

RECOLLECTIONS OF 50 YEARS OF BELTWIDE COTTON IMPROVEMENT

Philip A. Miller

**Retired, Agricultural Research Service, UDS
and North Carolina State University**

Abstract

This afternoon we had a very informative session summarizing the public and private successes in cotton breeding and genetics over the past 50 years. I would like to take a few minutes this evening to review some of the administrative support programs, which I feel, helped to facilitate these advances. Specifically, I wish to pay tribute to the “movers and shakers” who had the vision to organize and implement such programs as our Cotton Improvement Conference; the Southern Regional Research Projects; the Joint Cotton Breeding Policy Committee; the Cotton Winter Nursery; and the National Cotton Variety Test. Let me emphasize that most of my information is based on recollections — my own and various other people with whom I visited. There are very few written records remaining in the files concerning the organization and implementation of these programs. Recollections are often incomplete and modified by time. Thus, I am sure that both important programs and key people that should have been included here have been overlooked. But Steve (Calhoun) when he prevailed upon me to make these remarks said he would take the “rap” for the errors and omissions that are bound to surface!

Cotton Improvement Conference (CIC)

Let's start with the history of the CIC itself. I visited with John Green, who was a participant in the organizational meeting that was held in New Orleans in 1948. To the best of John's recollections the other people present included Tom Richmond, Tom Kerr, J. O. Ware, M. T. Henderson, D. M. Simpson, and John Cotton. There were probably others. John indicated that Tom Richmond, Texas A&M and Tom Kerr, Cotton Division, USDA, were leaders in organizing and initiating this annual conference. Certainly, H. D. Barker, Head of the Cotton Division; R. D. Lewis, Director of the Texas Agricultural Experiment Station; and various other state, federal, and private seed company administrators encouraged and supported this activity.

The first written record under the title of the CIC which I was able to find was included in the Proceedings of the Annual Meeting of the Southern Agricultural Workers held in Memphis, February 5-7, 1951. John Green, Oklahoma A&M, chaired the meeting and H. D. Barker, Beltsville, was listed as “Secretary.” Papers were given by Harold Loden, S. G. Stephens, Tom Kerr, Tom Richmond, Jim

Meyer, M. T. Henderson, L. A. Brinkerhoff, Ken Hertel, and C. J. Craven. The 1952 meeting likewise was held and reported as part of the southern Agricultural Workers meeting in Atlanta. John Turner chaired that session. These were the only written records, which I found for the CIC meetings during the 1948-1955 period. The CIC became a part of the Beltwide Production Conferences in 1956. Several locations including the Delta Branch Experiment Station have a complete set of Proceedings published by the National Cotton Council from 1956 to today. We should certainly recognize Jim Brown and later Paul Bugger for their indispensable support in arranging for the annual meetings and the publication of the Proceedings.

Regional Research Projects

Formal organization of regional research in cotton genetics was initiated in the fall of 1946 and implemented in 1948. A “Memorandum of Understanding” was entered into by 11 state agricultural experiment stations and the Cotton Division, USDA. The original master project designated as “S-1” was entitled “National Cooperative Research in Plant Sciences for Improvement of Cotton.” In 1952 the project title was revised to “Genetics and Cytology of Cotton” to more clearly indicate the emphasis on basic genetics research. Technical workers met annually to improve communication and coordination. The original Administrative Advisors were E. V. Smith, Director, Alabama Agricultural Experiment Station, and H. M. Steece, and later R. M. Heermann of the Cooperative State Research Service. T. R. Richmond was the Project Coordinator. After Tom Richmond's retirement Russ Kohel took over that leadership position.

Project S-1 was revised in 1958 and 1964 and terminated in 1969. Project S-77 was initiated in its stead and in 1975 the title was changed to “Preservation and Utilization of Germplasm in Cotton.” Simultaneously, Regional Research Project S-105, “Host Plant Resistance in Cotton to Insects, Mites, Nematodes, and Diseases” was initiated; splitting off some of these host plant resistance activities that had been a part of the Genetics and Cytology Project.

The S-77 Project was terminated several years ago and in 1994 a new project, S-258, “Evaluate Cotton Germplasm to Identify Useful Characters for Genetic Mapping” was initiated. A Southern Regional Information Exchange S-61 was also implemented to provide of the exchange of the more applied breeding information. This group meets in alternate years with the Cotton Breeders Tour sponsored by Cotton Inc.

Three Southern Cooperative Series publications (Bulletins 47, 139, and 256) include annotated bibliographies and summarize the advances made through this research. Jack McCarty is currently putting together the information for a final summary of the S-77 Project.

One of the Regional Research activities that merit special note was the development and maintenance of a cotton germplasm collection. Key early leaders include J. W. Neely (Upland stocks) and J. O. Ware, Tom Richmond, S. G. Stephens, Bill Manning, and Paul Fryxell in the collection and classification of *Gossypium* species and race stocks. Russ Kohel currently provides the leadership for the maintenance of this indispensable working collection of germplasm at College Station, Texas.

An additional area of support for cotton improvement included in the S-1 and S-77 projects was the instrumentation research at the Tennessee Agricultural Experiment Station. This project developed machines for testing and evaluating various properties of cotton fibers with special emphasis for making these measurements on small samples of experimental breeding material. K. L. Hertel was the lead scientist in this research. The USDA with leadership from Tom Kerr organized and supported a Fiber and Spinning Laboratory at Knoxville to further support fiber quality evaluations for geneticists and breeders. This cooperative research among physicists, engineers, geneticists, and breeders has provided the basis for very significant improvement in cotton fiber quality over the past 50 years. Research in these areas continues today at the Southern Regional Research Center, New Orleans.

Joint Cotton Breeding Policy Committee (JCBPC)

The establishment of this committee was the result of efforts initiated in 1949 to develop needed policies relating to the breeding, increase, and distribution of cotton planting seed. Representatives of the state agricultural experiment stations, USDA, and the cotton industry met in New Orleans in December 1954 and officially organized a standing committee. Leaders at this meeting included Robert Coker, Harold Loden, and Charles R. Sayer representing commercial cotton breeders; R. D. Lewis and E. V. Smith representing the state agricultural experiment stations; and K. S. Quisenberry representing the Agricultural Research Service, USDA. Others present were Hardy Tharp, Cotton Section, Beltsville; and Claude Welch and J. Ritchie Smith of the National Cotton Council. This committee with rotating membership representing these three groups continues to meet annually in conjunction with the Beltwide Cotton Production Conferences. J. Ritchie Smith and later Andy Jordan have served as recording secretaries for the JCBPC.

Along with various coordinating activities this committee sponsors the Cotton Genetics Award and facilitates such programs as the National Cotton Variety Test and the Cotton Winter Nursery. It has certainly played a key role in cotton improvement over the past 40 years.

Cotton Winter Nursery

A cotton winter nursery and tropical genetics garden was established in Iguala, Mexico in 1950. This facility was later moved to Tecoman, Colima, also in Mexico. The nursery was initiated through cooperative agreements between the National Cotton Council, the Agricultural Research Service of USDA, and the Instituto Nacional de Investigaciones Agricolas of Mexico. This facility enables geneticists and breeders in the U.S. to obtain two generations per year for developing genetic information and improved varieties. In addition, a tropical garden provides for the maintenance of photoperiodic germplasm. Both public and private researchers utilize the services provided by this Center.

Key early leaders for the establishment of this nursery service included J. Ritchie Smith of the National Cotton Council and H. D. Barker and B. M. Waddle of the ARS. The State Experiment Stations and the private seed companies also provided support in the management and utilization of this facility. Lon Litton was the first on-site manager followed by Ed Duncan and the current manager, Wes Malloy; all employees of the National Cotton Council. Russ Kohel and Andy Jordan continue to provide major coordinating roles for this activity.

National Cotton Variety Test

The Joint Cotton Breeding Policy Committee meeting in Houston in December, 1958, recommended that the Agricultural Research Service, the State Agricultural Experiment Stations and the industry cotton breeders organize a national cotton variety testing program. The following committee was appointed to develop the details:

Harold Loden – Industry
E. V. Smith – SAES's
H. D. Baker – ARS
C. F. Lewis – Cotton Investigations Leader, ARS

This committee met in Dallas in September 1959 and recommended that such a program be initiated in 1960. Charles Lewis reviewed the development of the program plans in a report entitled "The Regional Cotton Variety Testing Program" at the Cotton Improvement Conference held in Memphis in January 1960. I believe we are all generally familiar with the details of this activity which includes both public and private breeders. The first National Cotton Variety Testing Committee included J. B. Dick, Warren Fisher, Harold Loden, Bill Manning, Phil Miller (on leave in Peru), Jim Neely, Tom Richmond, and Al Smith. Subsequent committees continue to meet annually in conjunction with the Cotton Improvement Conference. For a number of years, Charles Lewis coordinated the summarization of the data and published the annual reports. This responsibility was later taken over by Hob Ramey at Knoxville; then Bob Miravalle at the

Southern Regional Research Center, and finally as it is today by Bill Meredith and S. T. Rayburn, ARS, Stoneville.

This program provides a unique base of information concerning the performance and quality of the major cotton varieties grown across the Cotton Belt as well as a measure of progress in varietal improvement over time. Data from the test from its inception in 1960 to the current year are maintained in an archive file at Stoneville, MS.

Cotton Incorporated

It is also important to recognize the programs of Cotton Inc. that are contributing to cotton improvement. Cotton Inc. tracing its history back to the National Cotton Council's emphasis on the need to strengthen promotion and research, is funded directly by the cotton growers. Some of this funding supports both in-house and contract research on the genetic improvement of the crop. Their support for the Cotton Winter Nursery and the breeders tours are particularly noteworthy. Bill Lalor of C.I. is on the Joint Cotton Breeding Policy Committee and Gay Jividen plays

an important role in managing the cotton genetics research.

Summary

Returning again to the CIC, this is where the real action takes place. The importance and many benefits of the CIC are obvious. I have had the privilege of being associated with several commodity improvement program groups. The uniqueness of the CIC has been the emphasis on open reporting and cooperation among the various breeders and geneticists including the State Agricultural Experiment Stations the Agricultural Research Service of the USDA, Cotton Inc., and the very important private sector. In addition, the joint sessions with the related disciplines — pathology, entomology, physiology, etc. — have been very productive. I am aware that the Plant Variety Protection Act and related legislation has changed the working environment for interactions among these groups. I strongly recommend, however, that every effort be made to adjust to these changes and continue the cooperative efforts that have been so effective over the past 50 years.