

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, 1981

1. PROJECT: S-9 Plant Germplasm - Its Introduction, Maintenance and Evaluation
2. COOPERATING AGENCIES AND PRINCIPAL LEADERS:

State Experiment Stations and Representatives

Ala. J. Pedersen*	N. C. W. T. Fike*
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 Soil Conservation Service

Southern Regional Plant Introduction Station, Cooperative ARS and SAES

Regional Coordinator
 Plant Pathologist
 Research Geneticist

G. R. Lovell
 Grover Sowell, Jr.
 W. C. Adamson

3. PROGRESS OF WORK AND PRINCIPAL ACCOMPLISHMENTS:

Germplasm of 7,405 new introductions was added to the regional plant germplasm collections. These new collections were composed of 23 genera and 41 species from 33 countries. The major crops included were sorghum, cowpeas, and peanuts. Introductions totaling 2,600 were grown at the regional station and other locations for seed increase and evaluation. These increases are being

*Indicates voting members of the Technical Committee

carried out under Broad Form Cooperative Agreements with Auburn University, University of Florida (at Gainesville and Ft. Pierce) and the Mayaguez Institute of Tropical Agriculture.

Distribution of seed packets totaled 21,522 in the following categories: S-9 Project, 9,519; NC-7 Project, 3,180; NE-9 Project, 355; W-6 Project, 5,725; National Seed Storage Laboratory, 118; Foreign, 2,625 seed packets to 55 countries.

As a continuing service function to the Legume Section of the Southern Forage Breeders Work Group, 1,700 seed packets were distributed upon request for field trials.

Financial support has continued for curators of the clover (Trifolium) collection at the University of Kentucky and the eastern gamagrass (Tripsacum) collection at North Carolina State University.

The catalog for Winter Legumes was revised and submitted for printing.

Full utilization of our Data Base System was delayed as a result of our Computer Specialist transferring to the Experiment Station's Economics Department. Expertise for handling data input and report writing will be developed utilizing one or more members of the current staff.

The S-9 Technical Committee met July 28-29 at the Northern Regional Research Center (USDA-ARS), Peoria, Illinois. Progress reports presented by each participant 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 project for Energy Feedstock Production Evaluation will be continued and its 1981 production of biomass samples will be analyzed. Emphasis will be placed on initial increase of the Ethiopian Sorghum collection. A plant collection trip is planned for pigmented cotton (Gossypium spp.) indigenous to Peru.

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:

2/12/82
DATE

A. J. Lewis
A. J. Lewis, Chairman, Technical Committee

2/15/82
DATE

C. R. Jackson
C. R. Jackson, Administrative Advisor

Supplement
to
1981 ANNUAL REPORT FOR REGIONAL PROJECT S-9

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

1. Bashaw, E. C. 1981. Nueces and Llano Buffelgrass. TAES Leaflet.
2. Boling, J. A., R. W. Hemken, L. P. Bush, R. C. Buckner, J. A. Jackson, Jr. and S. G. Yates. Role of alkaloids and toxic compound (s) in the utilization of tall fescue by ruminants. Proceedings of the XIV International Grasslands Conference, June 15-24, 1981. Lexington, KY. (In Press).
3. Bradshaw, D. W., S. R. Schmid. 1981. Imported Clones of the Ilex crenata ssp. radicans and Their Usefulness to the Landscape Industry. South Carolina Agr. Exp. Sta. Bulletin No. 187.
4. Campbell, T. A. and J. A. Abbott. 1981. Vegetable Amaranth (Amaranthus spp.) field evaluations of 20 strains. J. of Am. Soc. Hort. Sci. (In Press).
5. Carter, C. and J. Synder. 1981. Segregation of tomato trichome types and spider mite resistance. HortScience 16:36.
6. Carter, C. and J. Synder. 1981. Leaf trichomes and mite resistance of Lycopersicon esculentum and L. hirsutum. HortScience 16:36.
7. Christiansen, Scott, O. C. Ruelke, and R. O. Lynch. 1981. Regrowth in darkness as influenced by previous cutting treatments of four limpgrass genotypes. Soil & Crop Sci. Soc. of Fla. Proc. Vol. 39. (In Press).
8. Cook, M. 1981. Susceptibility of peanut leaves to Cercosporidium personatum. Phytopath. 71:787-791.
9. Demski, J. W. and G. Sowell, Jr. 1981. Resistance to Peanut Mottle Virus in Arachis spp. Peanut Sci. 3:43-44.
10. Eissler, R. L. and H. J. Dutton. 1981. Energy transfer from chlorophyll b to chlorophyll a in a hydrophobic model system. Photochem. Photobiol. 33:385-389.
11. Eskins, K. and L. Harris. 1981. High-performance liquid chromatography of etioplast pigments in red kidney bean leaves. Photochem. Photobiol. 33 (1) 131-134.
12. Hagemann, J. W., J. A. Rothfus, and M. A. Taylor. 1981. Comparison of sperm whale oil with three potential replacements on a mini four-ball wear tester. Lubr. Eng. 37 (3)145-152.
13. Hartwig, E. E. 1981. Breeding productive soybean cultivars resistant to the soybean cyst nematode for the southern United States. Plant Disease 65:303-307.

14. Herbert, T. T. and H. T. Stalker. 1981. Resistance to peanut stunt virus in cultivated and wild Arachis species. Peanut Science 8:45-47.
15. Jursinic, P. 1981. Investigation of double turnovers in photosystem II charge separation and oxygen evolution with excitation flashes of different duration. Biochem. Biophys. Acta. 635:38-52.
16. Keeling, B. L., E. E. Hartwig, and E. L. Jackson. 1981. Response of soybean strains to inoculation with Nematospora coryli. Crop Sci. 21:73-75.
17. Miller, R. W., R. G. Powell, C. R. Smith, Jr., F. Arnold, and J. Clardy. 1981. Anti-leukemic alkaloids from Taxus wallichiana Zucc. J. Org. Chem. 46 (7):1469-1474.
18. Mislevy, P. and P. H. Everett. 1981. Performance of 16 subtropical grasses under various management practices. Agron. J. Vol. 73. July-August.
19. Oakes, A. J. 1981. Registration of Winter-hardy limpgrass Hemarthria altissima, germplasm. Crop Science. (In Press).
20. Payne-Wahl, K. L. and R. Kleiman. 1981. trans-2-Hexadecenoic acid in Aster scaber seed oil. J. Nat. Prod. 44 (2):190-192.
21. Payne-Wahl, K. L., G. F. Spencer, R. D. Plattner, and R. O. Butterfield. 1981. High performance liquid chromatographic method for quantitation of free acids, mono-, di-, and triglycerides using an infrared detector. J. Chromatogr. 209:61-66.
22. Plattner, R. D., R. E. England, K. L. Payne-Whal, and S. G. Yates. Falcarinol in carrots by GC-MS. Proceedings of the Annual Conference on Mass Spectrometry and Allied Topics, May 24-29, 1981. Minneapolis, MN. (In Press).
23. Porter, W. M. and D. H. Smith, Jr., 1981. Computer-assisted management of the USDA small grain collection. Plant Disease 65. (In Press).
24. Powell, R. G. and C. R. Smith, Jr. 1981. An investigation of the antitumor activity of Sesbania drummondii. J. Nat. Prod. 44 (1):86-90.
25. Prine, G. M., L. S. Dunavin, J. E. Moore, and R. D. Roush. 1981. 'Florigraze' rhizoma peanut, a perennial forage legume. Univ. of Fla. Agr. Exp. Sta. Circ. S-275, 22 p.
26. Pueppke, S. G. 1981. Multiple Molecular Forms of Peanut Lectin: Classification of Isolectins and Isolectin Distribution Among Genotypes of the Genus Arachis. Archives of Biochemistry and Biophysics. 212 (1) 254-261.
27. Quesenberry, K. H., A. J. Oakes, and O. Jessop. 1981. Cytological and geographical characterizations of Hemarthria. Canad. J. Gen. & Cytol. (In Press).
28. Quesenberry, K. H., W. R. Ocumpaugh, and O. C. Ruelke. 1981. Hemarthria altissima - A pasture grass for the tropics. Proc. XIV International Grassland Congress. (In Press).

29. Quesenberry, K. H. and W. R. Ocumpaugh. 1981. Forage potential of Aeschynomene species in north central Florida. Soil & Crop Sci. Soc. Florida Proc. (In Press).
30. Radcliff, R. H. and A. J. Oakes. 1981. Yellow sugarcane aphid resistance in selected Digitaria germplasm. J. Econ. Entom. (In Press).
31. Ramirez, O. D., Arroyo Aguilu, J. A. and N. Semidev. 1981. Preliminary evaluation of ramie (Bohemeria nivea L. (Gaudich) as a forage source for livestock feeding. J. Agr. Univ. P. R. 65(3).
32. Rayford, W. E., R. D. Plattner, and R. Kleiman. 1981. Automated nitrogen isotope ratio analysis. Proceedings of the Annual Conference on Mass Spectrometry and Allied Topics, May 24-29, 1981. Minneapolis, MN. (In Press).
33. Ruelke, O. C. and K. H. Quesenberry. 1981. Topseeding winter clovers in limpoggrass, potential and problems. Soil & Crop Sci. Soc. of Fla. Proc. Vol. 39. (In Press).
34. Shipe, E. R. and F. M. Rouquette, Jr. 1981. Evaluation of 523 plant introductions of Trifolium spp. Texas Agric. Exp. Stn., Soil & Crop Sci. Dept. DTR 80-6. 86-91.
35. Simpson, C. E., D. H. Smith, O. D. Smith, and E. R. Howard. 1981. Breeding for leafspot resistance in peanuts. Texas Agric. Exp. Stn. Progress Report - 3854.
36. Sotomayor-Rios, A., J. Rodriguez-Garcia, and J. Velez-Santiago. 1981. Effect of three harvest intervals and protein content of 10 Brachiarias. J. Agr. Univ. P. R. 64 (2):147-153.
37. Sowell, G., Jr. 1981. Additional Sources of Resistance to Gummy Stem Blight of Muskmelon. Plant Disease 65:253-254.
38. Sowell, G., Jr. 1981. A Bacterial Disease Causing Severe Damage to Susceptible Plant Introduction of Muskmelon. Plant Disease 65 (7):609-610.
39. Spencer, G. F. 1981. Dammarenydiol II esters from Cacalia atriplicifolia L. seed oil. J. Nat. Prod. 44 (2):166-168.
40. Stewart, J. M. 1981. In Vitro fertilization and embryo rescue. Environ. Exp. Botany. (In Press).
41. Thomas, C. E. and R. E. Webb. 1981. Resistant to downy and powdery mildews. Alternaria leaf blight and WTV-1. Hort Science 16:96.
42. Velez-Santiago, J. and J. A. Arroyo-Aguilu. 1981. Effect of three harvest intervals on yield and nutritive value of seven Napier grass cultivars. J. Agr. Univ. P. R. 64 (2):129-137.
43. Waterworth, H. E. 1981. Control of Plant diseases by exclusion: Quarantine and disease-free stocks. In: Pest Management, D. Pimentel, editor, CRC Press.

44. Waterworth, H. E. 1981. Scionwood of pear cultivars and species available from the U. S. Plant Introduction Station. *Fruit Vars. Jour.* 35:71-74.
45. Waterworth, H. E. and G. A. White. 1981. Plant Introductions and quarantine: The necessity for both. *Plant Disease* 65: (In Press).
46. Wyatt, S. D. and T. C. Wilkinson. 1981. Movement of virus within cowpeas resistant to cowpea chlorotic mottle virus. *Phytopath.* 71:266.
47. Zummo, N., W. R. Findley, K. C. Freeman, M. J. Bitzer, and G. Armstrong. 1981. Resistance of sweet sorghum cultivars and lines to maize dwarf mosaic in Kentucky, Ohio, and Mississippi. *Plant Disease* 65:241-242.