STATUS OF ULTRA NARROW ROW RESEARCH IN THE SOUTHEAST

C.H. Burmester, Extension Agronomist
Auburn University
Belle Mina, AL

Abstract

Ultra narrow row cotton research in the Southeastern United States has been limited to demonstration work with farmers in Northern Alabama in the early 1980's and early 1990's. Farmer interest in row spacing less than 36 to 40 inches, has been limited in the Southeast. Only on the silty clay Limestone Valley soils in Northern Alabama has there been a wide adoption of 30 inch row technology. Farmers on the sandy Coastal Plain soils, which make up most of the Southeast, have shown limited interest in 30 inch technology. Reasons given include: inconsistent cotton yield increases with 30 inch rows, long cotton growing seasons, boll rot potential, and row compatibility with peanuts.

Preliminary work has indicated the best fit for ultra-narrow row cotton in the Southeast is areas of north and central Alabama and north Georgia which have shorter growing seasons and heavier textured soils. The sandy Coastal Plain soils will need additional research to make ultra-narrow cotton production successful. The development of new cotton strippers should increase farmer and research interest in ultra narrow row cotton in the Southeast.

Introduction

Very little research into ultra-narrow row cotton production has been conducted in the Southeastern United States. This is due in part to the fact that only a small portion of the cotton farmers in the Southeast have converted to 30 inch row patterns. Most of the cotton in this area is still grown in 36 to 40 inch row spacing. There seems to be a combination of factors that has slowed adoption of narrower cotton row patterns in this area. Research into yield increases produced by a more narrow row spacing has varied by state, but may provide insight into where ultra-narrow cotton may be most successful.

Ultra-Narrow Row Results

University tests in the Southeast with ultra-narrow row cotton have been limited to demonstration tests with farmers in northern Alabama. In the early 1980's in northern Alabama, weed control and "PIX" demonstrations were conducted with a farmer growing narrow row stripper cotton. Although yields approached conventional cotton, cotton grades were low and the farmer stopped this practice after two years. In 1993 one cotton producer on the Alabama-Tennessee border began experimenting with no-till cotton in a 10 inch row spacing. Demonstrations with seeding rates, "PIX" rates, varieties, and weed control have been conducted from 1993 through 1995. Cotton yields on this narrow row cotton have generally equalled or exceeded other cotton grown in the area (Table 1). Weed control and controlling cotton stalk growth for optimum stripper harvest have been major lessons learned over the last three seasons. Some problems with barky cotton grades also have been experienced. Soils in this area generally have thin topsoils and producing cotton in these ultra-narrow rows has seemed to work well. Growing ultra-narrow row cotton on soils with thicker topsoils and more rapid early season growth will need further evaluation.

Acreage of 30 Inch Cotton

Of the four Southeastern states only Alabama reported over 10 percent of total acres in 30 inch row spacing (Table 2). Most of the Alabama 30 inch acreage is located on the silty clay Limestone Valley soils in north Alabama. On sandy Coastal Plain soils very little 30 inch cotton production was reported in Alabama, Georgia, South Carolina and North Carolina.

University Yield Results with 30 Inch Cotton

In Alabama research studies, cotton in 30 inch row spacings out-yielded cotton in 40 inch rows 7 to 21 percent on Limestone Valley soils (Table 3). On a central Alabama Coastal Plain soil, the yield increase by converting to 30 inch rows was not as consistent but still averaged 7 percent from 1989 to 1991. Georgia studies with 30 inch row spacings have been mainly conducted on Coastal Plain soils. Cotton yield increases with 30 inch rows compared to 36 inch rows were inconsistent in these Georgia tests and varied from -5 to 8 percent (Table 4).

Reasons for Slow Adoption of Narrow Row Technology

One of the main advantages of growing narrow row cotton is better light interception at early bloom. Under ideal conditions, a cotton field that fully canopys row middles at early bloom should transfer this greater energy into boll production. Areas having problems reaching closure of row middles at bloom should benefit the most from growing cotton in narrow rows.

Soil types and planting dates are major factors in determining whether 30 inch or ultra-narrow row cotton has advantages for farmers in the Southeast. The area of greatest concentration of 30 inch cotton production is in central and north Alabama. Both these areas have red soils which warm quickly and cotton is planted in early April. When early season cotton growth is restricted, both areas have problems closing cotton row middles by bloom. Soils

Reprinted from the *Proceedings of the Beltwide Cotton Conference*
Volume 1:67-68 (1996)
National Cotton Council, Memphis TN

in south Alabama, Georgia, North Carolina, and South Carolina generally have sandy light colored surfaces that are often not planted until May. With adequate moisture, the soils produce rapid cotton growth and therefore, closing row middles is not a major problem. This may explain the inconsistent cotton yield data with narrow row cotton in the southeast.

There are several other factors Southeastern cotton growers have mentioned as reasons for maintaining 36 to 40 inch row patterns. With a longer growing season in most of the Southeast, farmers have grown taller, full season cotton varieties which may not be best suited for narrow rows. Boll rot is also a potential problem that may increase in narrow rows. Finally, many areas that have recently seen large expansions into cotton are also areas that grow peanuts. Since peanut equipment is designed for 36 inch rows, many farmers also plant cotton on 36 inch rows so equipment can be interchanged.

It appears that ultra-narrow row cotton production may fit best in the Southeast on areas with shorter growing seasons and heavier textured soils. This would include areas of north and central Alabama and north Georgia. The sandy Coastal Plain soils will require additional research before narrow row technology can be implemented.

Table 1. Cotton yield in ultra-narrow no-till cotton demonstrations, Loretto, TN.

Year	Acres	Row Spacing (in.)	Lint Yields (lb/A)
1993	8.5	10.0	910
1994	30.0	10.0	1000
1995	58.0	7.5	510

Table 2. Percent of cotton acreage currently using 30 inch row spacings.

State	Cotton acreage in 30 inch rows %
Alabama	13.0
Georgia	<5
North Carolina	6.5
South Carolina	<1

Table 3. Alabama cotton yield comparisons between 30 inch and 40 inch row spacing.

Years	Soil Type	Percent yield increase
1989-1991	LV*	7
1989-1991	CP*	7
1993	CP	0
1994	LV	9
1995	LV	21

* Limestone Valley
** Coastal Plain

Table 4. Georgia cotton yield comparisons between 30 inch and 36 inch row spacing.

Years	Soil Type	Percent Yield Increase to 30 Inch Rows
1985	CP *	0
1986	CP	7
1991	CP	-5
1991	CP	8
1991	P **	2
1992	CP	6
1992	P **	4

* Coastal Plain
** Piedmont