EFFECT OF LEAF SHAPE, PLANTING RATE, AND ROWSPACING ON COTTON DEVELOPMENT AND YIELD

D.P. DELANEY, C.D. MONKS, M.G. PATTERSON, AND M.D. PEGUES
Auburn University, AL

ABSTRACT

Cotton acreage in the southwestern section of the Gulf Coast Region of Alabama has experienced a resurgence in recent years, due to favorable prices, value as a rotation crop, and new technologies being adopted. Acreage has increased to approximately 40,000 acres in the immediate area.

Conditions are highly favorable for cotton production, with a long growing season, sandy soil which normally allows timely cultural practices, and frequent summer thunderstorms to replenish soil moisture. However, these same conditions also regularly lead to a severe boll rot problem due to high humidity, excessive vegetative growth, and reduced sunlight and air penetration into the canopy.

Some potential solutions to the problem include opening up the plant canopy with wider row spacings or skip row planting patterns, lower seeding rates, and growth regulators to decrease or alter plant size. Producers often delay planting dates to avoid boll maturity and peak susceptibility to rot during periods of frequent rainfall and high humidity in late summer, with potentially adverse effects on yield.

An experiment was conducted from 1994 to 1996 in the area to determine if an okra leaf variety, with potential to increase canopy penetration of light and air, in combination with altered row spacings or seeding rates, might have advantages over conventional practices for plant growth and boll rot occurrence.

An experimental design using stripped blocks of 30 and 36 inch rows, in combinations with seeding rates of 3 and 6 seed per foot of row, and MD51ne okra leaf and normal leaf isolines of cotton were used, for a total of 8 treatments.

Data was collected on plant heights and nodes, first fruiting branch, plant mapping (1995 and 1996), open/closed/rotten bolls, and yield.

There was a variable response of plant height and internode length to leaf shape between the years of 1994 and 1996. Lower seeding rates and closer rows increased number of reproductive nodes in 1994 and 1996. There were no effects of treatment on first fruiting branch in any year.

Little boll rot occurred in 1994 or 1996, so no differences could be measured between treatments. Hurricane Erin in August 1995 followed by Hurricane Opal in October, flattened the crop and caused excessive boll rot and shed on all treatments, obscuring treatment effects on boll rot.

Closer rows resulted in taller cotton in 1994 and 1996. The normal leaf cotton isoline had lower abscission rates, opened later than its okra leaf sister line, and also outyielded okra leaf cotton in 2 of 3 years.

Reprinted from the *Proceedings of the Beltwide Cotton Conference*
Volume 2:1409-1409 (1997)
National Cotton Council, Memphis TN