EVALUATION OF METHODS OF PLANTING AND ROW SPACING IN ULTRA NARROW ROW COTTON (URNC)

Kevin D. Howard, Thomas A. Kerby, Janet Burgess, Michael Casavechia, Alan Coskrey and Jeff Miller
Delta and Pine Land Company
Tim Deutsch
John Deere Des Moines Works

Abstract

In 1998, Deere & Company and Delta and Pine Land Company entered into a joint research project to evaluate the feasibility of UNRC cotton. A three year study was conducted at Hartsville, SC, Lubbock, TX, and Scott, MS in 1998, 1999, and 2000 to compare plant growth, maturity, yield, and fiber quality of 7.5 and 15 inch cotton harvest with a finger stripper to conventional row spaced cotton harvest with a spindle picker. The equipment used in this study was a John Deere 1520 drill for 7.5 in. row spacing, John Deere 1530 drill for the 15 in. row spacing, John Deere 1730 planter with vacuum meter of 15 in. row spacing, and conventional planter for the area. All trials were planted in a randomized complete block design with three replications. Stand counts, end-of-season box map data to partition yield according to plant position, machine harvested yield, and HVI data from a ginned sample were taken for all plots. The stand counts and the end-of-season box map was taken from a 3 m x 3 m section in the field for the UNRC plots and from 10-feet of row for the conventional plots. The stand counts over the three year study averaged between 90,000 to 100,000 plants per acre for the UNRC plots and between 45,000 to 55,000 plants per acre for the conventional plots. Tables 1 & 2 shows yield results and fiber quality data for the first two years of the study. These results demonstrated that the 7.5 in. and 15 in. cotton yields were similar and slightly better than the conventional planted cotton. These results also indicated that there was no difference in HVI fiber quality for row spacing/planter type. Filed observations and plant stand data indicate that stands were less variable with 15 in. planter compared to plots seeded with a drill. For the third year of testing the drill planter treatments, 7.5 in. and 15 in., were eliminated from the trial. Tables 3 & 4 shows the results from the three year comparison of the 15 in. planter to conventional row spacing. These results indicate that the 15 in planter slightly out yielded the conventional planter. Most fiber quality values were similar for treatments. For the two year study, UNRC had slightly higher values for yellowness. Micronaire was slightly lower for UNRC cotton. Box map data, Figure 1, indicated yield accumulation was one node faster with more bolls at first position compared to conventional spacing.

Table 1. HVI fiber quality data from the two year study (1998 & 1999) as influenced by planter type and row spacing.

Planter Treatment	Mic. (mic)	Str (g/tex)	Reflect (Rd)	Yellow (+b)	Leaf Grade	HVI Trash (%)	Length (in)
7.5" Drill	4.0 a	28.4 a	77.1 a	7.7 a	2.0 a	0.553 a	1.067 a
15" Drill	4.1 a	28.3 a	77.5 a	7.7 a	2.0 a	0.387 a	1.064 a
15" Planter	4.0 a	28.6 a	76.7 a	7.3 b	2.0 a	0.420 a	1.071 a
Conventional	4.2 a	28.2 a	77.0 a	7.2 b	2.0 a	0.513 a	1.065 a
P	0.436	0.936	0.477	0.025	0.987	0.604	0.817
LSD 0.05	NA	NA	NA	0.3	NA	NA	NA

Table 2. Lint yield and node to 95% zone from the two year study (1998 & 1999) as influenced by planter type and row spacing.

Planter Treatment	Lint Yield (lb./ac)	Node of 95% Zone
7.5" Drill	786 bc	13.27 b
15" Drill	810 ab	13.04 b
15" Planter	831 a	13.18 b
Conventional	766 c	14.12 a
P	0.049	0.008
LSD 0.05	34	0.46

Table 3. HVI fiber quality data from the three year study as influenced by planter type and row spacing.

Planter Treatment	Mic. (mic)	Str (g/tex)	Reflect (Rd)	Yellow (+b)	Leaf Grade	HVI Trash (%)	Length (in)
15" Planter	4.03 b	28.7 a	75.9 a	7.5 a	2.5 a	0.8 a	1.065 a
Conventonal	4.22 a	28.7 a	75.4 a	7.6 a	2.5 a	0.9 a	1.067 a
P	0.028	1.00	0.207	0.598	1.00	0.428	0.564
LSD 0.05	0.12	NA	NA	NA	NA	NA	NA

Table 4. Lint yield and node to 95% zone from the three year study as influenced by planter type and row spacing.

Planter Treatment	Lint Yield (lb./ac)	Node of 95% Zone
15" Planter	842 a	12.47 b
Conventional	826 a	13.44 a
P	0.281	0.0003
LSD 0.05	NA	0.32

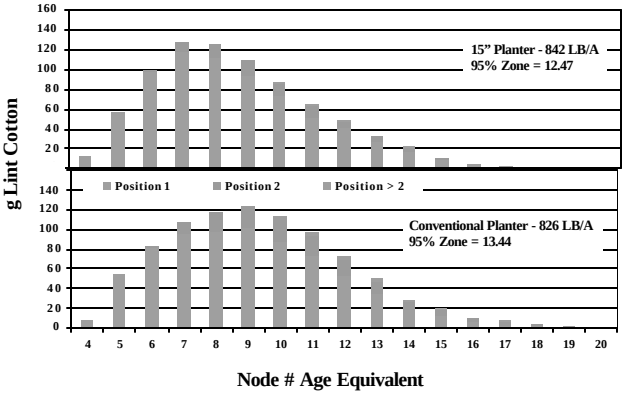

Figure 1. Lint yield accumulation as influenced by row spacing and planter type.

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