stabilize stream bank and shoreline erosion.

Elaeagnus umbellata, P.I. 294098
An introduction showing better climatic adaptation along the Gulf Coast and in Florida than most available autumnolive varieties.

Eragrostis curvula, P.I. 208994, 232813, 295689, 295703
These strains of weeping lovegrass are being compared with Ermello and common on site under grazing in Texas. Little or no difference in adaptation or use shows so far.

Eragrostis lehmanniana, P.I. 295698
An exceptionally robust strain of Lehman lovegrass. It has made approximately two times the dry weight production of commercially available Lehman lovegrass.

Eragrostis robusta, P.I. 209385
A broad bladed type, exceptionally hardy. Withstands winters in north Mississippi, central Arkansas, and piedmont North Carolina. It is possible that it is misidentified, but even so, it is more leafy, broader bladed and as robust as most E. curvula.

Glycine ussuriensis, P.I. 163453
A reseeding soybean useful for wildlife food planting. Its use is spreading to other areas of the South besides North Carolina. It is proving unadapted to those sites not suited to commercial soybeans.

Hemarthria altissima, P.I. 299993, 299994, 299995
The most rapidly growing and spreading grasses recently seen. P.I. 29993 is preferred by livestock in the spring; 299994 is the most cold resistant, having wintered at Americus, Ga., Coffeeville, Miss., and Knox City, Tex. It is only marginally hardy at the last two locations. Sting nematode damage is evident in very sandy sites in central Florida.

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Lespedeza virgata, P.I. 218004

Continues to look exceptionally good as a roadbank erosion control plant throughout the Southeast. Seed are beginning to be marketed for this purpose. Hay made from a seed field because of weeds was readily taken by livestock.

Malus hupehensis, P.I. 122586

A flowering crabapple of columnar form, bright green leaves and small fruit is attractive and furnishes food for birds. It has proven to be easy to grow and transplanting results are better with it than with several other species to which it was compared.

Panicum coloratum, P.I. 166400

"Selection 75" kleingrass has gained wide acceptance as a pasture grass since its release in Texas in 1968. The seed crop alone has been estimated to be between 125 to 175 thousand dollars in 1969.

Panicum miliaceum, P.I. 196692

The use and production of Dove proso millet has spread now from the Carolina coasts into Texas. Its use primarily as a food planting for doves and quail has enormously spread. A day length neutral it is the first proso to make adequate growth and crops in this area.

Paspalum nicorae, P.I. 202044

Paspalum nicorae, brunswickgrass, has proven to be adapted to an area extending from the south coastal portions of South Carolina westward to about the 40" rainfall line in northeast Texas and southward. It is furnishing good field waterway protection, contributing good erosion control on roadbanks, and providing hay and grazing. Under regular mowing and low fertility management, it forms a better sod than Pensacola bahiagrass on deep sands.

Pistacia chinensis, P.I. 21970

The Chinese pistacio is gaining acceptance across the South for its ornamental value and its fruit relished by many kinds of birds.

Phyllostachys bissetti, P.I. 143540

P. meyerii, P.I. 116768

We are looking at several of the more hardy bamboos as windbreak material.

Quercus acutissima, P.I. 233782

State foresters are growing and distributing seedlings of this plant in several southern states. It is widely adapted, comes into bearing early, and makes good regular crops of acorns relished by deer and squirrels. It is limited to well drained soil of moderate fertility.

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Salix glaucophylloides, P.I. 13690

This willow shows promise of stream bank erosion control in several states where it is undergoing tests. It withstands the flooding and so far has not become so big as black willow which is objectionable on account of size.

Trifolium vesiculosum, P.I. 233782

Meechee and Amclo continue to expand and grow in use. Over 12,000 pounds of seed were produced in Texas last year of these varieties. Texas was one of the last states to make adaptation tests with these crops.

Table of All P.I. Accessions under Test, in Production, or Otherwise for the Various Plant Materials Centers

In a presentation of this kind, a complete documentation of the attributes of all the materials listed would be impractical. Records on the performance of the items are on file in appropriate Service documents. The Soil Conservation Service evaluation process categorizes levels of study, and a glance at the tables that follow will indicate those items that have shown promise. Where they have been advanced beyond the initial evaluation stage, they possess some attribute that warrants further study.

The various items of the status columns may be further briefly described as follows:

Initial evaluations, columns 4, 5, 6

Plantings on centers usually in rod rows where the plants' characteristics and performance under good culture can be recorded.

For germination, G or GL = germinated and lived
G-D = germinated and died
NG = no germination
VL = vegetative - lived
VD = vegetative - died

Former years indicates materials carried during the year planted in an earlier year.

Advanced evaluations, column 7

Plants are noted in this status that have exhibited characteristics of sufficient importance to place them into more carefully controlled test that will give more precise evaluations of the worthiness.

Developing cultural methods, column 8

For the more promising plants, studies are often needed to determine such things as date and rate of planting, and others.

Field evaluation plantings, column 9

Comparisons of several plants in small scale plots with standards on particular sites, not on the center.

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Initial increase, column 10
The production of seed on the Center to provide that amount needed for testing, - on the Center or in field evaluation plantings.

Field scale increase, column 11
The production of seed on the Center to provide quantities sufficient for testing at a field scale in soil and water conservation districts on their cooperators' farms.

Breeders or foundation field, column 12
The maintenance and production of breeding and foundation seed on the Centers in order to supply seed to growers to get proven material on the market.

Seed orchards, column 13
Maintenance of important materials that may or may not have been completely tested.

Tables of P.I. accessions on the individual centers start on the pages indicated below:

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(File Code PM)

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TABLE OF ALL PI ACCESSIONS UNDER TEST, IN PRODUCTION OR OTHERWISE FOR THE AMERICUS, GA. PLANT MATERIALS CENTER FOR THE YEAR 1969

SPECIES	ACCESSIONS		STATUS										
			INITIAL EVALUATIONS										
			This Year		Former Years								
	Center AM / Number	PI, BN, or Other No.	Planted	Germination		Advanced Evaluations	Developing Cultural Management	Field Evaluation Plantings	Initial Increase	Field Scale Increase	Breeder or Foundation Fields	Seed orchard Holding block, or Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Agropyron elongatum	1687	PI-109542			x							
Andropogon distachyus	2097	283181			x	x						
Andropogon glabra	1411	209168			x	x						
Andropogon scoparius	1523	216751			x	x						
" "	1524	216752			x	x						
Andropogon scoparius	1525	216757			x	x						
" "	1526	216759			x	x						
" "	1527	216778			x	x						
" "	1528	217039			x	x						
Andropogon sp.	1969	306269			x	x						
Arachis benthami	2416	338252	July	VL								
" "	2417	338282	July	VL								
Arachis burkartii	692	261851			x							
" "	2418	338325			x							
" "	2537	338254	Sept.	VL								
Arachis burkartii	2538	338255	Sept.	VL								
Arachis correntina	2419	338310	July	VL								
" "	2420	338313	July	VL								
Arachis diogoi	2421	338268	July	VL								
Arachis duranensis	1631	219823			x	x						

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Continuation sheet no. 2

Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Arachis glabrata	694	PI- 262287			x							
" "	696	262797			x							
" "	697	262798			x							
" "	699	261865			x							
" "	700	262294			x							
Arachis glabrata	704	262839			x							
" "	708	262294			x							
" "	710	262794										
" "	711	262796			x							
Arachis glabrata	712	262801			x							
" "	713	262811			x							
" "	723	162801			x							
" "	1529	116976			x							
" "	1530	116979			x							
Arachis glabrata	2422	338256	July	VL	x							
" "	2423	338257	July	VL	x							
" "	2424	338259	July	VL	x							
" "	2425	338260	July	VL	x							
" "	2426	338261	July	VL	x							
Arachis glabrata	2427	338262	July	VL	x							
" "	2428	338263	July	VL	x							
" "	2429	338264	July	VL	x							
" "	2539	338265	Sept.	VL	x							
" "	2540	338266	Sept.	VL	x							

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Continuation sheet no. 3

Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Arachis glabarta	2541	PI-338304	Sept.	VL	x							
" "	2542	338305	Sept.	VL	x							
Arachis glabrata var. hagenbeckii	1532	172224			x							
" " " "	1533	151982			x							
Arachis guarantica	2543	338269	Sept.	VL								
Arachis hagenbeckii	2430	338367	July	VL								
" "	2453	338305	July	VL								
Arachis hypogaea	1632	219824			x							
Arachis macedoi	2431	338283	July	VL								
Arachis martii	2544	338270	Sept.	VL								
Arachis oteroi	2545	338386	Sept.	VL								
Arachis paraguariensis	2433	338271	July	VL								
" "	2434	338306	July	VL								
Arachis pintoi	2546	338314	Sept.	VL								
Arachis pseudoangustifolia	2435	338302	July	VL								
Arachis pseudovillosa	2547	338273	Sept.	VL								
Arachis pusilla	1633	210553			x	x						
Arachis repens	2436	338274	July	VL								
" "	2437	338275	July	VL								
Arachis repens	2438	338276	July	VL								
" "	2439	338277	July	VL								
Arachis sp.	564	263393	May	VL								
" "	693	262847			x							
" "	698	262813			x							
Arachis sp.	701	262834			x							
" "	702	262816			x							
" "	703	262817			x							
" "	695	262286			x							

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Continuation sheet no. 4

Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Arachis sp.	705	PI-262814			x							
" "	706	262820			x							
" "	707	F-1337			x							
" "	709	PI-262301			x							
" "	714	262812			x							
Arachis sp.	715	262815			x							
" "	716	262818			x							
" "	717	262819			x							
" "	718	262821			x							
" "	719	262826			x							
Arachis sp.	720	262828			x							
" "	721	262832			x							
" "	722	262840			x							
" "	2442	338258	July	VL								
" "	2443	338280	July	VL								
Arachis sp.	2444	338284	July	VL								
" "	2445	338287	July	VL								
" "	2446	338291	July	VL								
" "	2447	338293	July	VL								
" "	2448	338294	July	VL								
Arachis sp.	2449	338295	July	VL								
" "	2451	338298	July	VL								
" "	2452	338318	July	VL								
" "	2457	338279	Aug.	VL								
" "	2548	338201	Sept.	VL								

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Continuation sheet no. 5

Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Arachis sp.	2549	PI-338288	Sept.	VL								
" "	2550	338289	Sept.	VL								
" "	2551	338292	Sept.	VL								
" "	2552	338296	Sept.	VL								
" "	2553	338299	Sept.	VL								
Arachis sp.	2554	338300	Sept.	VL								
" "	2555	338301	Sept.	VL								
" "	2556	338303	Sept.	VL								
" "	2557	338313	Sept.	VL								
" "	2558	338316	Sept.	VL								
Arachis sp.	2559	338317	Sept.	VL								
" "	2560	338319	Sept.	VL								
" "	2561	338320	Sept.	VL								
" "	2562	338326	Sept.	VL								
" "	2563	338327	Sept.	VL								
Arachis sp.	2564	338329	Sept.	VL								
Arachis villosa	2440	338309	July	VL								
" "	2441	338323	July	VL								
" "	2454	330651	Aug.	VL								
" "	2455	330652	Sept.	VL								
Arachis villosa	2456	330653	Aug.	VL								
Ardisia crenulata	2512	275053	Aug.	VL								
Arundinella hirta	402	263693			x				x			
Arundinella hirta (Sel. of original)	402	263693			x				x			
" "	402	263693			x				x			

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Continuation sheet no. 6

Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Bothriochloa ischaemum	1240	PI-269364			x							
Brachiaria decumbens	2619	344767			x							
Brachiaria ruziziensis	2480	338220	Aug.	G								
" "	2481	338221	Aug.	G								
" "	2482	338225	Aug.	G								
Brachiaria ruziziensis	2617	344764			x							
" "	2618	344765			x							
Brachypodium mucronatum	1514	89817			x							
Brachypodium phoenicoides	1449	287785			x							
" "	1519	186288			x							
" "	2210	257680			x							
Bromus erectus	1357	111279			x							
Cajanus cajan	2068	279477	April	GD								
Callicarpa formosana	2403	324954	April	VL								
Callicarpa japonica	2404	317359	April	VL								
Castanea mollissima	1535	58602			x							
Castanopsis sclerophylla	2133	95630	Jan.									
" "	2133	95630			x							
" "	2133	95630	Nov.	G								
Celastrus sp.	2521	324963	March	VL								
Chloris distichophylla	1368	162637			x							
Chrysopogon fulvus	1402	213885	March	NG								
" "	1402	213885			x							
Cryptomeria japonica	793	279746			x							
" "	794	279748			x							
Cymbopogon distans	1229	271552			x							

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Continuation sheet no. 7

Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Dichanthium annulatum	1426	PI-199240			x							
Digitaria macroglossa	2284	299684			x							
Digitaria milanjana	1646	299689			x							
" " sub. sp. eylesiana	1648	299736			x							
Digitaria pentzii	190	106663			x	x						
Digitaria pentzii	190	106663			x							
" "	1649	299743			x							
" "	1668	302766			x							
Digitaria setivalva	1288	299795			x							
Digitaria smutsii	1655	299819			x							
Digitaria smutsii	1656	299826			x							
" "	1657	299828			x							
Digitaria valida	1653	299879			x							
" "	1660	299858			x							
" "	1661	299863			x							
Digitaria valida	1664	299877			x							
" "	1665	299878			x							
Echinochloa colonum	430	292598								x		
Echinochloa polystachya	2621	344771	1970		x			x				
Echinochloa sp.	2386	331387	March	NG				x				
Elaeagnus umbellata	1333	294098			x			x				
Elymus giganteus	847	108491			x							
Eragrostis chloremelas	2214	208087			x							
" "	2217	208225			x							
" "	2219	208384			x							
Eragrostis chloremelas	2220	226070			x							
" "	2222	234206										
" "	2223	234209			x							
Eragrostis curvula	2225	208385			x							

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Continuation sheet no. 8

Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Eragrostis chloromelas	2224	PI-276036			x							
Eragrostis horizontalis	539	276033			x							
Eragrostis robusta	360	234218			x							
" "	1673	234218			x							
Eurya ochnacea	2515	235502	Aug.	VL								
Festuca ampla	276	240157			x							
" "	276	240157			x							
" "	1355	240156			x							
Festuca arundinacea	1354	264766			x							
" "	1400	203728			x							
Festuca arundinacea (sel.)	1400	203728			x							
" "	2209	292602			x							
" "	2227	292603			x							
Festuca psammophila	1231	283320			x							
Glycine javanica	444	277534			x							
Hemarthria altissima	2313	299993	May	VL								
" "	2314	299994	May	VL								
" "	2315	299995			x				x			
" "	2316	299039			x				x			
Ilex cassine	2399	254592	March	VL					x			
Ilex latifolia	2509	274838			x				x			
Ilex montana var. macropoda	2400	316703	March	VL					x			
Ilex rotunda	2371	112222	1970						x			
" "	2510	112222			x				x			
Indigofera echinata	2106	225575			x				x			

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Continuation sheet no. 9

Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Indigofera hirsuta	2094	PI-316258			x							
" "	2096	311512			x							
Indigofera pseudotinctoria	325	197075			x					x		
Iris rossii	2522	316648	Aug.	VL					x			
Juglans regia	2568	125248	1970						x			
Juglans regia	2569	127460	1970						x			
" "	2570	159566	1970						x			
" "	2571	163539	1970						x			
" "	2572	265716	1970						x			
Kadsura japonica	2518	237883			x				x			
Lagerstromea indica	2516	316672			x				x			
" "	2517	316674			x				x			
Lathyrus sphaericus	1901	292796			x							
Lespedeza bicolor	1242	207718			x				x			
Lespedeza bicolor f. acutifolia matsum.	744	286477			x							
Lespedeza cuneata	334	195842			x							
" "	1369	186171			x							
" "	1474	179699			x							
" "	1475	246769			x							
" "	1903	310409			x							
Lespedeza intermixta	1471	246770			x							
Lespedeza penduliflora	746	286481			x							
Lespedeza pilosa	1477	246771			x							
Lespedeza serpens	1592	297385			x					x		
" "	1905	193950			x							

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Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Lespedeza virgata	1456	PI-218004			x					x		
Lithocarpus henryii	2134	120651	1970						x			
Lolium multiflorum	2382	321395	Oct.	G								
" "	2383	321396	Oct.	G								
" "	2384	321679	Oct.	G								
Lotononis bainesii	1292	234409			x							
Lotus corniculatus	465	260012			x							
" "	465	260012			x							
" "	1297	260011			x							
" "	1298	260013			x							
Lotus corniculatus	1298	260013			x							
Lotus frondosus	2233	310412			x							
Lupinus albus	2486	338645	Oct.	G								
Lupinus angustifolius	2487	338646	Oct.	G								
Lupinus hirsutus	2488	338647	Oct.	G								
Lupinus luteus	2489	338648	Oct.	G								
Lupinus varius	2490	338649	Oct.	G								
Malus baccata	1539	99907			x							x
Malus hupehensis	1540	122586			x							x
" "	1540	122586			x					x		
Onobrychis viciaefolia	1299	258767			x							
Onobrychis viciaefolia	1300	258774			x							
Orinthopus compressus	2236	284130			x							
Oryzopsis miliacea	1318	230621			x							
Osmanthus heterophyllus purpurpeus	683	242291			x							
Osmanthus heterophyllus x o. fortunei	687	238030			x							

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Continuation sheet no. 11

Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Osmanthus x osmarea burkwooki	689	PI-242241			x							
Panicum antidotale	364	185456			x							
" "	365	185457			x							
" "	365	185457			x							
" "	366	196337			x							
Panicum antidotale	367	213272			x							
" "	370	235119			x							
" "	1430	284150			x							
Panicum coloratum	371	207990			x							
" "	373	207995			x							
Panicum coloratum	378	208005			x							
" "	380	255333			x							
" "	381	255335			x							
" "	383	263602			x							
" "	384	263603			x							
Panicum coloratum	386	263606			x							
" "	387	263607			x							
" "	1418	178251			x							
Panicum coloratum var. makarikariense	361	203520			x							
" " "	363	210692			x					x		
" " "	1373	166400			x				x			
Panicum miliaceum	520	196692	May	G						x		
Panicum virgatum	2298	315728			x	x						
Paspalum alcalinum	2387	337556	March	NG								
Paspalum boscianum	1978	310049			x							
" "	1979	310051			x							

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Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Paspalum boscianum	1980	PI-310052			x							
Paspalum cromyorhizon	2395	276242	March	NG								
" "	2397	310059	April	G								
" "	2398	310070	April	G								
Paspalum dilatatum	1982	303975			x							
Paspalum intermedium	1983	310112			x							
Paspalum nicorae	469	202044			x	x				x		
" "	469	202044			x	x						
" "	470	276248			x	x						
" "	471	276249			x	x						
Paspalum nicorae	1266	284171			x	x						
" "	1267	209983			x	x						
" "	1985	304004			x	x						
" "	1986	310128			x	x						
" "	1987	310129			x	x						
Paspalum nicorae	1988	310130			x	x						
" "	1989	310131			x	x						
" "	1990	310132			x	x						
" "	1991	310133			x	x						
" "	1992	310314			x	x						
Paspalum nicorae	1993	310135			x	x						
Paspalum notatum	2289	284172			x							
" "	2290	162791			x							
" "	2292	209393			x							
" "	2293	241878			x							
" "	2294	276251										
" "	2291	204247			x							

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Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Paspalum notatum	2295	PI-282803			x							
" "	2296	282804			x							
" "	2297	284174			x							
Paspalum cf. quadrifarum	1977	310046			x							
Pennisetum alopecuros	1446	269235			x							
Pennisetum ciliare	581	203366			x							
Pennisetum clandestinum	2620	344768			x							
Pennisetum purpureum	2086	300086			x							
Pennisetum sp.	2088	304751			x							
" "	2322	271603			x							
Pennisetum unisetum	2087	304750			x							
" "	2087	304750	March	NG								
Phalaris aquatica	1696	240249			x							
" "	1715	306760			x							
" "	1724	306780			x							
Phalaris aquatica	1742	306735			x							
" "	1931	306743			x							
" "	1939	306756			x							
" "	1942	306761			x							
" "	1943	306762			x							
Phalaris aquatica	1944	306763			x							
" "	1948	306778			x							
Phalaris aquatica x arundinacea	1490	207959			x							
" " " "	1492	233707			x							
Phalaris arundinacea	2331	236525			x							

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Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Phalaris tuberosa	1494	PI-207961			x							
" "	1498	207968			x							
Phalaris tuberosa hirtiglumis	2091	202480			x							
Pistachia atlantica	1882	246336			x	x						
" "	1883	246337			x	x						
Pistachia atlantica	1884	276701			x	x						
" "	1885	276702			x	x						
" "	1886	276703			x	x						
Pistachia chinensis	1405	21970			x					x		
" "	1405	21970			x	x						
Pistachia terebinthus	1887	91608			x	x						
" "	1888	246341			x	x						
" "	1889	246342			x	x						
Pistachia vera	1890	12815			x	x						
" "	1890	12815			x	x						
" "	1892	17250			x	x						
Pistachia vera	1892	17250			x	x						
Polygnum capitatum	2523	307307	Aug.	VL					x			
Pterocarya stenoptera	2370	61938			x					x		
" "	2370	61938	Jan.							x		
Quercus acutissima	2089	317372			x				x			
Quercus macrocarpa	281	74222	Nov.	G					x			
" "	1761	74227			x				x			
Sasa pygmaea	1470	52674			x							x
Setaria argentina	1406	186346			x				x			
Setaria sphacelota	1407	153695			x				x			

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Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Sporobolus fiambriatus	2231	PI-300123			x							
Stipa pennata var. lessingiana	1730	314113			x							
Stipa splendens	1508	147820			x							
Themeda anathera	2338	271553	March	NG					x			
Themeda australis	2339	281968	March	G					x			
Themeda japonica	418	246782	March	G	x				x			
Themeda triandra	2337	274091	March	G					x			
" "	2340	206349	March	NG					x			
" "	2341	207932	March	NG					x			
" "	2342	208197	March	G					x			
Themeda triandra	2343	276070	March	G					x			
Trifolium isthmocarpum	2493	338675	Oct.	G								
Trifolium resupinatum	2494	338676	Oct.	G								
Trifolium spumosum	2495	338677	Oct.	G								
Trifolium vesiculosum	1452	234310			x						x	
Tripsacum australe	2396	337041	March	NG								
Viburnam lantana	2100	316679			x				x			
Vicia angustifolia	2496	340131	Oct.	G								
Vicia ervilla	2497	340132	Oct.	G								
" "	2498	340133	Oct.	G								
Vicia ervulla	2499	340135	Oct.	G								
Vicia narbonensis	2500	340146	Oct.	G								
" "	2501	340147	Oct.	NG								
" "	2502	340149	Oct.	G								

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Continuation sheet no. 16

Table of All Accessions under test, in production, or otherwise for Americus PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Vicia sativa	2503	PI-340157	Oct.	G								
" "	2504	340159	Oct.	G								
" "	2505	340169	Oct.	G								
Vicia villosa	2506	340174	Oct.	G								
" "	2507	340176	Oct.	G								

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(File Code PM)

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TABLE OF ALL PI ACCESSIONS UNDER TEST, IN PRODUCTION OR OTHERWISE FOR THE Brooksville, Florida PLANT MATERIALS CENTER FOR THE YEAR 1969

SPECIES	ACCESSIONS		STATUS									
			INITIAL EVALUATIONS									
			This Year		Former Years							
	Center F / Number	PI, BN, or Other No.	Planted	Germination		Advanced Evaluations	Developing Cultural Management	Field Evaluation Plantings	Initial Increase	Field Scale Increase	Breeder or Foundation Fields	Seed orchard Holding block, or Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Acacia cyclops	4728	330654 *	Apr	NG	X							
Aeschynomene paniculata Vog.	4264	322288	Apr	G								
" sp.	4265	322289	Apr	G								
" "	4266	322290	Apr	G								
" "	4267	322291	Jun	G	X				X			
" "	4268	322294			X							
" "	4269	322295			X							
Alysicarpus vaginalis (L.)	4270	322296			X							
Arachis benthamii	5094	338252	Sep	VL								
" "	5095	338282	Sep	VL								
" burkartii	1320	261851		X								X
" "	5096	338254	Sep	VL								
" "	5097	338255	Sep	VL								
" "	5098	338325	Sep	VL								
" diogoi	5099	338268	Sep	VL								
" glabrata	135	118457			X	X	X		X			
" "	1322	262287			X							X
" "	1325	262797			X							X
" "	1334	262839			X	X	X		X			
" "	1346	262794			X							X
" "	1348	262796			X							X
" "	1349	262801			X							X
" "	3220	231318 *			X							
" "	3223	231319 *			X							
" "	5100	338256	Sep	VL								
" "	5101	338257	Sep	VL								

* Accession removed during 1969.

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Continuation sheet no. 2

Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Arachis glabrata	5102	338258	Sep	VL								
" "	5103	338259	Sep	VL								
" "	5104	338260	Sep	VL								
" "	5105	338261	Sep	VL								
" "	5106	338262	Sep	VL								
" "	5107	338263	Sep	VL								
" "	5108	338264	Sep	VL								
" "	5109	338265	Sep	VL								
" "	5110	338266	Sep	VL								
" "	5111	338267	Sep	VL								
" "	5112	338304	Sep	VL								
" "	5113	338305	Sep	VL								
" guarantica	5114	338269	Sep	VD								
" martii	5115	338270	Sep	VL								
" oteroi	5116	338286	Sep	VL								
" paraguariensis	5117	338271	Sep	VL								
" "	5118	338306	Sep	VL								
" pintoi	5119	338314	Sep	VL								
" "	5119	338314	Oct	G								
" pseudoangustifolia	5120	338302	Sep	VL								
" pseudovillosa	5121	338273	Sep	VD								
" "	5121	338273	Nov	VL								
" repens	5122	338274	Sep	VL								
" "	5123	338275	Sep	VL								
" "	5124	338276	Sep	VL								
" "	5125	338277	Sep	VL								
" sp.	1323	262286			X							X
" "	1331	262834			X							X
" "	1333	262817			X							X
" "	1359	262828			X							X
" "	1360	262832			X							X
" "	1361	262840			X							X
" "	5129	338201	Sep	VL								
" "	5131	338283	Sep	VL								

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Continuation sheet no. 3

Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Arachis sp.	5132	338284	Sep	VL								
" "	5133	338288	Sep	VL								
" "	5134	338289	Sep	VL								
" "	5135	338291	Sep	VL								
" "	5136	338293	Sep	VL								
" "	5137	338295	Sep	VL								
" "	5138	338296	Sep	VL								
" "	5139	338299	Sep	VL								
" "	5140	338300	Sep	VL								
" "	5141	338301	Sep	VL								
" "	5142	338303	Sep	VL								
" " (RPIS #322)	5143	338313	Sep	VL								
" " (RPIS #322B)	5144	338313	Sep	VL								
" "	5145	338316	Sep	VL								
" "	5146	338317	Sep	VL								
" "	5147	338318	Sep	VL								
" "	5148	338319	Sep	VL								
" "	5149	338320	Sep	VL								
" "	5150	338326	Sep	VL								
" "	5151	338327	Sep	VL								
" "	5152	338329	Sep	VL								
" "	5153	338292	Sep	VL								
" "	5162	338279	Oct	NG								
" "	5168	338287	Oct	VD								
" "	5169	338294	Oct	VD								
" "	5170	338298	Oct	VD								
" villosa	3228	210555			X							
" "	3230	261872 *			X							
" "	5126	338309	Sep	VL								
" "	5126	338309	Oct	NG								
" "	5127	338310	Sep	VL								
" "	5128	338323	Sep	VL								
" "	5163	330651	Oct	G								

* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Arachis villosa	5164	330652	Oct	G								
" "	5165	330653	Oct	G								
Argyrolobium linnaeanum Walp.	4176	302847			X							
Astragalus sinicus L.	4271	322297 *			X							
Axonopus affinis Chase	1216	237128			X							X
Brachiaria brizantha	2711	298975			X							X
" " (Hochst.)Stapf	2282	292178 *			X							
" " " "	2283	292179 *			X							
" " " "	2286	292182			X							X
" " " "	2287	292183			X							X
" " " "	2288	292184 *			X							
" " " "	2291	292187 *			X							
" " " "	4840	316444	Apr	G								
" decumbens Stapf.	4841	316445	Apr	G								
" dictyoneura	140	153053			X					X		
" " (Fig. & DeNot)	4842	316446	Apr	G								
" humidicola	924	257678			X							X
" "	2560	299029 *			X							
" mutica (Forsk.) Stapf.	4651	316447			X							
" ruziziensis Germain & Evrard	4843	316448	Apr	NG								
" " " "	4986	338220	Aug	VL								
" " " "	4987	338221	Aug	VL								
" " " "	4988	338225	Aug	VL								
" " " "	5174	344764	Oct	VD								
" " " "	5175	344765	Oct	VD								
" " " "	5176	344766	Oct	VD								
" sp.	4167	299499 *			X							
Brachypodium phoenicoides (L.) Roem. & Schult.	4579	257680 *			X							
Bromus unioloides HBK	4580	316176			X							
" uruguayensis Arech.	2906	283201 *			X							
" willdenowii	3925	315677 *			X							
" " Kunth.	4581	164347			X							

* Accession removed during 1969.

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Continuation sheet no. 5

Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Cajanus indica var. Norman	1050	218066	Mar	G					X			
" indicus	4582	304646			X							
Callicarpa formosana	4940	324954	Apr	VL								
" japonica	4941	316359	Apr	VL								
Calopogonium mucunoides Desv.	4178	281634*			X							
" " "	4272	322301 *			X							
" " "	4273	322302 *			X							
" " "	4274	322303 *			X							
" sp.	4275	322304 *			X							
" "	4276	322305 *			X							
Canavalia maritima	476	209314 *			X							
" obtusifolia (Lam.) DC.	4277	322309 *			X							
" sp.	4584	200209 *			X							
Cassia alata L.	4180	164034			X							
" angulata Vog.	4278	322312			X							
" bicapsularis L.	4279	322313			X							
" " "	4280	322314			X							
" flexuosa L.	4281	322316 *			X							
" " "	4282	322317 *			X							
" " "	4283	322318 *			X							
" " "	4284	322319 *			X							
" latistipula Benth.	4285	322320 *			X							
" " "	4286	322321 *			X							
" " "	4287	322322 *			X							
" rotundifolia	4288	322323 *			X							
" " Pers.	4289	322324 *			X							
" sp.	4290	322325			X							
" "	4291	322326			X							
Castanea mollissima	4532	58602	Feb	VL	X				X			
" " Blume	2844	70314			X				X			
Cenchrus ciliaris	137	155084			X							X
" "	678	153671	Aug			NG						
" "	1502	271198	Aug		X	VL				X		
" "	4783	165749	Apr	G								

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Cenchrus ciliaris L.	3392	243199 *			X							
" " "	3894	299517 *			X							
" " "	3896	299520 *			X							
" " "	3897	299522 *			X							
" " "	3898	299523 *			X							
" " "	3899	299524 *			X							
" " "	3900	299525 *			X							
" " "	3903	299528 *			X							
" " "	3904	299532 *			X							
" " "	3906	299534 *			X							
" " "	3907	299535 *			X							
" " "	3908	299536 *			X							
" " "	3909	299537 *			X							
" " "	3911	299539 *			X							
" " "	3914	299542 *			X							
" " "	3915	299543 *			X							
" " "	3916	299544 *			X							
" " "	3917	299545 *			X							
" " "	3918	299546 *			X							
Centrosema arenarium Benth.	4292	322327 *			X							
" kermesi Burkart.	4293	322328 *			X							
" plumieri (Turp.) Benth.	4294	322329 *			X							
" pubescens Benth.	3872	316190			X							
" " "	3873	316191			X							
" " "	3874	316192 *			X							
" " "	3875	316193 *			X							
" " "	3876	316194			X							
" " "	3877	316195			X							
" " "	3878	316196 *			X							
" " "	3879	316197			X							
" " "	3880	316198			X							
" " "	4295	322330			X							
" " "	4296	322331			X							
" " "	4297	322332			X							

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Centrosema pubescens Benth.	4298	322333			X							
" " "	4299	322334			X							
" sp.	4300	322338			X							
" "	4301	322339			X							
" "	4302	322340			X							
" "	4303	322341			X							
" "	4304	322343 *			X							
" "	4305	322344			X							
" "	4306	322345			X							
" "	4307	322348			X							
" "	4308	322349			X							
" "	4309	322350			X							
" "	4310	322351 *			X							
" "	4311	322352			X							
" "	4312	322353 *			X							
" "	4313	322354 *			X							
" "	4314	322355			X							
" "	4315	322356 *			X							
" virginianum (L.) Benth.	4316	322336			X							
Chloris caribaea Spreng.	4844	203626	Apr	G.								
" castilloniana Lillo&Parodi	4585	316200			X							
" gayana	431	226052 *			X							
" "	4181	316411			X							
" "	4845	317342	Apr	G								
" " Kunth.	3558	309962 *			X							
" " "	3927	299548 *			X							
" " "	3929	299550 *			X							
" " "	3930	299552 *			X							
" " "	3931	299554 *			X							
" " "	4586	316203	Jun	G								
" " "	4846	202502	Apr	G								
" " "	4847	203519	Apr	G								
" " "	4848	298981	Apr	G								
" " "	4849	298982	Apr	G								

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Chloris gayana Kunth.	4850	298983	Apr	G								
" " "	4851	298984	Apr	G								
" " "	4852	318747	Apr	G								
" " "	4853	319460	Apr	G								
" " "	4854	319461	Apr	G								
" " "	4855	319462	Apr	G								
" " "	4856	319463	Apr	G								
" " "	4857	319464	Apr	G								
" " "	4858	316202	Apr	G								
" " "	4859	337315	Apr	NG								
Clitoria laurifolia Poir.	4317	322357			X							
" " "	4318	322358			X							
" ternatea L.	4319	322364	Jun	G								
" " "	4320	322365	Jun	G								
" " "	4321	322366			X							
Crotalaria anagyroides HBK	4322	322367	Apr	G								
" " "	4323	322369	Apr	G								
" balansae Micheli	4324	322370	Apr	G								
" brachystachya Benth.	4325	322371	Apr	G								
" " "	4326	322372	Apr	G								
" " "	4327	322373	Apr	G								
" eriocarpa Benth.	4328	322374	Apr	G								
" grantiana Harv.	4329	322375	Apr	G								
" " "	4330	322376	Apr	NG								
" incana L.	4588	304647	Apr	G								
" intermedia Kotschy.	4589	304648	Apr	G								
" juncea L.	4182	316208	Apr	G								
" lanceolata E. Mey.	4331	322378	Apr	G								
" " " "	4332	322379	Apr	G								
" orixensis Willd.	3933	186303	Apr	G								
" paulina Schrank.	4333	322380	Apr	G								
" pilosa Mill.	4334	322381	Apr	G								
" saltiana Andrews	4335	322382	Apr	G								
" " "	4336	322383	Apr	G								

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Crotalaria saltiana Andrews	4337	322384	Apr	G								
" " "	4338	322386	Apr	G								
" " "	4339	322387	Apr	G								
" " "	4340	322388	Apr	G								
" " "	4341	322389	Apr	G								
" " "	4342	322398	Apr	G								
" sp.	4343	322399	Apr	G								
" "	4344	322400	Apr	G								
" "	4345	322402	Apr	G								
" "	4346	322403	Apr	G								
" "	4347	322404	Apr	G								
" "	4348	322405	Apr	G								
" "	4349	322408	Apr	G								
" "	4350	322409	Apr	G								
" "	4447	172277	Apr	G								
" "	4590	165715	Apr	G								
" spectabilis Roth.	4885	316944	Apr	G								
" " "	4886	316945	Apr	G								
" stipularia Desv.	4351	322394	Apr	G								
" " "	4352	322395	Apr	G								
" " "	4887	316946	Apr	G								
" " "	4888	316947	Apr	G								
" usaramoensis Baker f.	4353	322396	Apr	G								
Cynodon plectostachyum	1204	224152			X							X
Desmanthus virgatus (L.) Willd.	4429	322411			X							
Desmodium cinerascens Gray.	1754	282691	Mar		X				WL			
" heterocarpon	4576	217910			X							
" intortum (Mill.) Urb.	4184	316213			X							
" pabulare Hoehne	4386	322458 *			X							
" " "	4387	322459 *			X							
" " "	4389	322461 *			X							
" perplexum Schubert.	4391	322463 *			X							
" sandwicense E. Mey.	4185	316217 *			X							
" " " "	4186	316220 *			X							

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Desmodium sandwicense E. Mey.	4393	322468 *			X							
" scorpiurus Desv.	4396	322474			X							
" sp.	4190	311105			X							
" "	4191	311122 *	Mar	VD	X							
" "	4193	312130			X							
" "	4195	312170 *	Mar	VD								
" "	4923	317895 *	Mar	VD								
" "	4924	319471 *	Mar	VD								
" tortuosum (Sw.) DC.	4408	322475 *			X							
" " " "	4411	322479 *			X							
" " " "	4415	322485 *			X							
" " " "	4416	322486 *			X							
" " " "	4419	322489 *			X							
" " " "	4422	322492 *			X							
" " " "	4425	322495 *			X							
" " " "	4426	322496 *			X							
Digitaria decumbens	139	111110	Jul	VL								
" "	139	111110	Aug			X						
" macroglossa	3842	299648			X				X			
" milanjiana (Rendle) Stapf.	4592	284544 *			X							
" pentzii	3844	299702	Apr	VL								
" "	3845	299752			X							X
" setivalva	4751	299795	Apr	VL								
" smutsii	3846	299828			X							X
" sp.	3107	300935			X							X
" vestita	2568	299037			X							
Dioclea sp.	4431	322526			X							
" "	4432	322528			X							
Dolichos axillaris E. Mey.	4433	322528			X							
" lablab L.	4200	311123 *			X							
" " "	4201	311124 *			X							
" " "	4202	311155 *			X							
" " "	4203	316232 *			X							
" " "	4434	322529 *			X							

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Dolichos lablab L.	4435	322530 *			X							
" " "	4436	322531 *			X							
" " "	4437	322532 *			X							
" " "	4438	322533 *			X							
" " "	4439	322534 *			X							
" " "	4440	322535 *			X							
" " "	4441	322536 *			X							
Eleocharis dulcis	4646	106274			X							
Eleusine tristachya Lam.	4861	331791	Apr	G								
Enchylaena tomentosa	4541	277797			X							
Eragrostis bahiensis Schrad	3592	310004 *			X							
" chloromelas	4042	234209			X				X			
" "	4044	276036			X							X
" curvula	3334	299914 *			X							
" " (Schrad.) Nees.	3942	299924			X							X
" " " "	3943	299925			X							X
" " " "	3944	299926			X							X
" " " "	4593	299911			X							
" " " "	4594	299917			X							
" " " "	4595	299918			X							
" " " "	4596	299919			X							
" " " "	4597	310403			X							
" " v. conferta	3946	299928 *			X							
" porosa	4204	190317 *			X							
" robusta	1580	234218							X	X		
" superba	3336	295704 *			X							
Eriosema floribundum Benth.	4442	322537			X							
" " "	4443	322538			X							
" sp.	4444	322539			X							
" "	4445	322540			X							
Festuca arundinacea	852	203728	Dec	G								
Galactia acapulcensis Rose.	3886	188883			X							
" jussiaeana Kunth.	4446	322541			X							
Glycine sp.	4211	200233			X							

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Glycine wightii(R.Grah.exWight.&Arn)	4598	319474			X							
" " " " "	4599	319475			X							
" " " " "	4600	319476			X							
" " " " "	4602	319478			X							
" " " " "	4603	319479			X							
Hemarthria altissima	2534	299993			X	X	X	X		X		
" "	2535	299994			X	X			X	X		
" "	2536	299995			X	X				X		X
" "	2569	299039			X							X
Indigofera hirsuta L.	4212	316258			X							
" " "	4213	316259			X							
" " "	4214	316260			X							
" " "	4448	322542			X							
" lespedezioides	4449	322543 *	Jun	NG								
" pseudotinctoria	4533	197075	Mar	G					X			
" sp.	4452	322547			X							
" "	4453	322548			X							
Ischaemum timorense Kunth.	2937	271193	Feb	VL								
Kochia brevifolia R. Br.	4932	321389 *	Apr	NG								
" " " "	4933	330672 *	APR	NG								
" georgei Diels	4934	330673 *	Apr	NG								
" indica Wight.	4935	330674 *	Apr	NG								
" prostrata (L.) Schrad.	4936	330675 *	Apr	NG								
" " " "	4937	330708 *	Apr	NG								
Lathyrus hirsutus	4125	283520			X							
" "	4126	283521			X							
Leptochloa monstachya	3337	207633 *	Jun	NG								
Lespedeza cuneata	4755	246769	Apr	G								
" "	4756	310409	Apr	G								
" " (Dumont) G. Don	4455	322551			X							
" japonica	4758	90664	Apr	G								
" pilosa	4761	246771	Apr	G								
" serpens	4527	297385			X							
Leucaena leucocephala (Lam.)DeWit.	3881	316263			X							

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Leucaena leucocephala (Lam.)DeWit.	4619	304650			X							
Lotononis bainesii Baker.	4456	322554 *			X							
Lotus conimbricensis Brot.	2940	283616 *			X							
" corniculatus L.	4457	322556			X							
" decumbens Poir.	2607	251148 *			X							
" hispidus Desf.	2942	283615 *			X							
" major Scop.	2938	300015 *			X							
" mearnsii Britton	3961	284761 *			X							
" pedunculatus	2574	103483 *			X							
" "	2577	194059 *			X							
" "	2584	202383 *			X							
" "	2588	232099 *			X							
" "	2590	234493 *			X							
" "	2591	234812 *			X							
" "	2592	235102 *			X							
" "	2594	235115 *			X							
" "	2595	235526 *			X							
" "	2596	235527 *			X							
" "	2597	235528 *			X							
" "	2598	235529 *			X							
" "	2600	235531 *			X							
" "	2601	237188 *			X							
" "	2602	239936 *			X							
" "	2603	239937 *			X							
" "	2604	239938 *			X							
" "	2605	239939 *			X							
" "	2606	239940 *			X							
" "	2614	282129 *			X							
" "	2623	282138 *			X							
" "	2629	282144 *			X							
" "	2631	282146 *			X							
" "	2632	282147 *			X							
" "	2634	282149 *			X							
" "	2635	282150 *			X							

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Lotus pedunculatus	2637	282152 *			X							
" "	2638	282153 *			X							
" "	2643	282158 *			X							
" "	2650	282167 *			X							
" " Cav.	1611	180172 *			X							
" " "	1612	190349 *			X							
" " "	1714	189113 *			X							
Lupinus elegans HBK	11	185099								X		
Medicago ciliaris	1921	292415			X*				X			
" intertexta (L.) Mill.	3962	308058 *			X							
" polymorpha	4122	197340			X							
" "	4123	170548 *			X							
" scutellata	2003	189570 *			X							
Melilotus alba Desr.	4458	322560 *			X							
Melinis minutiflora Beauv.	4621	319484			X							
Myrica cordifolia L.	3103	300032 *	Apr	NG								
Olea europea L.	3096	298030			X							
Ornithopus compressus L.	4604	284130			X							
Oryzopsis holciformis (Bieb.) Hack	4938	330716 *	Apr	NG								
" miliacea (L.) Benth.&Hook	4939	330678 *	Apr	NG								
Osteospermum moniliferum	4729	300033 *	Apr	NG								
Panicum coloratum	1072	263603			X							X
" "	3340	298988 *			X							
" " L.	3964	300041			X							
" maximum	1621	156080			X							X
" "	1647	259563							X			
" "	4215	316303			X							
" " Jacq.	4862	337552 *	Apr	NG								
" " "	4863	337660	Apr	G								
" " "	4864	337661 *	Apr	NG								
" sp.	4865	331347	Apr	G								
" stapfianum Fourc.	3963	300039 *			X							
" " "	3966	300058 *			X							
" " "	3967	300059 *			X							

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Panicum virgatum v. cubense Griseb.	3968	315728			X							
Paspalum almum Chase.	3632	310044 *			X							
" boscianum Fluegge	3634	310046 *			X							
" " "	3635	310047			X*				X			X
" " "	3636	310048 *			X							
" " "	3639	310051			X*							X
" conspersum Schrad ex Schult	3642	310054 *			X							
" cromyorhizon	4831	276242	Apr	G								
" " Trin ex Doell	3647	310059			X*				X			
" " " " "	3658	310070 *			X							
" dilatatum	3369	300068 *			X							
" hieronymii Hack.	3694	310107 *			X							
" " "	3695	310108 *			X							
" intermedium Munro.	3698	310111 *			X							
" " "	3699	310112 *			X							
" nicorae Parodi	3715	310128 *			X							
" " "	3717	310130 *			X							
" " "	3718	310131 *			X							
" " "	3719	310132 *			X							
" " "	3720	310133 *			X							
" " "	3721	310134 *			X							
" " "	3722	310135 *			X							
" " "	4866	337014 *	Apr	NG								
" notatum Fluegge.	3736	310149 *			X							
" " "	3757	310170 *			X							
" " "	3761	310174 *			X							
" paucicilliatum(Parodi)Herter	3428	310216 *			X							
" " " "	3421	310209 *			X							
" " " "	3432	310220 *			X							
" plicatulum	3499	310287 *			X							
" " Michx.	3446	310234 *			X							
" " "	3503	310291 *			X							
" " v. plicatulum	3459	310247 *			X							
" sp.	3495	310283 *			X							

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* Accession removed during 1969.

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Continuation sheet no. 16

Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Paspalum sp.	3498	310286 *			X							
" "	3502	310290 *			X							
" urvillei	4227	316315 *	Jun	NG								
" "	4228	316316 *	Jun	NG								
" "	4229	316317 *	Jun	NG								
" yaguaronense Henr.	3482	310270 *			X							
" " "	3483	310271 *			X							
" " "	3484	310272 *			X							
" " "	3491	310279 *			X							
Pennisetum latifolium Spreng.	4867	331131 *	Apr	NG								
" pedicellatum	3380	284177 *			X							
" "	4144	213527 *			X							
" purpureum	3244	304188 *			X							
" "	3245	304189 *			X							
" "	3246	304190 *			X							
" "	3248	304192 *			X							
" "	3249	304193 *			X							
" "	4255	300086	Apr	VL								
" " Schumach.	4168	304751	Apr	VL								
" " x P. typhoides	1906	291392 *			X							
" sp.	4605	321087 *			X							
Periandra heterophylla Benth.	4459	322570	Jun	G								
Phalaris angusta Nees.	3504	310292 *			X							
" arundinacea	4716	297362 *			X							
" "	4731	236525	Oct	G								
Phaseolus atropurpureus	4460	322575			X							
" " DC.	4461	322576			X							
" " "	4462	322577			X							
" " "	4463	322578			X							
" " "	4464	322579			X							
" " "	4465	322581			X							
" " "	4622	316339			X							
" lathyroides	4156	153704	Jun	G								
" "	4157	316464 *			X							

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Phaseolus lathyroides L.	1417	276183							X			
" " "	4466	322591			X							
" " "	4467	322592			X							
" " "	4468	322593			X							
" " "	4469	322594 *			X							
Pistacia atlantica	4557	246336			X							
" "	4558	246337			X							
" "	4559	276701			X							
" "	4560	276702			X							
" "	4561	276703			X							
" chinensis	5204	21970							X(NG)			
" terebinthus	4562	91608			X							
" "	4563	246341			X							
" "	4564	246342			X							
" vera	4565	121776			X							
" "	4566	17250			X							
" "	4567	12815 *			X							
Pterocarya stenoptera	4836	61938	Nov-Dec	NG								
Pueraria javanica Benth.	4470	322613 *			X							
" montana (Lour.) Merr.	4471	322602			X							
" " " "	4472	322603			X							
" " " "	4473	322604			X							
" " " "	4474	322605			X							
" " " "	4475	322606			X							
" " " "	4476	322607			X							
" " " "	4477	322609			X							
" " " "	4478	322610			X							
" " " "	4479	322611			X							
" " " "	4480	322612			X							
Quercus acutissima	3295	168939			X							
" "	5837	54433	Jan	G					X			
" myrsinaefolia	4838	74222	Jan	G					X			
" "			Oct	VL								
" "			Oct,Dec						NG			

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Rhynchosia minima (L.) DC.	4481	322614			X							
" " " "	4482	322615			X							
" phaseoloides (SW.) DC.	4483	322616			X							
" " " "	4484	322617			X							
" sp.	4485	322619			X							
" "	4486	322620			X							
" "	4487	322621			X							
" "	4488	322622			X							
" "	4489	322623			X							
" "	4490	322624			X							
" "	4491	322625			X							
Sesbania exasperata HBK.	4493	322627			X							
" punicea Benth.	4494	322628			X							
" sesban (L.) Merr.	4495	322629 *			X							
Setaria longiseta Beauv.	4607	315885			X							
" sphacelata	3385	165718 *			X							
" " (Schum)Stapf.&Hubb.	2329	295368 *			X							
" " " " "	4868	316465	Apr	G								
" " " " "	4869	316468	Apr	G								
" " " " "	4870	319489	Apr	G								
" " " " "	4871	337596 *	Apr	NG								
" " " " "	4872	337664 *	Apr	NG								
Sorghum sudanense	4232	308976 *			X							
Stylosanthes capitata Vog.	4496	322634 *			X							
" gracilis HBK.	4497	322635 *			X							
" " "	4498	322636			X							
" " "	4499	322637			X							
" " "	4500	322638 *			X							
" " "	4501	322639 *			X							
" guyanensis(Aubl)Swartz	4502	322641 *			X							
" " " "	4503	322642	Jun	G								
" humilis HBK.	4505	322644			X							
" montevidensis Vog.	4506	322646 *	Jun	NG								
Teramnus uncinatus (L.) Swartz	4507	322663 *			X							

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Teramnus uncinatus (L.) Swartz.	4508	322664			X							
" " " "	4509	322665			X							
" " " "	4510	322666			X							
" " " "	4511	322667			X							
" " " "	4512	322668			X							
" " " "	4513	322669			X							
" " " "	4514	322670			X							
" " " "	4515	322671			X							
" volubilis Sw.	4516	322672			X							
Tetrachne dregei Nees.	4613	300137			X							
Thuarea involuta	4244	318746 *			X							
Trifolium agrarium	4046	251172 *			X							
" amabile	4047	194827			X							
" ambiguum	4048	206483 *			X							
" campestre	4049	174392 *			X							
" "	4050	206479 *			X							
" "	4051	207937 *			X							
" "	4052	226678 *			X							
" "	4053	233718 *			X							
" "	4054	241474 *			X							
" cheranganianis	4056	226101 *			X							
" clypeatum L.	4612	308079	Oct	G								
" globosum	4057	168636 *			X							
" "	4058	244678 *			X							
" glomeratum	4059	201211 *			X							
" "	4060	207936 *			X							
" hirtum	4061	249846 *			X							
" incarnatum	4062	251563 *			X							
" "	4063	255892 *			X							
" isthmocarpum	4065	197741 *			X							
" meneghinianum	4066	238156 *			X							
" nigrescens	4067	206926 *			X							
" "	4068	210354 *			X							
" "	4069	233723 *			X							

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Trifolium nigrescens	4070	249855 *			X							
" pallidum	4071	201213 *			X							
" pratense	4072	204933 *			X							
" repens L.	3922	300147			X							
" resupinatum	2223	268432 *			X							
" "	4073	204932 *			X							
" "	4074	223537 *			X							
" "	4075	223826 *			X							
" "	4076	250035 *			X							
" "	4077	250036 *			X							
" "	4078	250999 *			X							
" "	4079	251000 *			X							
" "	4080	251198 *			X							
" spumosum	4081	180896 *			X							
" "	4082	200373 *			X							
" "	4083	241481 *			X							
" "	4084	244325 *			X							
" "	4085	253992 *			X							
" strictum	1691	238372 *			X							
" "	4087	249853 *			X							
" tomentosu m	4088	168639 *			X							
" "	4089	170817 *			X							
" "	4090	170826 *			X							
" vesiculosum	894	233782 *			X							
" "	895	233816 *			X							
" "	896	234310 *			X							
Tripsacum australe Cutler & E Anders	4873	337041 *	Jun	NG								
Urochloa mosambicensis (Hack)Dandy	3970	314886 *			X							
Vicia angustifolia	4094	227880 *			X							
" "	4095	238383 *			X							
" atropurpurea	4097	230665 *			X							
" benghalensis	4098	199265 *			X							
" "	4795	220880			X							
" cordata	4093	121275			X							

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* Accession removed during 1969.

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Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Vicia cornigera Chaub.	4100	238375 *			X							
" dasycarpa	4101	249882 *			X							
" floridana S. Wats.	4614	316684 *			X							
" globosa	4104	238376 *			X							
" hirsuta	4105	183099 *			X							
" "	4106	183100 *			X							
" lutea	4109	249922 *			X							
" "	4799	284354 *			X							
" "	4800	284355 *			X							
" macrocarpa	4110	238379 *			X							
" narbonensis	4113	238380 *			X							
" "	4801	170017 *			X							
" "	4802	230275 *			X							
" onobrychoides	4114	193683 *			X							
" pannonica Crantz.	2975	170008			X							
" sativa	4803	284056 *			X							
" " L.	2986	175956 *			X							
" " "	3010	193686 *			X							
" " "	3018	228301							X			
" " "	3020	230362			X				X			
" " "	3023	239348 *			X							
" " "	3024	247092 *			X							
" " "	3030	293298 *			X							
" " "	3031	293299 *			X							
" " "	3032	293300 *			X							
" " "	3036	293430 *			X							
" " "	4002	284470 *			X							
" " "	4099	193116 *			X							
" " "	4116	176954 *			X							
" " "	4117	284468 *			X							
" " "	4118	284469 *			X							
" sp.	3046	179122 *			X							
" villosa Roth.	3048	229970			X							

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* Accession removed during 1969.

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Continuation sheet no. 22

Table of All Accessions under test, in production, or otherwise for Brooksville, Florida PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Vigna vexillata (L.) A. Rich.	3173	306266 *			X							
Zornia brasiliensis Vog.	4517	322683 *			X							
" diphylla (L.) Pers.	4519	322685			X							
" " " "	4520	322686			X							

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* Accession removed during 1969.

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(File Code PM)

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TABLE OF ALL PI ACCESSIONS UNDER TEST, IN PRODUCTION OR OTHERWISE FOR THE COFFEEVILLE, MISS. PLANT MATERIALS CENTER FOR THE YEAR 1969

SPECIES	ACCESSIONS		STATUS									
			INITIAL EVALUATIONS									
			This Year		Former Years							
	Center MS / Number	PI, BN, or Other No.	Planted	Germination		Advanced Evaluations	Developing Cultural Management	Field Evaluation Plantings	Initial Increase	Field Scale Increase	Breeder or Foundation Fields	Seed orchard Holding block, or Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Agropyron obtusiusculum	387	261099			x				x			x
Alnus meyerii	2902	317356			x							
Andropogon scoparius (sel.)	1772	217039							x			
Arachis glabrata	955	162801	Apr	G								
Arachis monticola	528	263393								x		
Bothriochloa intermedia	919	241498			x							
Bothriochloa v. indica	2910	6580	May	G								
Bromus erectus	805	254881										x
" "	807	251106										x
" "	808	253301										x
" "	809	251107										x
Bromus papovii	757	283197										x
Bromus sitchensis	1924	292257										x
Bromus unioloides	1925	292258										x
Bromus willdenowii	1907	284107										x
" "	1908	284109										x
" "	1909	284110										x
" "	1910	284111										x
" "	1911	284112										x
" "	1912	284788										x
Castanea sp.	157	58602										x
Castanopsis chrysophylla	2949	244348	Jan	NG						x		
Cenchrus ciliaris	2878	271198			x							

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Continuation sheet no. 2

Table of All Accessions under test, in production, or otherwise for Coffeeville, Miss. PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Chloris acicularis	2958	23825	May	G								
Chloris castilloniana	2959	316200	May	G								
Chloris cucullata	2960	315683	May	G								
Chloris gayana	2700	316203			x							
" "	2701	283226		G	x							
Chloris myriostachya	2985	200213	May	G								
Chloris pectinata	2986	238260	May	G								
Chloris pycnothrix	2987	199955	May	G								
Chloris roxburghiana	2980	207632	May	G								
Chloris truncata	2988	279931	May	G								
Chloris ventricosa	2989	257692	May	G								
Chrysopogon fulvus	562	215586							x			
Coronilla c. varia	485	204871			x							
" "	486	206487			x							
" "	487	210365			x							
" "	489	228411			x							
" "	491	229968			x							
" "	492	238142			x							
" "	493	251808			x							
" "	494	253435			x							
" "	495	274040			x							
" "	496	274041			x							
" "	497	278698			x							
Cotoneaster racemiflora	2936A	297597	Jan	G						x		
Dactyloctenium australe	2702	299588			x							
Digitaria diversinervis	2592	299613			x							x
Digitaria eriantha	522	106663			x							
Digitaria pentzii	2605	302766			x							
" "	2929	299743			x							

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Continuation sheet no. 3

Table of All Accessions under test, in production, or otherwise for COFFEEVILLE PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Digitaria setivalva	2607	299800			x							
Digitaria smutsii	2609	299826			x							
Digitaria sp.	2606	286505			x							
Digitaria valida	2612	299858			x							
" "	2616	299878			x							
" "	2619	299879			x							
Echinochloa crusgalli	187	173754	May	G		x						
" "	188	219606	May	G		x						
" "	2992	325314	May	G								
Echinochloa haplocladia	3074	266065	May	G								
Echinochloa holubii	924	207924				x	x	x		x		
Echinochloa sp.	2993	331385	May	G								
" "	2994	331387	May									
Eleocharis dulcis	1642	106274										x
Eragrostis robusta	443	234218							x			
" "	394	209385							x			
Euonymus fortunei	2379	275073			x							
Festuca ampla	275	238315										x
" "	688	240157										x
Festuca arundinacea	2262	302996										x
" "	2329	203728				x						
" "	2707	292602	Oct	GD								
Festuca elatior	2411	270399										x
Glycine ussuriensis	128	163453								x		
Hemarthria altissima	2916	299993			x							
" "	2917	299039			x							
" "	2918	299994			x							
" "	2919	299995			x							
Ilex cassine	3009	254592			x							

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Continuation sheet no. 4

Table of All Accessions under test, in production, or otherwise for COFFEEVILLE PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Ilex montana v. macropoda	3010	316703			x							
Kochia brevifolia	3066	321389	May	NG								
" "	3067	330672	May	G								
Kochia georgei	3068	330673	May	GD								
Kochia indica	3069	330674	May	G								
Kochia prostrata	3070	330675	May	GD								
" "	3071	330708	May	GD								
Lespedeza cuneata	279	246769			x							
" "	2535	310409			x							
Lespedeza intermixta	280	246770			x	x						
Lespedeza japonica	1643	90664			x	x						
Lespedeza pilosa	282	246771			x							
Lespedeza virgata	126	218004			x	x	x			x		
Malus baccata	151	99907			x							
Malus hupehensis	150	122586			x					x		x
Metasequoia glyptostroboides	2580	286608			x							
Panicum antidotale	380	275096			x							
" "	2726	300034			x							
Panicum coloratum	2543	300039			x							
Panicum cymbiforme	2846	238344			x							
Panicum ianipes	2847	238346			x							
Panicum stapfianum	2727	300058			x							
" "	2874	145794			x							
" "	2876	206371			x							
Pappophorum sp.	2998	331155	May	GL								
Paspalum alcalinum	2999	337556	May	NG								
Paspalum cromyorhizon	1985	276242			x							
Paspalum gemniflorum	3079	303985	May	NG								
Paspalum nicorae	905	276249	May	GD								

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Continuation sheet no. 5

Table of All Accessions under test, in production, or otherwise for COFFEEVILLE PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Paspalum nicorae	904	276248	May	G								
" "	906	202044	May	G		x	x					
" "	999	284171	May	NG								
" "	1000	209983	May	G								
" "	1001	283020	May	G								
" "	3080	304003	May	G								
" "	3081	304004	May	G								
" "	3082	310128	May	G								
" "	3083	310129	May	G								
" "	3084	310130	May	G								
" "	3085	310131	May	G								
" "	3086	310132	May	G								
" "	3087	310133	May	G								
" "	3088	310134	May	G								
" "	3089	310135	May	G								
Paspalum notatum	2023	276251			x							
" "	3003	337564	May	GL								
" "	3004	337569	May	GL								
" "	3005	331156	May	GL								
Paspalum plicatulum	2031	276253	May	GL								
" "	3002	337583	May	NG								
" "	3090	284501	May	GD								
" "	3091	299070	May	GL								
" "	3092	304025	May	GL								
" "	3093	304027	May	GL								
" "	3094	304029	May	GL								
" "	3095	304030	May	GL								
" "	3096	304031	May	GL								
" "	3097	304032	May	GL								
" "	3098	304035	May	GL								

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Continuation sheet no. 6

Table of All Accessions under test, in production, or otherwise for COFFEEVILLE PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Paspalum plicatulum	3099	304036	May	GL								
" "	3100	304081	May	GL								
" "	3101	310234	May	GL								
" "	3102	310239	May	GL								
" "	3103	310244	May	GL								
" "	3104	310246	May	GL								
" "	3105	310247	May	GL								
" "	3106	310287	May	GL								
" "	3107	310291	May	GL								
" "	3108	312896	May	GL								
Paspalum quadifarium	2033	161886			x							
" "	2034	283022			x							
Paspalum sp.	3000	331158	May	NG								
Paspalum urvillei	3001	331157	May	NG								
Pennisetum ciliare	2756	203366	April	G								
Pennisetum sp.	484	271603			x							
" "	2728	315868			x							
Phyllostachys bissetii	499	143540			x					x		
Phyllostachys meyerii	498	116768			x					x		
Pinus koraiensis	2903	316977			x							
" "	2904	317255			x							
" "	2905	317256			x							
Pistacia atlantica	2501	276702			x							
" "	2502	276703			x							
Pistacia chinensis	2182	21970			x					x		
Pistacia terebinthus	2499	246342			x							
Psoralea adscendens	2804	238351			x							
Psoralea bituminosa	780	283969			x							
" "	2880	238352			x							

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Table of All Accessions under test, in production, or otherwise for COFFEEVILLE PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Psoralea bituminosa	2882	246744			x							
" "	2886	287920			x							
" "	2887	287921			x							
" "	2889	302954			x							
Psoralea cinerea	2805	238353			x							
Psoralea dentata	2883	246745			x							
Psoralea eriantha	2885	255746			x							
" "	2888	287922			x							
Psoralea sp.	2803	183344			x							
Psoralea tenax	2884	246747			x							
Pyracantha coccinea	367	203240			x							x
Quercus acutissima	2	142294			x							x
Quercus myrsinaefolia	6	74222			x							x
" "	2433	74227			x							
Robinia pseudacacia	2906	257022								x		
Salix aurita	841	265662			x							x
Salix purpurea	1972	266477			x							x
Salix repens x rosmarinafolia	843	265667			x							x
Salix x chrysostala	842	265663			x							x
Sasa pygmaea	838	52674										x
Setaria flabellata	2732	300109			x							
Setaria geniculata	2899	316422			x							
Setaria gerrardi	2073	208303			x							
Setaria italica	2081	230136			x							
Setaria macrostachya	2082	217229			x							
" "	2083	229129			x							
" "	2084	229131			x							
Setaria neglecta	2548	300110			x							
Setaria sphacelata	2848	284477			x							

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Table of All Accessions under test, in production, or otherwise for COFFEEVILLE PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Setaria sphacelata	2849	314859			x							
" "	2850	314862			x							
" "	2851	314867			x							
" "	2852	314868			x							
" "	2853	314869			x							
" "	2854	314871			x							
" "	2855	314872			x							
" "	2856	314874			x							
" "	2857	314875			x							
" "	2858	314877			x							
" "	2859	314878			x							
" "	2890	280125			x							
" "	2891	296007			x							
" "	2892	296008			x							
" "	2893	314870			x							
" "	2894	314881			x							
" "	2895	314882			x							
" "	2896	314883			x							
" "	2897	314884			x							
" "	2898	316406			x							
Stipa barbata	2006	330722	Oct	NG								
Stylosanthes humilis	756	187098	May	NG								
Tetrachne dregei	2926	300136			x							
Tetragonolobus palaestinus	2810	294271	May	GD								
" "	2811	294272	May	GD								
" "	2812	294273	May	GD								
" "	2813	294274	May	GD								
" "	2814	294275	May	GD								
" "	2815	294276	May	GD								

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Table of All Accessions under test, in production, or otherwise for COFFEEVILLE PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Tetragonolobus purpureus	2807	206379	May	GD								
Tetragonolobus requieni	2808	244701	May	GD								
Tetragonolobus siliquosus	2712	308073										
" "	2735	310431										
" "	2806	204884	May	GD								
" "	2809	287943	May	GD								
Themeda anathera	478	218114			x							
Themeda australis	1859	281968			x							
Themeda triandra	1860	206349			x							
" "	1863	207932			x							
" "	1867	208198			x							
" "	1870	276070			x				x			
Tricholaena monachne	2801	166381			x							
Tridens brasiliensis	2901	310319			x							
Tridens muticus	2900	241079			x							
Trifolium ambiguum	2713	283999			x							
" "	2714	284003			x							
" "	2715	284004			x							
Trifolium butchellianum	2927	300148			x							
Trifolium incarnatum	2716	308082			x							
Trifolium medium	338	241117			x							
" "	1624	284621			x							
" "	1626	250989			x							
" "	1627	251210			x							
" "	1628	253200			x							
" "	1629	260249			x							
Trifolium repens	2717	300147			x							
Trifolium vesiculosum	329	233782								x	x	
Vicia amoena	2928	286389	Oct	NG								

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Table of All Accessions under test, in production, or otherwise for COFFEEVILLE PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Vicia lutea laevigata	2741	308107			x							
Vicia michauxii	2742	314260			x							
Vicia ocalensis	2743	316685			x							
Vicia sativa	2745	289483			x							
" "	2746	212482			x							
Vicia sp.	2745	314504			x							
" "	2748	317185			x							
Vicia villosa	2721	314404			x							
" "	2750	308123			x							
Vicia tetrasperma	2749	312481			x							
Zoysia japonica	340	231060										x
" "	341	235534										x
" "	2841	324184										x
Zoysia matrella	343	264343										x
Pennisetum sp.	3122	304751	May	G								
Pennisetum spicatum	2978	337999	May	G								
" "	2979	338000	May	G								

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U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TABLE OF ALL PI ACCESSIONS UNDER TEST, IN PRODUCTION OR OTHERWISE FOR THE Knox City / James E. "Bud" Smith PLANT MATERIALS CENTER FOR THE YEAR 1969

SPECIES	ACCESSIONS		STATUS									
			INITIAL EVALUATIONS									
			This Year		Former Years							
GRASSES	Center Number	PI, BN, or Other No.	Planted	Germination		Advanced Evaluations	Developing Cultural Management	Field Evaluation Plantings	Initial Increase	Field Scale Increase	Breeder or Foundation Fields	Seed orchard Holding block, or Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Agropyron elongatum (Host)	659	PI-150123		G	1965							
Agropyron elongatum	929	PI-131532		G	1965							
Agropyron junceum	1195	PI-218863	X	G	1966				X			
Agropyron obtusinaculum	931	PI-261099		G	1965							
Agropyron trichophorum	932	PI-106831		G	1965							
Agropyron trachycaulum	1196	PI-281865		G	1966							
Agropyron tsukushiense (Honda)Ohwi	1197	PI-283170		G	1966							
Andropogon distachyus	1334	PI-283180		G	1967							
Aristida unipluma	1336	PI-276026		G	1966							
Bothriochloa ischaemum	1128	PI-161669		G	1966							
Bothriochloa ischaemum	1129	PI-171397		G	1966							
Bothriochloa ischaemum	1130	PI-268361		G	1966							
Bothriochloa ischaemum	1131	PI-269364		G	1966							
Bothriochloa ischaemum	1132	PI-263192		G	1966							
Bothriochloa ischaemum	1133	PI-253444		G	1966							
Bromus willdenowii Kunth	1338	PI-315677		G	1967							
Chrysopogon fulvus	973	PI-215586		VL	1967							
Chrysopogon fulvus	1301	PI-213885		VL	1967							
Chrysopogon fulvus	1348	PI-254887		G	1967							
Chrysopogon fulvus	1349	PI-302660		G	1967							
Cymbopogon distans (Nees) Watts	1350	PI-271552		VL	1967							

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Continuation sheet no. 2

Table of All Accessions under test, in production, or otherwise for JAMES E. "BUD" SMITH PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Cynodon plectostacys	1524	PI-224693		VL	1967							
Dactyloctenium australia Steud.	2139	PI-299588	X	G								
Desmostachys bipinnata (L.) Stapf.	1351	PI-268417		VL	1965							
Elymus giganteus Vahl.	1211	PI-108491		G	1966							
Elymus sabulosus Bieb.	1198	PI-11599	X	G	1966			x				
Elyonurus hirsutus	1154	PI-271566		G	1967							
Elyonurus hirsutus Munro.	1353	PI-271565		G	1967							
Eragrostis atherstonei Stapf.	1135	PI-299038		G	1967							
Eragrostis atherstonei	1303	PI-276033		G	1967							
Eragrostis atherstonei	1355	PI-299906		G	1967							
Eragrostis chloromelas Steud.	1356	PI-299910		G	1967							
Eragrostis chloromelas	1357	PI-299911		G	1967							
Eragrostis curvula (Schrad.) Nees	603	PI-208994		G	1965			x				
Eragrostis curvula	604	PI-232813		G	1965			x				
Eragrostis curvula	718	PI-295689	X	G	1965							
Eragrostis curvula	728	PI-295700		G	1967			x				
Eragrostis curvula	729	PI-295703		G	1965			x				
Eragrostis lehmanniana	731	PI-295696		G	1965							
Eragrostis lehmanniana	732	PI-295698		G	1965			x				
Eragrostis lehmanniana	733	PI-295699		G	1965							
Eragrostis lehmanniana	1373	PI-299936		G	1967							
Eragrostis lehmanniana	1374	PI-299937		G	1967							
Eragrostis lehmanniana	1375	PI-299938		G	1967							
Eragrostis lehmanniana	1376	PI-299939		G	1967							
Eragrostis lehmanniana	1377	PI-299940		G	1967							
Eragrostis lehmanniana Nees.	1378	PI-299941		G	1967							
Eragrostis lehmanniana	1379	PI-299942		G	1967							
Eragrostis lehmanniana	1392	PI-299944		G	1967							
Eragrostis obtusa	1393	PI-299945		G	1967							
Eragrostis obtusa	1394	PI-299947		G	1967							

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Continuation sheet no. 3

Table of All Accessions under test, in production, or otherwise for JAMES E. "BUD" SMITH PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Eragrostis porosa	1390	PI-190317		G	1967							
Eragrostis rigidor	1391	PI-299064		G	1967							
Eragrostis superba Peyr.	1140	PI-295704		G	1967							
Festuca ampla Hack.	1199	PI-283275		G	1967							
Festuca ampla	1558	PI-238315		G	1967							
Festuca arundinacea Schreb.	1200	PI-203728		G	1967							
Festuca arundinacea	1546	PI-292602		G	1967							
Festuca arundinacea	1547	PI-292603		G	1967							
Festuca arundinacea	1548	PI-316243		G	1967							
Festuca arundinacea	1549	PI-316245		G	1967							
Festuca arundinaces	1550	PI-316246		G	1967							
Festuca orientalis Kern.	1202	PI-283314		G	1966							
Festuca uechtritziana	1203	PI-283324		G	1967							
Hemarthria altissima Stapf. & Hubb.	1532	PI-299993		VL	1967							
Hemarthria altissima	2167	PI-299994	X	VL								
Hordeum bulbosum L.	1204	PI-274910		G	1966							
Hordeum bulbosum	1552	PI-287840		G	1966							
Panicum bisulcatum	1416	PI-286485		G	1967							
Panicum coloratum Walt.	1081	PI-185548		G	1966							
Panicum coloratum	1082	PI-185550		G	1966							
Panicum coloratum	1083	PI-185551		G	1966							
Panicum coloratum	1084	PI-185558		G	1966							
Panicum coloratum	1085	PI-188931		G	1966							
Panicum coloratum	1086	PI-188932		G	1966							
Panicum coloratum	1087	PI-196360		G	1966							
Panicum coloratum	1088	PI-196361		G	1966							
Panicum coloratum	1089	PI-196362		G	1966							
Panicum coloratum	1090	PI-196363		G	1966							
Panicum coloratum	1091	PI-196364		G	1966							
Panicum coloratum	1092	PI-196365		G	1966							
Panicum coloratum	Sel.75	PI-166400		G	1966						x	

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Table of All Accessions under test, in production, or otherwise for JAMES E. "BUD" SMITH PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Panicum coloratum	1093	PI-206370		G	1966							
Panicum coloratum	1095	PI-253241		G	1966							
Panicum coloratum	1097	PI-253243		G	1966							
Panicum coloratum	1098	PI-253246		G	1966							
Panicum coloratum	1099	PI-253247		G	1966							
Panicum coloratum	1100	PI-253249		G	1966							
Panicum coloratum	1101	PI-253254		G	1966							
Panicum coloratum	1102	PI-253256		G	1966							
Panicum coloratum	1103	PI-253605		G	1966							
Panicum coloratum	1105	PI-208003		G	1966							
Panicum coloratum	1106	PI-208943		G	1966							
Panicum coloratum	1108	PI-284152		G	1966							
Panicum coloratum	1111	PI-300041		G	1966							
Panicum coloratum	1112	PI-209002		G	1966							
Panicum coloratum	1113	PI-277963		G	1966							
Panicum coloratum	1114	PI-295645		G	1966							
Panicum stapfianum Fourc.	1115	PI-145794		G	1966							
Panicum stapfianum	1116	PI-178257		G	1966							
Panicum stapfianum	1117	PI-185547		G	1966							
Panicum stapfianum	1118	PI-190326		G	1966							
Panicum stapfianum	1119	PI-190327		G	1966							
Panicum stapfianum	1121	PI-196368		G	1966							
Panicum stapfianum	1122	PI-198589		G	1966							
Panicum stapfianum	1123	PI-206371		G	1966							
Paspalum nicorae Parodi	975	PI-202044		G	1966							

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Table of All Accessions under test, in production, or otherwise for JAMES E. "BUD" SMITH PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Paspalum nicorae	976	PI-276248		G	1966							
Paspalum nicorae	977	PI-276249		G	1966							
Pennesetum sp.	2168	PI-304751	X	VL								
Phalaris aquatica	1205	PI-284202		G	1966							
Phalaris aquatica	1206	PI-284205		G	1966							
Phalaris aquatica	1544	PI-284241		G	1967							
Phalaris arundinacea L.	1768	PI-297362		G	1968							
Poa iridifolia Hauman	1210	PI-284254		G	1966							
Stipa hyalina	1562	PI-197687		G	1967							
Stipa pennata v. lessingiana (Tr.& Rupr.) Richter	1538	PI-314113		G	1967							
Stipa pennata v.lessingiana	1540	PI-314395		G	1967							
Stipa pennata v.lessingiana	1542	PI-314482		G	1967							
Stipa ucrainica P. Smirnow	1539	PI-314114		G	1967							
Stipa ucrainica	1541	PI-314396		G	1967							
Tetrachne dregei Nees.	2156	PI-300136	X	NG								
Tetrachne dregei	2157	PI-300137	X	NG								
Tetragonolobus purpureus Moench	2158	PI-308071	X	GD								
Tetragonolobus requienii (Mauri) Fisch.	2159	PI-308072	X	G								
Tetrapogon mossambicensis (K. Schum) Chipp.	2160	PI-300139	X	G								
Urochloa mosambicensis (Hack.) Dandy	2164	PI-314886	X	F								

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Continuation sheet no. 6

Table of All Accessions under test, in production, or otherwise for JAMES E. "BUD" SMITH PMC, Year 1969

SPECIES	ACCESSIONS		STATUS									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
LEGUMES & FORBS												
Adesmia incana Vogel	2122	PI-285108	X	NG								
Adesmia tanella Hook & Arn.	2123	PI-285112	X	NG								
Adesmia tanella	2124	PI-285113	X	NG								
Adesmia tanella	2125	PI-285114	X	NG								
Anthyllis tetraphylla L.	2134	PI-292846	X	G								
Anthyllis tetraphylla	2135	PI-297878	X	G								
Anthyllis vulneraria L.	2136	PI-182769	X	NG								
Anthyllis vulneraria L.	2137	PI-283184	X	NG								
Anthyllis vulneraria L.	2138	PI-305506	X	NG								
Arachis sp.	876	PI-263393		G	1967							
Lespedeza pilosa	1748	PI-297385		G	1965							
Sanguisorba minor	1518	PI-287923		G	1967							
Sanguisorba minor	1519	PI-297952		G	1967							

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TABLE OF PI ACCESSIONS UNDER TEST IN THE FIELD
IN ALABAMA FOR THE YEAR 1969

Species	Center Number	PI Number	Field Evaluation	Field Planting	District Seed Increase
Arachis glabrata	AM-1533	151982	x		
Arachis sp.	AM-564	263393	x	x	
Axonopus compressus	AM-1403	237128	x		
Brachiopodium phoenicoides	AM-1519	287785	x		
Cenchrus ciliaris	AM-2320	271198	x		
Chloris gayana	AM-1340		x		
Chrysopogon fulvus	AM-1402	213885	x		
Desmodium uncinatum	AM-2168		x		
Desmodium uncinatum	AM-2172		x		
Digitaria eriantha	AM-190	106663	x		
Digitaria setivalva	AM-1288	299795	x		
Echinochloa crusgalli	AM-2009	219606	x		
Echinochloa frumentacea	AM-1455	196293	x		
Eleagnus umbellata		294098	x	x	
Elymus canadensis	AM-162		x		
Eragrostis robusta	MS-394	209385	x		
Eragrostis robusta	AM-360	234218	x		
Festuca arundinacea	AM-1400	203728	x		
Hemarthria altissima	F-2534	299993	x	x	
Hemarthria altissima	F-2535	299994	x		
Hemarthria altissima	F-2536	299995	x		

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TABLE OF PI ACCESSIONS UNDER TEST IN THE FIELD

IN ALABAMA FOR THE YEAR 1969

Species	Center Number	PI Number	Field Evaluation	Field Planting	District Seed Increase
Hordeum bulbosum	AM-1479	200399	x		
Lespedeza cuneata	AM-1369	186171	x		
Lespedeza virgata		218004	x	x	
Lotononis binesii	AM-1292	234409	x		
Lotus corniculatus	AM-1298	260013	x		
Malus hupehensis		122586	x	x	
Panicum maximum	AM-7		x		
Panicum miliaceum		196692	x	x	x
Paspalum boscianum	AM-1978	310049	x		
Paspalum nicorae		202044	x	x	
Phalaris arundinacea	AM-1599		x		
Phalaris tuberosa	AM-2091	14529	x		
Pistachia chinensis		21970	x	x	
Setaria sphacelata	AM-1407	153695	x		
Stipa splendens	AM-1508	147820	x		
Trifolium resupinatum	AM-1748	316354	x		
Trifolium subterraneum	AM-286		x		

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TABLE OF PI ACCESSIONS UNDER TEST IN THE FIELD

IN ARKANSAS FOR THE YEAR 1969

Species	Center MS Number	PI Number	Field Evaluation	Field Planting	District Seed Increase
Castanea mollissima	24	BN8299		1	
Cynodon dactylon (Tufcote)	527	BN4198		18	1
Echinochloa frumentacea (Chiwapa)	181	196293		2	
Echinochloa holubii	924	207924	1	2	
Elaeagnus umbellata	432	BN12090		14	
Eragrostis robusta	394	209385	1	1	
Glycine ussuriensis	128	163453		7	
Lespedeza virgata	126	218004	1		
Lonicera maackii	2161	BN8318		10	
Malus hupehensis	150	122586		16	
Panicum miliaceum (Dove)	AM520	196292		1	
Paspalum nicorae	AM469	202044	1	11	
Phyllostachys bissetti	499	143540		3	
Phyllostachys meyerii	498	116768		3	
Phyllostachys sp.	500			3	
Pistacia chinensis	2182	21970		14	
Quercus acutissima	2	142294		6	
Trifolium vesiculosum (Meechee)		233782		22	2

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TABLE OF PI ACCESSIONS UNDER TEST IN THE FIELD

IN FLORIDA FOR THE YEAR 1969

Species	Center Number	PI Number	Field Evaluation	Field Planting	District Seed Increase
Arachis glabrata	F-135	118457	x	x	x
Arachis glabrata	F-1334	262839	x	x	x
Brachiaria dictyoneura	F-140	153053	x	x	
Cenchrus ciliaris	F-1502	271198	x		
Digitaria macroglossa	F-3842	299648	x		
Eleagnus umbellata		294098		x	
Eragrostis robusta	F-1508	234218	x		
Hemarthria altissima	F-2534	299993		x	x
Hemarthria altissima	F-2535	299994		x	
Hemarthria altissima	F-2536	299995	x		
Lotononis binesii	AM-1292	234409		x	
Malus hupehensis		122586		x	
Phaseolus lathyroides	F-1417	276183	x		
Pistachia chinensis		21970		x	

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TABLE OF PI ACCESSIONS UNDER TEST IN THE FIELD

IN GEORGIA FOR THE YEAR 1969

Species	Center AM Number	PI Number	Field Evaluation	Field Planting	District Seed Increase
Festuca arundinacea	1400	203728	x		
Lespedeza virgata	1456	218004	x	x	x
Lotononis bainessii	1292	234409	x		
Malus hupehensis	1540	122586	x	x	
Panicum miliaceum	520	196692	x		x
Paspalum nicorae	469	202044	x	x	
Pistacia chinensis	1405	21907	x	x	
Hordeum bulbosum	1479	200399	x		x
Trifolium michaelianum		120249	x		
Trifolium vesiculosum	1452	234310	x		x
Trifolium vesiculosum	1453	233816	x		
Trifolium vesiculosum	1454	233782	x		
Vicia lutea	1466	249880	x		

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TABLE OF PI ACCESSIONS UNDER TEST IN THE FIELD

IN LOUISIANA FOR THE YEAR 1969

Species	Center MS Number	PI Number	Field Evaluation	Field Planting	District Seed Increase
Arachis monticola	528	263393		2	
Castanea mollissima	AM284	BN8299		1	
Cynodon dactylon (Tufcote)	527	BN4198		10	
Echinochloa frumentacea (Chiwapa)	181	196293		2	
Elaeagnus umbellata	432			13	
Eragrostis robusta	394	209385	1		
Glycine ussuriensis	128	163453		10	
Lespedeza virgata	126	218004	1		
Lonicera maackii	2161	BN8318		11	
Malus hupehensis	150	122586		16	
Paspalum nicorae	AM469	202044	2	6	
Phyllostachys meyerii	498	116768		2	
Pistacia chinensis	2182	21970		14	
Quercus acutissima	2	142294		6	
Salix glaucophylloides	850	13696		1	
Salix nana	881	13666		1	
Salix oxica	875	13667		1	
Trifolium vesiculosum (Meechee)	AM329	233782		9	1

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TABLE OF PI ACCESSIONS UNDER TEST IN THE FIELD

IN MISSISSIPPI FOR THE YEAR 1969

Species	Center MS Number	PI Number	Field Evaluation	Field Planting	District Seed Increase
Arachis monticola	528	263393		1	
Castanea mollissima	22			10	
Cynodon dactylon (Tufcote)	527	BN4198		31	
Echinochloa frumentacea (Chiwapa)	181	196293		18	
Elaeagnus umbellata	432			29	
Glycine ussuriensis	128	163453		20	
Lespedeza virgata	126	218004		3	
Lonicera maackii	2161	BN8318		16	
Malus hupehensis	150	122586		32	
Panicum miliaceum (Dove)	AM520	196292		3	
Paspalum nicorae	AM 469	202044		5	
Photinia villosa sinica	2426			1	
Quercus acutissima	2	142294		28	
Trifolium vesiculosum (Meechee)		233782		30	4

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TABLE OF PI ACCESSIONS UNDER TEST IN THE FIELD

IN TENNESSEE FOR THE YEAR 1969

Species	Center AM Number	PI Number	Field Evaluation	Field Planting	District Seed Increase
Festuca arundinacea	1400	203728	x		
Lespedeza virgata	1456	218004	x	x	
Malus hupehensis	1540	122586		x	
Panicum miliaceum	520	196692		x	
Pistacia chinensis	1405	21907		x	
Trifolium vesiculosum	1452	234310		x	
Trifolium vesiculosum	1454	233782		x	

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TABLE OF PI ACCESSIONS UNDER TEST IN THE FIELD

IN TEXAS FOR THE YEAR 1969

Species	Center PMT Number	PI Number	Field Evaluation	Field Planting	District Seed Increase
Eragrostis curvula (Schrad.) Nees	603	208994		x	
Eragrostis curvula	604	232813		x	
Eragrostis curvula	718	295689	x		
Eragrostis curvula	729	295703	x		
Eragrostis lehmanniana Nees.	732	295698	x		
Panicum coloratum L. "Selection 75"		166400			x

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U. S. Plant Introduction Station
Route 4 Box 433, Savannah, Ga. 31405

Report to S-9 Technical Committee
July 22, 1970
Walter O. Hawley

Test and evaluation of new plant accessions is the basic objective of work at this station. A limited distribution of ornamentals is carried on and we are involved in the production of chemurgic crops when material may be needed for investigation by cooperating agencies.

Ornamentals

Seedling selection studies are being carried on for those introductions which may yield outstanding individuals. Ilex crenata has produced very dwarf and compact forms and forms with yellow berries. Pistachia chinenses - 15 individuals, out of 300, all look promising for outstanding fall coloring. Other desirable characters include foliage textures, late bud breaking and early hardening off for resistance to frost damage.

Propagation and increase of approximately 100 accessions of miscellaneous ornamentals is under way for the production of stock plants. Eventually these are to be used as a source of propagation material for accessions worthy of distribution. Current distribution is limited to Temperate Zone bamboo species and seed of a limited number of introduced trees on the station. These include Quercus myrsinaefolia, Q. accutissima, Castinopsis schlerophylla, Pterocrya stenoptera, Albizzia kalkora, Lithocarpus henryi, and others.

Chemurgics

Kenaf - Screening of accessions of root-knot resistance includes the inoculation, and susceptability reading, of several thousand seedlings. We have found a few promising individuals. Approximately 5 acres of kenaf are under cultivation this season, including replicated treatments of liming, fertilizer application, and soil type exposure; as well as, the production of a crop to be used for pulp production and storage investigation.

Specialty Crops

Chinese Waterchestnuts, (Eleocharis dulcis) are grown annually for seed corm production for interested potential growers. This crop has not been a successful introduction due to the availability of material from the Orient.

Plant Pest Control

We are involved in the control studies of alligatorweed (Alternanthera philoxeroides). This aquatic plant is currently the most serious weed pest in the Southeastern United States. Treatments include biological; as well as, chemical application, and this work continues after 3 years of investigation.

Grain Legume Improvement Program for Tropical Americas
Summary of Field Observation in Puerto Rico (January to July 1970)
Data on 498 Plant Introduction Vigna sinensis Accessions

Nader G. Vakili

USDA in cooperation with USAID have agreed to a program of Grain Legume Improvement which is primarily concerned with tropical Americas. The program is funded by AID and administered by International Programs Division of ARS while personnel and technical knowhow are provided by Crops Research Division. The program is now one year old and in the first stage of screening Plant Introduction lines for diseases and insect pests prevalent in the tropics. The main emphasis has been on Phaseolus vulgaris introductions plus some breeding work for disease resistance and agronomic characteristics. Vigna sinensis accessions were observed for agronomic characteristics and responses to diseases and insect pests under tropical lowland conditions. Four hundred and ninety eight PI lines were grown on Northern shores of the Island at Isabela and observed for a period of seven months (January to July 1970).

The results of these observations indicated that:

Thirty seven PI lines had strong bushy habit which are grown again for further selection. While, 36 PI lines had strong prostrate habit with long vines which retained 80-100% foliage over six months of growth. These will be tested at higher elevations and their cover crop potentiality will be observed under no fertilization conditions.

Powdery mildew was prevalent in the field. Thirty one PI lines displayed 0 to 1 (resistant) response throughout the observation period.

Cercospora leafspot began to spread in the field by late May. By this time some lines had already dried. However, 11 PI lines did not support any Cercospora lesions.

No Anthracnose lesions were observed on 63 of the PI accessions. Lesions developed on peduncles, petioles and branches.

Eleven PI lines were positively classified as having no mosaic viruses, especially Southern Bean Mosaic Virus. Chlorotic Mottle Virus was severe on many lines, but further inoculation and observation is necessary to locate resistance.

Bacterial Blight occurred sparsely in the field.

The soil in Isabela is free from soil-borne diseases affecting Vigna sinensis.

Insect pests caused the major cultural problems. All accessions were severely attacked by bean leaf beetle. But three PI lines showed moderate damage. Leaf miner was wide spread both in the extent and the duration of infestation. Sixty seven PI lines had less that 5% of their foliage tunnelled. Among these, 10 PI lines were either free from infestation or showed resistant response.

During the warm rainy season, starting by early June, caterpillars of Etiella and Fundula and magots of curculio caused heady pod infestation.

Report for 1970 Meetings of Regional Technical Committees on New Crops

W. H. Tallent
Northern Utilization Research and Development Division

High-Erucic Oilseeds. Crambe is attracting increased attention as a source of long-chain acid for industrial use while the Canadians are deliberately reducing the erucic acid content in rapeseed oil for food use. During the past year Japanese companies have indicated a desire to buy substantial quantities of either crambe oil or seed from U.S. sources. Ironically, absence of an interested U.S. processor with an extraction facility of appropriate size and location has meant that so far Canada rather than the U.S. is realizing the first significant economic benefits from the new industrial crop. Northern Sales Ltd. (Winnipeg) continues to extract oil from Canadian-grown crambe for sale in the U.S.

Several expressions of serious industrial interest led us to contract for preparation of nylon 1313 on a pilot-plant scale. The contract should permit reliable determination of process costs and will provide 300 pounds of the new nylon that will be supplied to particularly interested companies for evaluation in their specific applications. Concurrent in-house research should improve the erucic acid ozonolysis step, the most expensive one in the sequence involved in making the nylon, and simultaneously provide raw material for research directed at preparation of the monomer of the closely related nylon 13. In additional crambe oil research, preparation of new thermosetting resins is progressing. As a class, thermosetting resins are used in such diverse applications as molded electronic parts and fiberglass reinforced panels for appliances, automobiles, etc.

Thioglucosides lower the feed value of meals from cruciferous seeds. Northern Sales Ltd. has informed us of plans to subject crambe to a water extraction process developed by the Canadian Food Research Institute to remove rapeseed thioglucosides. In this process, for which CFRI has constructed a pilot plant, the seed is coarsely ground but not defatted before the extraction. Hence it is approximately midway between two approaches being investigated at the Northern Division that involve water extraction of intact crambe seed or alternatively of the defatted meal. There are pros and cons to all three of these approaches and a fourth one under study with rapeseed in Chile. There does seem to be promise that some variation of water extraction will provide the basis of a feasible process for removing thioglucosides.

About 425 of the 1,420 samples of various Brassica lines from India have been analyzed for oil and C_{22} acids (mainly erucic) in search of materials for our breeding program at Corvallis. Numerous samples have had as much erucic acid as usual crambe. When oil analyses are finished, the oil-free meals will be tested for glucosinolate content.

Hydroxy-Acid Oilseeds. Following an interdivisional conference in September 1969, it was decided that we should prepare lithium salts of hydroxy acids for evaluation as grease thickeners. The acid used now is 12-hydroxystearic acid produced from castor oil, most of which is imported. Industry has expressed interest in lesquerolic acid as a substitute (that might show superior performance because of its longer chain length). We expect to test a variety of hydroxy acids found in our screening program and to prepare additional materials by hydroxylation of selected olefinic acids (including erucic). Factors studied will include effects of chain length, the number of hydroxyl groups, and their position in the molecule.

Discovery of 14-hydroxy-11,17-eicosadienoic (aurecolic) acid in oil from Lesquerella auriculata (1969 report to NC-7 Industrial Utilization Subcommittee) has led to the further finding that oils of Lesquerella are more complex than earlier data indicated. The conclusion still holds that there are two primary types of oils, one rich in lesquerolic (C_{20}) and one in densipolic (C_{18}) acid. However, L. auriculata oil has some properties from both groups. The major hydroxy acid, auricolic, has the same chain length as lesquerolic acid, but it has two unsaturated sites analogous to the ones in densipolic acid. The oil also has small amounts of both lesquerolic and densipolic acids. Use of more sensitive gas-chromatographic equipment than previously available has shown that some lesquerolic-type oils contain small amounts of densipolic and auricolic acids; lesquerolic acid has not yet been detected in the densipolic-type oils.

L. auriculata oil was found to have unusual structure in that much of it consists of tetra-acid glycerides in which the hydroxyl group on one of the acids attached to the glycerol moiety is itself esterified with a long-chain acid. Such structures in seed oils are rare but not unprecedented. Re-examination of some oils studied earlier suggest that densipolic-type oils contain tetraglycerides, but the lesquerolic-type does not.

New Seed Oils. Oil from Thunbergia alata, an ornamental vine, contains an unusual series of acids; cis-6-hexadecenoic acid makes up 82 percent of the total. Small amounts of the previously unknown cis-8-octadecenoic are present with the known cis-7-hexadecenoic and oleic acids. The two C_{14} acids present have not yet been rigorously identified. Seed (plus pericarp) from Stokesia laevis (Compositae, Stoke's aster) contains 40 percent oil, and the oil contains 70 percent vernolic acid. The species is native to the southeastern part of the United States and is sold commercially as a perennial ornamental. Oil from Anemone canadensis contains 60 percent of acetotriglycerides. A new cyclopropenoic acid, containing one carbon atom less than malvalic acid, has been found (4 percent) in oil from Pavonia sepium seed. Cyanolipids, like or similar to that reported last year for Cordia verbenacea (Boraginaceae), have been found in nine species of Sapindaceae (Cardiospermum halicacabum, Allophyllus edulis, Nephelium lappaceum, Paullinia meliaefolia, Sapindus mukorossi, Ungnadia speciosa, Urvillea uniloba, Koelreuteria paniculata, and Stocksia brahuica).

During the year ending April 30, 1970, 1,288 seed samples were received for the screening program, 1,117 of which were crucifers for possible use in the breeding program for high-erucic oils. Screening analyses were

made on 569 samples, including all species new to the collection and represented by an adequate sample. The first samples from Dr. Barclay's 1970 collection trip through the South and Southwest arrived at the end of June.

Kenaf. In December 1969 a run on the large paper machine at the Northern Laboratory demonstrated that kenaf can be used effectively in combination with wood pulps for commercial paper production. The furnish contained 40 percent kenaf pulp, 40 percent softwood pulp, and 20 percent of hardwood pulp. Pulps from both pre-frost and post-frost harvests of kenaf were used. Although some areas for improvement were noted, the physical properties of the papers were slightly superior to the all-wood controls. To follow up this development, a research contract of 3-1/2 years duration has been negotiated with the Herty Foundation, Savannah, Ga., to demonstrate the technical and economic feasibility of pulping kenaf and using it for papermaking on a pilot-plant scale under simulated industrial conditions. The influence of processing variables and prepulping treatments of the kenaf on the efficiency of the operations and the quality of the final product will be evaluated. The Crops Research Division will supply the large quantity of kenaf required for this research. Again both green and dried stalks will be used.

Analysis is nearing completion of samples of kenaf stored outdoors with and without tarpaulin covers for several years at Experiment, Ga. by Dr. Dave Cummins. The results to date indicate that such storage is feasible, but there were some effects that warrant further investigation.

Tephrosia. Work has continued on analytical methods. Recovery of rotenoids varies with the solvent used and the condition of the plant material. The effectiveness of solvents vary on fresh, dried, and frozen material, and the reasons for variable recovery of rotenoids have not been established. Extraction of fresh material by acetone approaches maximum recovery. This procedure will be applied in a study of development of rotenoids as the plant matures. Determination of rotenone and deguelin in the extract will be by thin-layer densitometry, gas chromatography, or both. Plants of two lines grown in Glenn Dale by Dr. Joe Higgins (CR) will be harvested at seven stages of maturity and separated into root, stem, petiole, and leaflet fractions for analysis. Material being grown at Purdue will be used by Bauer Bros. of Springfield, Ohio, to study leaf-stem separation on commercial equipment. Attempted preparation of pure natural deguelin for testing for insecticide activity has met with unanticipated difficulties. A new approach is being tried with promising preliminary results.

Other Studies. Three additional alkaloids, closely related to harringtonine, have been characterized from Cephalotaxus harringtonia. All of these have shown activity against leukemia in mice. About 1,000 pounds of Cephalotaxus trees have been received from an Oregon nursery for processing to provide sufficient harringtonine for preclinical testing. Search for new sources of anti-tumor activity was begun in June on seed of species not previously tested.

Dihydroxyphenylalanine (L-dopa) has been shown to be effective in treating Parkinson's disease and has recently received approval from the Food and

Drug Administration. Popular interest has been widespread enough to result in a 2-page story in a picture magazine. We have examined over 700 seed samples, including 336 species of legumes, and have found significant amounts (arbitrarily 0.5 percent or more) only in the genus Mucuna (including Stizolobium). The highest level found in seed of the genus was 6.7 percent in M. holtonii and the lowest was 3.1 percent in M. deeringianum, a velvet bean). A commercial company is said to have 250 acres of velvet beans planted in Georgia and another has seven acres at an unspecified location. The potential usage is perhaps 2 million bushels per year. Although Vicia and Sesamum have been reported to contain L-dopa, none of the species we have tested had enough to give a positive test by our method. Foliage of some plants is said to contain L-dopa, but we have not as yet tested any of this type of material.

The samples of Crepis thomsonii, C. vesicaria, and Cichorium intybus stored at 40° C for a year increased in content of conjugated acids from 4.5 to 10.4 percent, 2.4 to 5.6 percent, and 2.4 to 5.6 percent, respectively. At the same time the amount of epoxy acids increased by comparable amounts in Crepis thomsonii and Cichorium intybus but decreased slightly in Crepis vesicaria. Results are not conclusive, but it appears that linoleic and crepenynic acids are oxidized to the epoxy form and rearranged to give the conjugated dienols. In Crepis vesicaria, with a large amount of epoxy acid present initially, conversion to the dienol is greater than the formation of new epoxy acid and the total amount of epoxy decreases. The significance of the formation of these oxyacids is unknown; they may have important bearing on the storage of Compositae seed intended for oil production.

Planting of Borago officinalis has been requested because the oil is a source of γ-linolenic acid used in the synthesis of a prostaglandin which has physiological action on smooth muscles and may have use as a contraceptive drug. If this year's plantings are promising, the Hormel Institute will support a one-acre planting next year.

There has been no laboratory work of significance on Briza this year. We hope to contract for extensive evaluation in the baking industry if the 1970 harvest provides sufficient oil.

Samples from Committee Members and Regional Stations. Among the samples received were 42 from 1967-1969 increases of species in the SIPE program at Corvallis, 13 from Chico, four from SRPIS, Hemarthria from Florida, Vernonia and Tephrosia from Puerto Rico and Glenn Dale, jojoba from Professor Yermanos, two from NCRPIS, Lathyrus sativus from WRPIS, Mucuna from SCS, Brooksville, Fla., and a dozen Cephalotaxus samples from various places.

SIPE Review by CR and NU. While work continues unabated on such high-priority items as sources of epoxy and high-erucic oils, emphasis will be increased on some species (e.g., sources of tung-like oils, certain borages) and decreased on others (sources of linseed- and safflower-like oils, petroselenic acid).