ANNUAL REPORT OF COOPERATIVE REGIONAL PROJECTS
Supported by Allotments of the Regional Research Fund
Hatch Act, as Amended August 11, 1955
January 1 to December 31, 1989

1. PROJECT: S-9 Plant Germplasm: Its Introduction, Maintenance and Evaluation

2. COOPERATING AGENCIES AND PRINCIPAL LEADERS:

State Experiment Stations and Representatives

AL	J. A. Mosijdis*	NC	W. T. Fike*
AR	T. E. Morelock*	OK	J. S. Kirby*
FL	G. M. Prine*	PR	R. V. Colon*
GA	W. D. Branch*	SC	D. W. Bradshaw*
HI	P. J. Ito*, Chm.	TN	D. L. Coffey*
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MS	C. E. Watson*		

Administrative Advisor G. F. Arkin

U. S. Department of Agriculture

Co-Administrative Advisor, ARS	E. L. Corley
National Program Staff, ARS	H. L. Shands
Germplasm Resources Lab, ARS	G. A. White*
National Seed Storage Lab, ARS	S. A. Eberhart
Subtropical Hort.Res.Stn.,ARS	R. J. Schnell
Tropical Agri. Res. Stn.,ARS	F. Vazquez
Northern Reg. Res. Center,ARS	R. Kleiman
Cooperative State Res. Serv.	S. G. Wiggans
Soil Conservation Service	H. W. Everett*

Southern Regional Plant Introduction Station, Cooperative ARS and SAES

Regional Coordinator	G. R. Lovell
Research Pathologist	A. G. Gillaspie
Research Horticulturist	R. L. Jarret
Curator, Horticulturist	R. N. Pittman

*Indicates voting members of the Technical Committee

3. PROGRESS OF WORK AND PRINCIPAL ACCOMPLISHMENTS:

Germplasm of 1,680 new Plant Introductions (PI's) were added to the S-9 Project plant germplasm collections. Distribution of seed packets totaled 47,593. The S-9 Region received 30,217; NC-7 Region 2,980; NE-9 Region 329; W-6 Region 349, and the National Seed Storage Lab received 1,813 for long term storage. Foreign distribution consisted of 5,989 seed samples to 48 countries. Cooperators in AL, CA, FL, GA, NM, PR, and the Virgin Islands grew 4,420 samples for seed increase.

A second year of field studies were done on the epidemiology of peanut stripe virus in soybean and lima bean. Six soybean and four lima bean cultivars were tested in yield tests. Virus spread from peanuts into soybean was first detected 18 days following planting. The inital spread was mostly in a north-south direction and infected plants were detected up to 50 feet from the peanuts. After 60 days no seed transmission was observed in tests of seeds from infected lima bean or soybean. Screening of watermelon germplasm against watermelon mosaic virus 2 continues with a small amount of resistant germplasm found in preliminary tests.

Peanut regeneration from virus free seed continued through cooperative projects with university and ARS scientist in Oklahoma, Texas, and Virginia.

One hundred and fifty accessions of Ipomoea were acquired for the Sweet Potato Repository through cooperation of the International Potato Center (Peru) and the Queensland Department of Primary Industries (Australia). Virus indexing procedures were initiated for clonal materials previously meristem cultured. To date 30 clones have been tested and all tested clones were found to be virus-free. Demand for seed propagated Ipomoea species has been greater that for clonal material in 1989.

Research on characterization of Musa clones and species using isozymes and organelle DNA markers has continued. A DNA library is being enlarged for use with Musa using a malaccensis subspecies.

4. USEFULNESS OF FINDINGS:

Results obtained through this project at the regional station, at state experiment stations, by federal agencies, and by private enterprise are mutually beneficial to plant breeders and other plant scientists, and through them ultimately to the public. Desirable traits found in plant introductions can be used to develop superior varieties thereby increasing the efficiency of production and reducing the need for pesticides. Through work at the regional station seed of world collections of economic crops is maintained for future use. New information gained from cultural studies of potential crops may lead to greater diversification of agriculture.

5. WORK PLANNED FOR NEXT YEAR:

The Regional Plant Introduction Station will continue to receive, propagate, and catalogue plants for distribution to plant breeders and other cooperators. Screening studies will be continued to locate resistance to insects and disease. The evaluation and classification of the Ethiopian Sorghum Collection will be continued through several cooperative agreements with University and ARS plant scientists in Puerto Rico, Georgia, Oklahoma, and Texas. The evaluation and assay of peanut lines suspected of contamination by the new Peanut Stripe Virus will continue and the increase of virus-free seed will be accelerated. The Plant Introduction Station will continue research with bananas (Musa) to assist Hawaii and Puerto Rico in the genetic identification and improvement of their banana germplasm.

6. PUBLICATIONS ISSUED OR MANUSCRIPTS APPROVED DURING THE YEAR:

A list of publications related to evaluation and use of plant germplasm in the Southern Region are listed in Supplement I to this report.

7. APPROVED:

03/02/90
DATE

F. Vazquez, Chairman,
Technical Committee

3/6/90
DATE

G. F. Arkin, Adm. Advisor

Supplement I

Publications Related to Evaluation and Use of Plant Germplasm in the S-9 Region, 1989

FLORIDA

Adjei, M. B., P. Mislevy, K. H. Quesenberry, and W. R. Ocompaugh. 1988. Grazing-frequency effect on forage production, quality, persistence and crown total non-structural carbohydrate reserves of limpograsses. Soil and Crop Sci. Soc. of Fla. Proc. 47:233-236.

Adjei, M. B., P. Mislevy and R. L. West. 1988. Effect of stocking rate on the location of storage carbohydrate in the stubble of tropical grasses. Trop. Grasslands 22:(2)50-56.

Canudas, E. G., K. H. Quesenberry, L. E. Sollenberger, and G. M. Prine. 1989. Establishment of two cultivars of rhizoma peanut as affected by seed control and planting rate. Trop. Grasslands. (In press).

Chiteka, Z. A., D. W. Gorbet, D. A. Knauft, F. M. Shokes, and T. A. Kucherek. 1988. Components of resistance to late leafspot in peanut. II. Correlations among components and their significance in breeding for resistance. Peanut Sci. 16:76-81.

Christiansen, S., O. C. Ruelke, W. R. Ocumpaugh, K. H. Quesenberry, and J. E. Moore. 1988. Seasonal yeild and quality of 'Bigalta', 'Redalta', and 'Floralta' limpograss. Trop. Agric. (Trinidad) 65:49-55.

Fluck, R. C. and P. Busey. 1988. Energy for mowing turfgrass. Trans of the ASAE 31:(In press).

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Knauft, D. A., and D. W. Gorbet. 1988. Agronomic performance and composition of genetic mixtures in peanut. Agron. Abstr. 80:86.

Knauft, D. A., and D. W. Gorbet. 1989. Analysis of peanut production in stress and non-stress environments. Trop. Agric. 66:(In press).

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Knauft, D. A., D. W. Gorbet, and A. J. Norden. 1988. Yield and market quality of seven peanut genotypes as affected by leafspot disease and harvest dates. Peanut Sci. 15:9-13.

Kouame, C. N., D. D. Baltensperger, K. H. Quesenberry, and R. A. Dunn. 1988. Evaluation of Trifolium spp. germplasm for resistance to root-knot nematodes. Progress Report Clovers and Special Purpose Legume Research 21:12-19.

Mislevy, P., W. F. Brown, A. J. Overman, and R. M. Sonoda. 1988. 'Florona' stargrass. AREC, Ona Research Report RC-1988-7. 5 pg.

Mislevy, P., W. F. Brown, A. J. Overman and R. M. Sonoda. 1988. 'Florico' stargrass. AREC, Ona Research Report RC-1988-6. 6 pg.

Mislevy, P., J. P. Gilreath, G. M. Prine, and L. S. Dunavin. 1987. Alternative production systems: Nonconventional Herbaceous Species. In Methane from Biomass: A System Approach (Wayne H. Smith and James R. Frank) (eds.). Elsevier Applies Science London and New York, pp. 261-276.

Mislevy, P., A. Larbi, M. Adjei. 1988. New stargrass varieties for south Florida. Proc. 37th Annual Beef Cattle Short Course, University of Florida, Gainesville, FL pp. 91-98.

Mislevy, P., O. C. Ruelke, and F. G. Martin. 1988. Grazing evaluation of Cynodon species. Soil and Crop Sci. Soc. Fla. Proc. 47:207-212.

Moore, J. E., L. E. Sollenberger, K. A. Albrecht, P. T. Beede, and W. F. Brown. 1989. Effect of regrowth interval upon canopy struction and utilization of aeschynomene=limpograss pastures. Proc. 16th Int. Grassl. Congress, Nice, France. (In press).

Niles, W. L., and K. H. Quesenberry. 1988. Factors influencing seed production in Florigraze (Arachis glabrata Benth.) Agron. Abstracts. p. 90.

Prine, G. M., S. C. Schank, P. Mislevy, R. L. Stanley, Jr., and L. S. Dunavin. 1988. Production of elephantgrass and other tall grasses for energy use in subtropical and warmer temperate climates Southern Biomass Conf. July 26-28.

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Quesenberry, K. H., D. S. Wofford, and D. D. Baltensperger. 1988. Genotype by in vitro media interaction for callus production and plant regeneration in Desmodium and Aeschynomene. Agron. Abstracts p. 92.

Rusland, G. A., L. E. Sollenberger, K. A. Albrecht, C. S. Jones, Jr., and L. V. Crowder. 1988. Animal Performance on limpograss-aeschynomene and nitrogen-fertilized limpograss pastures. Agron. J. 80:957-962.

Ruttinger, A. E., K. H. Quesenberry, G. M. Prine, and G. A. Moore. 1988. Germplasm evaluation of wild perennial Arachis introductions. Agron. Abstracts. p. 94.

Schank, S. C., Rex L. Smith and Sandra L. Russo. 1989. Characterization of genetic variability among accessions and crosses of napiergrass, Pennisetum purpureum. XVI Intern. Cong. (In press).

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Sollenberger, L. E., C. S. Jones, Jr., and G. M. Prine. 1989. Animal performance of dwarf elephantgrass and rhizoma peanut pastures. Proc. 16th Int. Grassl. Congress, Nice, France. (In press).

Sollenberger, L. E., W. R. Ocumpaugh, V. P. B. Euclides, J. E. Moore, K. H. Quesenberry, and C. S. Jones, Jr. 1988. Animal performance on continuously stocked 'Pensacola' bahiagrass and 'Floralta' limpograss pastures. J. Prod. Agric. 1:216-220.

Sollenberger, L. E., G. M. Prine, W. R. Ocumpaugh, W. W. Hanna, C. S. Jones, Jr., S. C. Schank, and R. S. Kalmbacher. 1989. Registration of 'Mott' dwarf elephantgrass. Crop Sci. (In press).

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Sollenberger, L. E., G. A. Rusland, C. S. Jones, Jr., K. A. Albrecht, and K. L. Gieger. 1989. Animal and forage responses on rotationally stocked 'Floralta' limpograss and 'Pensacola' bahiagrass pastures. Agron. J. (In press).

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Branch, W. D. 1989. Inheritance of dominant white peanut testa color. J. Hered. 80:155-156.

Branch, W. D. and C. C. Holbrook. 1989. Genic relationship between R_1, R_2, and R_3 for red peanut testa color. Peanut Sci. 15:13-14.

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Gerik, T. J., W. D. Rosenthal, and R. R. Duncan. 1988. Simulating grain yield and plant development of ratoon grain sorghum over diverse environments. Field Crops Res. 19:63-73.

Goodroad, L. L. and R. R. Duncan. 1988. Nitrogen fertilizer management of ratooned grain sorghum. J. Plant Nutr. 11:209-216.

Holbrook, C. C. and W. D. Branch. 1989. Additional locus with a recessive allele for red testa color in peanut. Crop Sci. 29:312-314.

Holbrook, C. C., J. P. Noe, T. B. Brenneman, and W. D. Branch. 1989. Identification of new sources of resistance to Meloidogyne arenaria and Cercosporidum personatum. Proc. Amer. Peanut Res. and Educ. Soc. Val. 21:(In press).

Kvien, C. S., W. D. Branch, M. E. Sumner, and A. S. Csinos. 1988. Pod characteristics influencing calcium concentrations in the seed and hull of peanut. Crop Sci. 28:666-671.

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Wiseman, B. R., R. R. Duncan, and N. W. Widstrom. 1988. Registration of SGIRL-MR-3 and SGIRL-MR-4 midge-resistant sorghum germplasms. Crop Sci. 28:202-203.

Wiseman, B. R., W. W. McMillian, and N. W. Widstrom. 1973. Registration of SGIRL-MR-1 sorghum germplasm. Crop Sci. 13:398.

Wiseman, B. R., N. W. Widstrom, and R. R. Duncan. 1984. Registration of SGIRL-MR-2 sorghum germplasm. Crop Sci. 24:627.

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Ito, P. J. 1988. Mango. World Book Encyclopedia, Vol. 13, p. 140.

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Bessin, R., T. E. Reagan, and R. A. Martin. 1987. Integrated management of the sugar cane borer. Sugar y Azucar 82.

Chao, C. P., J. W. Hoy, and F. A. Martin. 1988. Evaluation of Sugarcane Traits Associated with Resistance to Smut. Sugar y Azucar Abst.

Fontenot, J. F., G. Shaver, P. W. Wilson, W. A. Young, W. A. Meadows. 1988. In: National potato germplasm evaleration and enhancement report (USDA Vegetable Lab, Beltsville):56-64.

French, A., C. B. Sverzut, L. R. Verma, and F. A. Martin. 1987. Use of NIR spectroscopy for the analysis of sugarcane quality. JASSCT Abst. 7:104.

Gravois, K. A. and F. A. Martin. 1987. Path-coefficient analysis of plant cane yield components in sugar cane. Sugar y Azucar. 82:(6)33.

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Groth, D. E. and E. M. Nowick. 1988. Rice plant introductions of the Rice Research Station, 1984 - 1987. Rice Research Station Report #3, 34pp.

Hamby, R. K. and E. A. Zimmer. 1988. Ribosomal RNA sequences for inferring phylogeny within the grass family (Poaceae).

Zimmer, E. A., E. R. Jupe, and V. Walbot. 1988. Ribosomal gene structure, variation, and inheritance in maize and its ancestors. Genetics 120:125-136.

Johnson, H. E., M. Hegstead, and W. J. Blackmon. 1988. Protein quality evaluation of Apios americana as a wetland tuber crop. First National Symposium on New Crops Program :25.

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Jones, J. E., J. I. Dickland, and R. G. Novick. 1988. Another look at effects of leaf shape trait on agronomic performance of cotton. p. 94-95. In J. M. Brown (ed). Proc. Belt. Cot. Prod. Res. Conf. N. O., LA 3-8 Jan., Nat. Cot. Cou. of Amer. M. T.

Jones, J. E., R. G. Novick, and J. I. Dickson. 1988. Boll Weevil resistance in day-neutral converted primitive race stocks of Gossypium hirsutum L. p. 99-100. In J. Mr. Brown (ed). Proc. Res. Conf. N.O. LA 3-8 Jan., Nat. Cot. Cou. of Amer.

Kennedy, C. W., J. E. Jones, and R. L. Hutchinson. 1988. Soil moisture extraction, plant growth, and yield of cotton genotypes. (Abst.) p. 107 In J. M. Brown (ed). Proc. Belt. Cot. Prod. Res. Conf. N.O. LA 3-8 Jan., Nat. Cot. Cou. of Amer.

McCarty, J. C., Jr. and J. E. Jones. 1989. Boll Weevil (Coleoptera:Curclulionidae) nonpreference for primitive cotton. J. Econ. Entomol. 82:298-300.

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Milligan, S. B. 1989. Inbreeding in the Louisiana sugarcane variety development program and the utility of inbreeding coefficients and pedigrees in the variety selection program. Sugar y Azucar. (June).

Milligan, S. B. and F. A. Martin. 1987. The effects of year and locations on the repeatabilities of sugarcane yield components in Louisiana. JASSCT Abst. 7:106.

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Musgrave, M. E., A. G. Hopkins, Jr., and W. J. Blackmon. 1988. Evaluating the potential of Apios americana as a wetland tuber crop. First National Symposium on New Crops Program :27.

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Picha, D. H., W. J. Blackmon, P. W. Wilson, L. P. Hanson, and B. D. Reynolds. 1988. Compositional changes in Apios americana tubers during storage. First National Symposium on New Crops Program :26.

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OKLAHOMA

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TEXAS

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