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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, 1980

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

2. COOPERATING AGENCIES AND PRINCIPAL LEADERS:

State Experiment Stations and Representatives

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

Administrative Advisor — C. R. Jackson

U. S. Department of Agriculture

Co-Administrative Advisor, SEA,AR	D. E. Zimmer
National Program Staff, SEA,AR	Quentin Jones
Germplasm Resources Laboratory, SEA,AR	G. A. White*
	A. J. Oakes
	H. F. Winters
National Seed Storage Laboratory, SEA,AR	L. N. Bass
Subtropical Hort. Res. Stn., SEA,AR	R. J. Knight
	P. K. Soderholm
Mayaguez Institute of Trop. Agric.,SEA,AR	G. Freytag
Northern Regional Research Center, SEA,AR	L. H. Princen
Cooperative Research, SEA	C. O. Grogan
Soil Conservation Service	Arnold Davis*

Southern Regional Plant Introduction Station, Cooperative SEA,AR 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 3,513 new introductions was added to the regional plant germplasm collection. These new collections were composed of 65 genera and 123 species from 61 countries. The major crops included were cowpeas, peppers, squash, okra, and peanuts. Introductions totaling 2,035 were grown at the regional station and other locations for seed increase and evaluation. These increases

*Indicates voting members of the Technical Committee.

are being 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 18,757 seed packets were in response to 458 requests in the following categories: S-9 Project, 229 requests and 11,846 seed packets; NC-7 Project, 44 requests and 2,407 seed packets; NE-9 Project, 30 requests and 383 seed packets; W-6 Project, 43 requests and 1,015 seed packets; National Seed Storage Laboratory, 5 shipments of 1,175 accessions of seed for long term storage; Foreign, 107 requests (45 countries) and 1,175 seed packets.

Distribution of complete collections was completed and/or initiated in 1980. The peanut collection (4,383 accessions) was provided to Dr. Steven Pueppke, University of Florida. Through a series of biweekly shipments, seed samples were analyzed for content of peanut seed isolectins. Summary reports are forthcoming from Dr. Pueppke. Two requests were received for samples of all accessions in the sorghum collection (3,620). Dr. Kenneth Starks, SEA-AR, Oklahoma State University and Dr. Tom Harvey, Kansas State University, Branch Experiment Station, Ft. Hays, Kansas utilizing different approaches have begun screening for sources of resistance to a new biotype of the greenbug (Schizaphis gramium) in the Southern Plains. Screening should be completed by November, 1981.

As a continuing service function to the Legume Section of the Southern Forage Breeders Work Group, 987 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 the eastern gammagrass (Tripsacum) collection at North Carolina State University.

The catalog of eggplant introductions was received from the printers and distributed to the S-9 Technical Committee.

Computer Data Base development was completed on the germplasm collection inventory. Computer capability now exists for inventory maintenance and report printing for the 39,845 plant introductions composed of 254 genera and 1,439 species.

The S-9 Technical Committee met August 8-9 at Clemson University, Clemson, SC. Progress reports presented by each participant are recorded in the minutes of the meeting.

Seven hundred plant introductions of muskmelon (Cucumis melo) were screened for resistance to powdery mildew. Nineteen were found resistant in these preliminary tests. A very dry summer resulted in minimum disease development in field plantings which prevented reliable screening data for anthracnose resistance in watermelon (Citrullus lanatus) and sorghum (Sorghum bicolor).

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. An annual newsletter (beginning in 1981) will be widely distributed to highlight the outstanding plant introductions reported throughout the S-9 Project region.

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 the first set of biomass samples will be analyzed. This will be the first of an expected four annual biomass production and sampling periods. Plant Collection trips are planned for rabbit-eye blueberries (Vaccinium ashei) in the Southeastern United States, cotton (Gossypium spp.) indigenous to Australia, and beans (2 new Phaseolus spp.) in eastern central Mexico.

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:

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DATE J. S. Kirby, Chairman, Technical Committee

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DATE C. R. Jackson, Administrative Advisor

Supplement
to
1980 ANNUAL REPORT FOR REGIONAL PROJECT S-9

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

1. Adamson, W. C. 1980. Diallel Analysis of Leaf and Stem Characters in Kenaf. (Abstr.) American Soc. Agron. p. 47.

2. Branch, W. D. and Ray O. Hammons. Inheritance of a Variegated Testa Color in Peanut. (Abstr.) Am. Soc. Agronomy, Agronomy Abstracts, p. 56. June 1979.

3. Branch, W. D. and Ray O. Hammons. Inheritance of Testa Color Variegation in Arachis hypogaea L. (Abstr.) Proc. Am. Peanut Res. Educ. Soc. 11(1):54. November 1979.

4. Branch, W. D. and Ray O. Hammons. Inheritance of Testa Color Variegation in Peanut. Crop Sci. 19(6): 786-789. Nov.-Dec. 1979.

5. Freytag, G. F. 1978. Improved Plant Type of Some Advanced Bean Lines Developed in Puerto Rico. (In Spanish.) In XXIV Reunion Anual PCCMCA 1 (L-18):1-8.

6. Freytag, G. F. 1979. Preliminary Results of Bean Plantings in Narrow Rows. (In Spanish.) In Memoirs Soc. Puertorriquena Agr. Sci. 5.

7. Freytag, G. F. 1979. Metaxenia Effects on Pod Size Development in the Common Bean (P. vulgaris L.). Jour. Herd. 70:444-446.

8. Freytag, G. F. and R. Echavez. 1980. Field Trials at Three Localities with Advanced Bean Lines Developed in Puerto Rico. (Abstr. - in Spanish.) In XXVI Reunion Anual PCCMCA. p. 81.

9. Freytag, G.F. and F. Bliss. 1980. Total Protein Content of Advanced Bean Lines Developed in Puerto Rico. (Abstr. - in Spanish.) In XXVI Reunion Anual PCCMCA. p. 82.

10. Freytag, G. F. and L. Telek. 1980. Investigation of the Anti-nutritional Factors in Bean. (Abstr. - in Spanish.) In XXVI Reunion Anual PCCMCA. p. 110.

11. Granberry, Darbie M. 1979. Response of Progeny from Interspecific Cross of Cucumis melo L. x C. metuliferus E. Mey. to Meloidogyne incognita acrita. J. Amer. Soc. Hort. Sci. 105:180-183.

12. Hammons, Ray O., G. Sowell, Jr., and D. H. Smith. Registration of Cercospora arachidicola Resistant Peanut Germplasm. Crop Sci. 29(2):292. Mar.-Apr. 1980.

13. Hoveland, C. S., R. L. Haaland, C. C. King, Jr., W. B. Anthony, J. A. McGuire, L. A. Smith, H. W. Grimes, and J. L. Holliman. 1980. Steer Performance on AP-2 Phalaris and Kentucky 31 Tall Fescue Pasture. Agron. J. 72:375-377.

14. Hoveland, C. S., R. L. Haaland, and R. Rodriguez-Kabana. 1979. Forage Production of Phalaris Species as Affected by Nematode Populations. Nematropica 9:22-27.

15. Latigo, G. V. and C. L. Gonzalez. 1979. Dolichos lablab, A Potential Forage Legume in South Texas, can Improve Pastures and Beautify Homes. Journal Rio Grande Valley Hort. Soc., Vol. 33. p. 121-123.

16. Pettit, R. E., R. A. Taber, O. D. Smith, and B. L. Jones. 1977. Reduction of Mycotoxin Contamination in Peanuts Through Resistant Variety Development. Annals of Tech. Agric. 27:343-351.

17. Ray, L. L. Tamcot A-788 - A New Cytoplasmic Male-sterile Line for Hybrid Cotton Research. Texas Agric. Exp. Stn. Leaf. L-1771, Sept., 1979.

18. Reeves, Sim A.,Jr. Sweet Sorghum Variety Yield and Sugar Performance. Texas A&M University Agric. Exp. Stn. Progress Rept. PR-3646. Jan., 1980.

19. Smith, Olin D. and T. E. Boswell. 1980. Breeding for Resistance to Pod Rot and Lesion Nematodes. Proceedings of the American Peanut and Educ. Soc.

20. Smith, Olin D., T. E. Boswell and W. H. Thames. 1978. Lesion Nematode Resistance in Peanut. Crop Science 18:1008-1011.

21. Sowell, G., Jr., J. T. Strickland, and J. L. Walden. 1980. Catalog of Seed Available at the Southern Regional Plant Introduction Station. Solanum. 21 pp.

22. Suvanprakorn, Kamolvan. 1980. Inheritance of Resistance to Race 2 Anthracnose (Collectotrichum laginarium) in Watermelon. Journ. Amer. Soc. Hort. Sci. (Accepted for publication).