

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, 1982

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*, Chm.
Ark.	J. L. Bowers*	Okla.	J. S. Kirby*
Fla.	G. M. Prine*	P. R.	O. D. Ramirez*
Ga.	C. S. Hoveland*	S. C.	D. W. Bradshaw*
Ha.	P. J. Ito*	Tenn.	D. L. Coffey*
Ky.	R. E. Sigafus*	Tex.	O. E. Smith*
La.	W. A. Meadows*	Va.	A. J. Lewis, III*
Miss.	C. E. Watson*		

Administrative Advisor	C. R. Jackson
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U. S. Department of Agriculture

Co-Administrative Advisor, ARS	D. E. Zimmer
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National Program Staff, ARS	Quentin Jones
Germplasm Resources Laboratory, ARS	G. A. White*
National Seed Storage Laboratory, ARS	L. N. Bass
Subtropical Hort. Res. Stn., ARS	R. J. Knight
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Mayaguez Institute of Trop. Agric., ARS	E. Vazquez
Northern Regional Research Center, ARS	R. Kleiman
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Soil Conservation Service	Arnold Davis*

Southern Regional Plant Introduction Station, Cooperative ARS and SAES

Regional Coordinator	G. R. Lovell
Plant Pathologist	Grover Sowell, Jr.
Research Geneticist	W. C. Adamson

3. PROGRESS OF WORK AND PRINCIPAL ACCOMPLISHMENTS:

Germplasm of 3,171 new introductions from 30 countries was added to the regional plant germplasm collection. These new collections were composed of 36 genera and 40 species. The major crops included were sorghums, cowpeas, peanuts, millets, and mung beans. A total of 4,741 introductions were grown at the regional station and other locations for seed increase and evaluation. These increases are being carried out under agreements

*Indicates voting members of the Technical Committee

with Auburn University, University of Florida (at Ft. Pierce), the Mayaguez Institute of Tropical Agriculture, and the South Texas Plant Materials Center.

Requests for samples of plant germplasm continued at a high level. Distribution of seed packets totaled 19,241 in the following categories: S-9 Project, 4,908; NC-7 Project, 3,222; NE-9 Project, 525; W-6 Project, 1,496; National Seed Storage Laboratory, 333; Foreign, 8,757 packets to 62 countries.

As a continuing service function to the Legume Section of the Southern Forage Breeders Work Group, 2,145 seed packets were distributed upon request for cultivar field trials.

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

Utilization of our plant germplasm Data Base System was improved with the acquisition of a CRT Unit (computer terminal) and printer. In addition a dedicated line through GTE Telenet Services has been installed to tie our terminal into the National Plant Germplasm System's computer at the Beltsville Agricultural Research Center. Staff training is underway.

Breeding work with Plant Introductions (PI's) of peppers are in the final stages and release of three breeding lines is eminent. Peppers C-44 and V-22 carry resistance to bacterial spot from PI 163192. In addition, V-22 has virus resistance. Two other breeding lines of pepper with resistance to bacterial spot resulted from the crossing of 'Yolo Wonder' with PI 322719.

Resistance to gummy stem blight in watermelon (PI's 189225 and 271778 crossed and backcrossed to 'Crimson Sweet') and muskmelon (PI's 140471, 266935, and 296345 crossed to 'Planter's Jumbo') is very promising.

The evaluation of new-crop sources of oils and hydrocarbons has continued. Of the 25 species evaluated, pokeweed, Phytolacca americana appears to be the most promising producer.

The S-9 Technical Committee met July 27-28 at VPI, Blacksburg, Virginia. 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. Evaluation of watermelon and muskmelon for resistance to gummy stem blight will continue. Breeding lines will be selected which combine resistance with acceptable fruit size. Large field nursery of Eupatorium and Phytolacca will be evaluated as superior sources of oils and hydrocarbons. Selected introductions of sorghums from earlier research will be evaluated for resistance to head mold which lowers seed germination.

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:

2/11/83
DATE

W. T. Fike
W. T. Fike, Chairman, Technical Committee

2/17/83
DATE

E. B. Browne
E. B. Browne, Administrative Advisor

Supplement
to
1982 ANNUAL REPORT FOR REGIONAL PROJECT S-9

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

1. Adamson, W. C. 1981. Evaluation of New Crops for Oil and Hydrocarbon Production. Abst. Southern Branch ASA 8:1.
2. Adamson, W. C., Long, F. L., and Prine, G. M. 1981. Kenaf Yield and N and K Content at Different Harvest Dates. Agron. Abst. 1981:130.
3. Adamson, W. C. and O'Bryan, J. E. 1981. Inheritance of Photosensitivity in Roselle, Hibiscus sabdariffa. Jour. Hered. 72:443-444.
4. Adamson, W. C. and Minton, N. A. 1981. Stem and Root Density in Kenaf and Roselle at Different Harvest Dates. Crop Sci. 21:849-851.
5. Adamson, W. C. and Roth, W. B. 1982. Variation of Acetone and Hexane Extracts in Populations of Oil and Hydrocarbon-Producing Plants, Abst. Southern Branch ASA.
6. Adamson, W. C. and Sowell, G., Jr. 1982. The Inheritance of Three Sources of Resistance to Bacterial Spot of Pepper. Abst. Phytopathology. 72:99.
7. Ahring, R. M., Taliaferro, C. M. and Richardson, W. L. 1982. Bermudagrass seed production under different management. Agron. J. 74:445-446.
8. Banks, D. J. and Kirby, J. S. 1981. Inheritance of wine seed coat (testa) and yellow flower color in peanuts. Proc. Am. Peanut Res. and Educ. Soc. p. 66 (abstract).
9. Banks, D. J., Melouk, H. A., and Ketring, 1982. Peanut germplasm development, Proc. Am. Peanut Res. and Educa. Soc. (abstract, in press).
10. Brewbaker, J. L. ed. Leucaena Research Reports, (Vol. 1, 1980, Vol. 2, 1981. Vol. 3, in press), U. Hawaii and Taiwan Council Agric. Planning and Development.
11. Brewbaker, J. L. 1982. (Ed.) Leucaena Research Reports, Vol. 2, 88 pp. Council Agric. Plann. Dev., Taipei, Taiwan.
12. Brewbaker, J. L., Rich Vand Den Beldt and MacDicken, Ken. 1981. Nitrogen-fixing tree resources; Potentialities and limitations. In "Biological Nitrogen Fixation", Ed. Halliday; Proc. of Conf. in Calif., Colombia.
13. Carter, Catherine D. 1982. Tomato leaf trichome and spider mite resistance, Dissertation. University of Kentucky, 1982.
14. Gautney, T. L. and Norton, J. D. 1982. Muskmelon pickleworm resistance. Hort. Sci. 17: 404-405.

15. Girl, N., Taylor, N. L., and Collins, G. B. 1981. Chromosome numbers in some Trifolium species with a karyotype for T. physodes. Can. J. Genet. 23:621-626.
16. Hamilton, R. A., Cavaletto, C. G. and Anderson D. 1982. 'Pahala' Macadamia named. Hawaii Macadamia Producers Assoc. 21st Annual Meeting, pp. 69-75.
17. Hamilton, R. A., Ito, P. J. and Fukunaga, E. T. 1982. An outstanding new macadamia variety named in honor of William Purvis. Hawaii Macadamia Producers Assoc. 21st. Annual Meeting. pp. 58-68.
18. Hoveland, C. S., Haaland, R. L., Berry, C. D. and Pedersen, J. F. 1982. Oasis phalaris a new perennial grass. Alabama Agricultural Experiment Station Circular 259.
19. Hoveland, C. S., Haaland, R. L., Berry, C. D., and Pedersen, J. F. 1982. Triumph - a new winter productive tall fescue variety. Alabama Agricultural Experiment Station Circular 260.
20. Kuwite, C. A. 1982. Some properties of a cucumber mosaic virus strain isolated from winged bean (Psophocarpus tetragonolobus) in Florida. Plant Disease 66 (In press).
21. Martin, F. W., Rhodes, A. M., Ortiz, M., and Diaz, F. 1981. Variation in Okra. Euphytica 30: 697-705.
22. Martin, F. W. and Ruberte, R. 1981. Variability in okra seed quality. Jour. Agric. Univ. Puerto Rico 55:205-212.
23. Melouk, H. A. and Banks, D. J. 1982. Resistance in peanut germplasm to Cercospora arachidicola. Proc. Am. Peanut Res. and Educ. Soc. (abstract, in press).
24. Menzel, M. Y., Hasenkampf, C. A. and Stewart, J. M. 1982. Incipient genome differentiation in Gossypium. III. Comparisons of G. hirsutum and Asiatic diploids using heterozygous translocations. Genetics 100:89-103.
25. Mislevy, P. and Blue, W. G. 1981. Reclamation of quartz sand tailings from phosphate mining: I. Tropical forage grasses. J. Environ. Qual. Vol. 10, No. 4, 449-453.
26. Prine, G. M., Dunavin, L. S., Mislevy, Paul, McVeight, K. J., and Stanley, R. L., Jr. 1982. Florida 80 ryegrass. Fla. Agr. Exp. Sta. Circ. S-291. 12 pages
27. Pueppke, S. G. 1982. Multiple molecular forms of peanut lectin; classification of isolectins and isolectin distribution among genotypes of the genus Arachis. Arch. Biochem. Biophys. 212, 254-261.
28. Ramirez, O. D., Green, J. J., and Caloni, I., Evaluation and acceptability of ten cassava cultivars. J. Agr. Univ. P. R. (In press).

29. Rhodes, B. B. and Love, S. 1981. Watermelon breeding and variety testing. 1981. Biennial Report of Vegetable Breeding in the Southern U. S., HI. and PR. U. S. Veg. Lab. Charleston, P. 53. (abstract).
30. Schank, S. C., Ruelke, O. C., Ocumpaugh, W. R., Moore, J. E. and Hall, D. W. 1982. Survenola digitgrass, tropical forage grass. Fla. Agr. Exp. Sta. Circ. S-292. 16 pages.
31. Sonoda, R. M. and Kretschmer, A. E., Jr. 1982. Identification of Macroptilium atropurpureum accessions resistant to Uromyces appendiculatus. Univ. of Florida, IFAS, Ft. Pierce, ARC Res. Rept. RL-82-1. 7 p.
32. Sowell, G., Jr. and Demski, J. W. 1981. Resistance to Watermelon Mosaic Virus in Muskmelon. Plant Protection Bulletin Vol. 29, No. 314:71-73.
33. Sowell, G., Jr. 1982. Population Shift of Sphaerotheca fuliginea on Muskmelon from Race 2 to Race 1 in the Southeastern United States. Plant Disease 66(2):130-131.
34. Starks, K. J., Casady, A. J., Merkle, O. G. and Boozaya-Angoon, D. 1982. Chinch bug resistance in pearl millet. J. Econ. Entomol. 75:337-339.
35. Taliaferro, C. M. The manuscript, "Registration of OKPC-1 Kleingrass Germplasm" has been submitted for publication.
36. Thomas, C. E. 1982. The Potential for Controlling Downy Mildew of Cantaloupe Using Plant Introductions Sources of Resistance. (abstract) Phytopathology 72:362.
37. Thomas, C. E. 1982. Resistance to downy mildew in Cucumis melo plant introductions and American Cultivars. Plant Disease 66: 500-502.
38. Velez-Santiago, J., Arroyo Aguilu, J. A. and Fuentes, F. J. Productivity of a number of herbage cultivars over a two year period in two soils, Bayamon and Vega Alta clays. J. Agr. Univ. P. R. (In Press).