

**THE PARTIAL HISTORY OF COTTON
BREEDING PROGRAM FOR THE LAST FIFTY
YEARS (1947-1997) AS IT TOUCHES THE
STONEVILLE PEDIGREED SEED COMPANY**

**C. W. Manning
Leland, MS**

Abstract

During the last fifty years there has been a renewed search for new germplasm in cotton. New procedures have been devised to develop plants better able to meet the requirements of new planting, plant care, harvesting, and ginning methods.

Discussion

Thanks for the privilege of being a part of the 50th Anniversary of the Cotton Improvement Conference. The Stoneville Pedigreed Seed Company never required written reports on the breeding program and seldom was any made. After all these years what we did fifty years ago isn't always clear, so please forgive me for not giving you a lot of details.

I'd like to start with comments on the never-ending research for germplasm to broaden the genetic base of breeding material. One source in which I was involved was visiting parts of Central America for wild and distant relatives of Upland cotton. One expedition in 1946 was led by T. R. Richmond and the trip in 1948 was led by J. O. Ware. Others have made similar collections and more are likely to follow. The seed of these collections were made available to those who were willing to determine their value in breeding programs. No doubt you have heard, or will hear, more about this in other papers given at this Conference.

Let me leave this subject and turn more closely to the topic to which I was assigned. C. A. Tate had been the plant breeder of the Stoneville Pedigreed Seed Company for many years. H. B. Brown had originated the breeding work of the company. Tate worked with him as his assistant which included helping him in developing research that would be used in a book on cotton being written by Brown.

Tate is credited with developing Stoneville 2B and Delfos 9169. Association with Brown very likely was the reason that he learned so much about plant growth. To him, plant selection was an art. He told me that he remembered the very plant that became Stoneville 2B.

These two varieties had been on the market for several years. Both had good fiber qualities, especially Delfos

9169, but both had low gin turnout and were somewhat susceptible to Verticillium wilt. Some change seemed necessary.

J. W. Neely joined the company during the mid-forties and stayed until 1951 when he became a member of the Coker Pedigreed Seed Company. Tate stayed with Stoneville until 1953 and then retired. A. L. Germany joined us in 1957. Tate offered to continue making plant selections and evaluating progeny rows. He didn't feel at home with the chores of running the program, so he suggested that I develop the procedures, set up statistical designs, analyze the data, and determine what strains to continue in the program.

Our aims were much the same as one would use in most cotton breeding programs. We hoped not to lose the fiber qualities of Stoneville 2B and Delfos 9169, but this was not to be. In those days cotton breeders, whether public or private, were very generous with their material and a considerable amount of germplasm was exchanged. They cooperated so closely that they even shared testing areas.

This was the case with the Coker people, J. B. Dick of the Delta Station, and the Stoneville Pedigreed Seed Company. The shared plot was near Clarksdale, Mississippi, an area that showed signs of a Verticillium wilt problem. Good wilt areas were hard to find and often hard to keep, as the wilt often was not consistent from year to year.

Back in the fifties, there wasn't much irrigation of cotton. Fields were not prepared for applying water in any uniform manner. In 1955, there was a real shortage of rain, at least in the Mississippi Delta. The plots on which the Stoneville 2B material was planted were badly hurt. However, certain progeny rows were obviously less affected by the dry conditions. From those, one strain identified as 0719 appeared to warrant further testing, and seeds from one progeny row were used to plant several acres. This meant a poor stand, but we were after seed production and did not worry about fiber yield. This early generation increase helped speed the seed increase as the strain was tested and evaluated. From this, Stoneville 7 developed and was released as a variety. It satisfied us on the higher gin turnout, maturity, and production, but had less than desirable fiber strength.

Coming closely behind Stoneville 7 were several strains which had better fiber and were considered worthy of continued selection. From these strains number 54206 became 7A and 54213 became Stoneville 213. Stoneville 7A had better fiber strength than Stoneville 213, but the latter was somewhat earlier and showier. Both of these varieties had fibers that withstood the action of the cotton picker spindles and fast speed ginning better than their predecessors. Naturally the mills liked the 7A, farmers leaned toward Stoneville 213. You know the rest of the story.

After Germany joined the staff, the program was enlarged in an attempt to develop nectariless cotton. Seed of the nectariless parent was obtained from J. A. Meyer at the Delta Station. From this work Stoneville 731N was released to be followed by Stoneville 825.

Some effort was made to develop a glandless cotton, but trouble with the stinkbug discouraged an all-out effort. This was something not often found in cotton but these insects were drawn to it in massive numbers. Even though we tried to control them, production was reduced.

Our Fusarium wilt program began with a strain obtained from A. L. Smith at Auburn University. It was a sister line of Auburn 56 with stronger wilt resistance. From this came Stoneville 603 and Stoneville 506.

The Stoneville Seed Company purchased the Bobshaw Seed Company with headquarters in Indianola, Mississippi. Posey Brown developed a variety called Dixie King, which was resistant to Fusarium. It did well in the Southeastern region but not in the Mid-South.

Before leaving this history of cotton varieties, I would like to comment on changes made in the mechanical aspect of preparing seed for field tests, especially what we did at Stoneville. When I joined the company in 1951, planting of fuzzy seed was done mostly by dropping the seed by hand, especially in progeny rows and in primary increase blocks.

G. R. Walker constructed a small device that allowed seed to pass through a flame, which burned off most of the fuzz. Samples could be cleaned better and planting made much more rapidly with better plant stands.

The next step in using such a process was to develop a flamer large enough for processing seed sold commercially. With no plans available, it took some time, and many changes to arrive at a flamer suitable for this purpose. A patent was not obtained, but the process worked so well that other seed firms copied it.

Acid delinting of the seed came next. Seed cleaning and sizing were possible, which meant better quality. The farmer got a better product.

The next big step in plant breeding came with the biotechnology approach. I retired about this time and should not make many comments about it. The potentials are great, and I cannot see anything except success. We have been through changes, some of which were successful, and some not. Sometimes the research had not been carried far enough. Sometimes the user of the seed or practice was not ready to handle the change. Certainly caution is required.

I have a few slides you might like to see, providing there is time. Thank you for your attention.