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, 1986

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

2. COOPERATING AGENCIES AND PRINCIPAL LEADERS:

State Experiment Stations and Representatives

Ala.	J. F. Pedersen*	N. C.	W. T. Fike*
Ark.	T. E. Morelock*	Okla.	J. S. Kirby*
Fla.	G. M. Prine*	P. R.	G. J. Fornaris*
Ga.	C. S. Hoveland*	S. C.	D. W. Bradshaw*
Ha.	P. J. Ito*	Tenn.	D. L. Coffey*
Ky.	R. E. Sigafus*[1]	Tex.	O. E. Smith*[2]
La.	A. M. Thro*		G. G. McBee*[3]
Miss.	C. E. Watson*, Chm.	Va.	R. E. Veilleux

Administrative Advisor C. W. Laughlin

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	L. N. Bass
Subtropical Hort.Res.Stn.,ARS	R. J. Knight
Tropical Agri. Res. Stn.,ARS	E. 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

*Indicates voting members of the Technical Committee
1 Retired Effective June, 1986, Position Vacant as of 12-31-86
2 Retired Effective July, 1986
3 Replaced Mr. Smith, July, 1986

3. PROGRESS OF WORK AND PRINCIPAL ACCOMPLISHMENTS:

Germplasm of 2,143 new Plant Introductions (PI's) were added to the S-9 Project plant germplasm collections. This total included 37 genera and 114 species from 67 countries. The crop groups received were sorghum, peanuts, okra, pumpkins, gourds, forage grasses, and forage legumes. The five-year (1981-86) average for receiving new germplasm is 2,524 PI's per year. The germplasm collections now total 57,497 accessions. The distribution of seed packets totaled 28,835. The S-9 Region received 16,312 seed packets; NC-7 Region, 2,013; NE-9 Region, 2,014; W-6 Region, 1,048; National Seed Storage Lab, 1,045. In response to international requests 2,127 samples were shipped to 35 countries. A total of 3,856 PI's were grown for seed increase.

The assaying of sections of the peanut collection that were exposed to contamination with peanut stripe virus (PStV) has continued.

Dr. R. L. Jarret, Research Horticulturist, was added to the staff July 7 to function as Curator of the Sweet Potato Clonal Repository.

Dr. A. G. Gillaspie, Research Pathologist, became Research Leader and Location Coordinator September 7.

Gil Lovell will continue as Coordinator of the S-9 Project and Chief Curator of the germplasm collections.

Dr. O. E. Chambliss, Auburn University, completed the first year of a two year project to screen the Cowpea collection for resistance to Blackeye Cowpea Mosaic Virus. Fifteen PI's have been identified as being resistant to the virus.

Evaluation of the Ethiopian Sorghum Collections continues as follows: Downy Mildew Pathotypes 1 & 3, Texas A&M; Yellow Sugar Cane Aphid, ARS, Stillwater OK; Fall Armyworm, ARS, Tifton, GA

Samples of the entire pepper (Capsicum spp.) collection were provided to Dr. A. Pantoja, University of Puerto Rico and to Dr. P. W. Bosland, New Mexico State University. These actions represent two new major thrusts in improvement of pepper productions in diverse areas.

The S-9 Technical Committee met July 22-23, 1986 at the University of Arkansas Fruit Substation, Clarksville. Progress reports for each are recorded in the minutes of the meeting.

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 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 Sweet Potato Clonal Repository will be fully activated.

6. PUBLICATIONS ISSUED OR MANUSCRIPTS APPROVED DURING THE YEAR:

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

7. APPROVED:

2/17/87
DATE

C. E. Watson
C. E. Watson, Chairman, Technical Committee

2/23/87
DATE

C. W. Laughlin
C. W. Laughlin, Adm. Advisor

Supplement
to
1986 ANNUAL REPORT FOR REGIONAL PROJECT S-9

Publications related to evaluation and use of plant germplasm in the Southern Region:

1. Blackmon, W. J., Apios Tribune. A newsletter (Vol. 1, No. 1 - February 1985).

2. Blackmon, W. J., B. D. Reynolds, and J. R. Ault. 1986. Variations among plants of Apios americana Medikus. Abstracts of Second International Legume Conference, "Biology of the Leguminosae". Page 37.

3. Blackmon, W. J. and B. D. Reynolds. 1986. The crop potential of Apios americana - preliminary evaluations. Hort Science (In Press).

4. Campbell, C. W., Knight, R. J., Jr., and Olszack, R. 1985. Carambola production in Florida. Proc. Fla. State Hort. Soc. 98: 145-149.

5. Coffelt, T. A., W. D. Branch, D. W. Gorbet, J. S. Kirby, R. E. Lynch, A. J. Norden, C. E. Simpson, O. D. Smith, and J. C. Wynne. 1985. 1985 Uniform Peanut Performance Tests. USDA, ARS, and Va. Poly. Inst. and State Univ. Tidewater Research Center Information Series No. 137, 19 p.

6. Demski, J. W., D.V.R. Reddy, G. Sowell, Jr., and D. Bays. 1984. Peanut stripe virus - a new seed-borne potyvirus from China infecting groundnut (Arachis hypogaea). Ann. Appl. Biol. 105:495-501.

7. Demski, J. W. and G. R. Lovell, 1985. Peanut stripe virus and the distribution of peanut seed. Pl. Dis. 69:734-738.

8. Doye, Bernadine G. 1986. Callus initiation and plantlet regeneration of apomictic bluestem grasses (Bothriochloa spp.). M. S. Thesis. Okla. St. Univ. 35 p.

9. Flores, H. E., and P. Filner. 1985. Metabolic relationships of putrescine, GABA and alkaloids in cell and root of Solanaceae. In Primary and Secondary Metabolism of Plant Cell Cultures (K.-H. Neumann, W. Barz, and E. Reinhard, eds.), Springer- Verlag, Berlin, pp. 568-578.

10. Flores, H. E. and R. A. Teutonico. 1986. Amaranths (Amaranthus spp.) - Potential grain and vegetable crops. In Biotechnology in Agriculture and Forestry (Y.P.S. Bajaj, ed.) Vol. 2, Springer-Verlag, Berlin, pp. 568-578.

11. Gorbet, D. W., A. J. Norden, F. M. Shokes, and D. A. Knauft. 1985. Southern Runner - A new leafspot resistant peanut variety. Univ. of Fla. - IFAS Circular (in press).

12. Gorny, J. R., P. W. Wilson, W. J. Blackmon and B. D. Reynolds. 1986.

Fatty acid profiles in Apios americana. Supplement to Plant Physiol. 80(4):75.

13. Hanning, G. E. and B. V. Conger. 1986. Factors influencing somatic embryogenesis from cultured leaf segments of Dactylis glomerata. J. Plant Physiol. 123:23-29.

14. Inayatullah, C., J. A. Webster, and H. T. Nguyen. 1986. Greenbug (Homoptera: Aphididae) antibiosis tests in growth chambers: Design of experiments and optimum sample size. Environ. Entomol. 15:581-584.

15. Martin, F. W. 1986. Notice of release of "Papota" sweet potato. Mimeographed after approval, Tropical Agriculture Research Station, Mayaguez, Puerto Rico.

16. Martin, F. W. and Carmer, S. G. 1985. Variation in sweet potato for tolerance to some physical and biological stresses. Euphytica 34:457-466.

17. Nowick, E. M. 1986. Chromosome pairing in Oryza sativa L. x O. latifolia Desv. hybrids. Can. J. Genet. Cytol. 28:278-281.

18. Nowick, E. M. 1985. Chromosome pairing in Oryza sativa L. x O. latifolia Desv. hybrids. 77th Ann. Prg. Rep., Rice Res. Sta., La. Ag. Exp. Sta. (in press).

19. Nowick, E. M. and J. F. Robinson. 1985. Screening of Oryza species for rice water weevil resistance. 77th Ann. Prg. Rep., Rice Res. Sta., La. Ag. Exp. Sta. (in press).

20. Nowick, E. M. and H. Hoffpauir. 1983. Evaluation of interspecific crosses for use in rice improvement. 75th Ann. Prog. Rep., Rice Res. Sta., La. Ag. Exp. Sta. pgs. 38-39.

21. Nowick, E. M., J. F. Robinson, H. Hoffpauir, and G. Trahan. 1983. Screening of Oryza spp. for rice water weevil resistance. 75th Ann. Prog. Rep., Rice Res. Sta., La. Ag. Exp. Sta. pgs. 38-39.

22. Nowick, E. M. 1984. Regeneration of Oryza sativa x O. latifolia triploid hybrids. 76th Ann. Prog. Rep., Rice Res. Sta., La. Ag. Exp. Sta. pgs. 46-47.

23. Nukal, B. M.. 1984. Inheritance of the bloomless or sparse-bloom character in some lines of sorghum. Masters Thesis, Okla. State Univ., Stillwater. p 28.

24. Pixley, Kevin V. 1985. Physiological and epidemiological characteristics of leafspot resistance in four peanut genotypes. M.S. Thesis (138 p.) Univ. of Fla. (Agronomy).

25. Quesenberry, K. H., S. R. Hardy, and R. H. Dunn. 1986. Evaluating Aeschynomene americana L. germplasm for response to Meloidogyne spp. Proc. XV International Grassland Congress. In press.

26. Reed, M. J. and W. J. Blackmon. 1985. Observations on the potential of Apios americana as a food crop. Hort. Science. 20:557.

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

28. Reynolds, B. D. and W. J. Blackmon. 1985. Regeneration of plants from callus of Apios americana Medik. Hort Science. 20:609.

29. Rutger, J. N., E. M. Nowick, and R. Dilday. 1986. Distribution and origin of species, botany and genetics. In Rice in the United States: Varieties and Production. Revision of AH289, USDA Ag. Res. Service (in press).

30. Shrefter, J. W., E. C. McGawley, W. J. Blackmon, and B. D. Reynolds. 1986. Effects of hot-water treatments on root knot nematodes in tubers of Apios americana. (Abstract, J. Nematol - In press).

31. Smith, M. A., C. E. Watson, Jr., and L. E. Trevathan. 1986. Stem rust resistance in tall fescue. S. Branch Amer. Soc. Agron. Abstr. 13:8.

32. Sollenberger, Lynn E., Kenneth H. Quesenberry and John E. Moore. 1986. Establishment and management of Aeschynomene in limpograss pastures. Proc. 35th Beef Cattle Shortcourse. IFAS. Univ. of Florida, Gainesville, FL.

33. Stewart, J. M.. 1986. Cytogenetic observations on the Australian Gossypium. Proc. Beltwide Cotton Prod. Res. Conf. p. 102 (Abstr.).

34. Stewart, J. M., L. A. Craven, and P. A. Fryxell. 1986. Report on 1985 Gossypium collection in Australia. Proc. Beltwide Cotton Prod. Res. Conf. p. 102 (Abstr.).

35. Tappan, William B., and Daniel W. Gorbet. 1985. Peanut Insect Management in 1985. Univ. of Fla., Quincy NFREC Res. Rpt. NF 85-5, 19 p.

36. Thro, A. M. 1986. Collection of germplasm of Aeschynomene americana L. in Louisiana. Proc. Second International Legume Conf., Mo. Bot. Garden, St. Louis, MO., June, 1986.

37. Thro, A. M., and C. C. Shock. In press. Forage legume introduction in Louisiana, USA. Proceedings of the 15th International Grassland Congress, Aug. 24-31, 1985; Kyoto, Japan.

38. Thro, A. M., C. C. Shock, F. J. Peterson, B. D. Nelson, A. B. Coco, L. P. Brown, and A. T. Wier. 1985. Experimental summer annual legumes for Louisiana pasture systems. Louisiana Cattleman Vol. 18 No. 4 (April) pp. 9, 39, 47. (Popular publication).

39. Tjia, B. 1985. Introducing the calla lily, exciting new crop, a novelty in U. S. Greenhouse Manager 4(6):122-124.

40. Tjia, B. 1985. Hybrid calla lilies. A potential new crop for Florida, Proc. Florida Hort. Soc. (in press).

41. Tjia, B. 1985. Postharvest studies of the white calla lily Zantedeschia aethiopica. In. Proc. Tropical Region Amer. Soc. Hort. Sci.

42. Tjia, B. and T. J. Sheehan. 1986. Chemical height control of Lisianthus russellianus. Hort Science 21(1) 147-148.

43. Tjia, B. and B. McKay. 1986. Growth regulators effect on growth and flowering of Zantedeschia rehmannii. Hort Science (submitted).

44. Tjia, B. and T. J. Sheehan. 1984. Longevity, quality studies help prolong life of Heliconia. Greenhouse Manager 2(#11) 94-100.

45. Tyler, J. M. 1985. Greenbug resistance in wheat germplasm lines CI 17881-17886. Ph.D. Dissertation. Oklahoma State Univ., Stillwater.

46. Umbeck, P. F., and J. M. Stewart. 1985. Substitution of cotton cytoplasms from wild diploid species for cotton germplasm improvement. Crop Sci. 25:1015-1019.

47. Waldroup, P. W., H. M. Helwig, D. E. Longer and C. S. Endres. 1985. The utilization of grain amaranth by broiler chickens. Poultry Sci. 64:759-762.

48. Webster, J. A., C. Inayatullah, and O. G. Merkle. 1986. Susceptibility of 'Largo' wheat to biotype B greenbug (Homoptera: Aphididae). Environ. Entomol. 15:700-702.

49. Wilson, P. W., J. R. Gorny, W. J. Blackmon, and B. D. Reynolds. 1986. Fatty acids in the American groundnut (Apios americana). J. Food Sci.