Agriculture and Natural Resources

COMPARATIVE GROWTH AND YIELD OF COTTON AT VARIOUS PLANTING DENSITIES

Texas AgriLife Extension Service
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Summary

This test was located on the Darrel Lawhon Farm, North of Concordia, CR 73B. Soil moisture conditions at planting were fair. Rainfall during the growing season was below normal. Cotton variety FM 835 LLB2 was evaluated for comparative growth and yield at various planting densities. The best performing treatment in this test was planting four seeds per foot producing 869 pounds per acre lint yield, although there was not a statistical difference in lint yield between 2, 4, or 6 seed per foot. However, the 4 seed per foot treatment shows an economic advantage of $13.20 per acre over the 2 seed per foot and $53.89 per acre over the 6 seed per foot treatment.

Objective

To evaluate performance of a commercially available cotton at various planting densities growing under Nueces County conditions.

Materials and Methods

Cotton variety FM 835 LLB2 was planted in a replicated study in a randomized complete block design with three replications. Each plot consisted of 12 rows, and seed was planted using a John Deere 1770 NT planter. Soil moisture conditions at planting were marginal at planting depth. Stand counts were taken at three areas in the field for each treatment approximately one month following planting. Rainfall was below normal. The monthly rainfall received was; March = 0.31 inch, April=0 inch, May=1.75 inches, June = 0.71 inch, and July= 0 inch for a total of 2.77 inches from planting through harvest. Plots were harvested on July 19 with a John Deere picker. Fiber analysis was conducted by the Fiber & Bio-polymer Research Institute using standard HVI classing procedures.

Table 1: Agronomic data for cotton density evaluation, Lawhon Farm, Concordia, Nueces County, Texas, 2011.

Planting Date: 3/11/2011 Harvest Date: 7/19/2011	Rows/Plot: 12- with 3 replicates	Row Width: 38 inch
Fertility: 250# 22-10-0	Herbicide: 1 qt/ A Prowl H2O pre-emerge 23 oz/ A Ignite post-emerge	Previous Crop: Grain Sorghum
Planting Rate: 2, 4, 6 plants/foot	Soil Type: Victoria clay	Insecticide: Seed treatment
Cotton Variety: FM 835 LLB2		

Results and Discussion

The data tables below provide comparisons of data on fiber quality, lint yield as well as the final plant population for each seeding rate involved in this test. Turnout percentages are somewhat higher than typical for commercial gins because samples were not processed using multi-stage lint cleaning equipment.

Table 2. Comparison of number of seed per foot, lint yield, fiber quality, number of days to cutout, loan value, and lint value per acre, Lawhon Farm, Nueces County, 2011.

Targeted Seed /Foot[1]	Actual Seed/ Foot[2]	Lint lbs/ac.	TO %	Mic	Len	Str	Unif	Days to Cutout (NAWF=5)	Loan Value (¢/lb)	Lint Value ($/ac)[3]
2	1.64 c	822 a	38.5 a	4.0 a	1.13 a	31.8 a	83.7 a	90 a	53.98 a	805.39
4	3.08 b	869 a	38.1 a	3.8 b	1.13 a	31.3 a	83.5 a	86.0 b	54.12 a	852.66
6	3.92 a	852 a	38.2 a	3.6 b	1.12 a	30.7 a	82.8 a	85.0 b	53.75 a	832.83
LSD (P=0.05)	0.3182	NS	NS	0.207	NS	NS	NS	2.07	NS	NS
P>F	0.0001	0.4997	0.8049	0.0193	0.3941	0.1282	0.0535	0.0054	0.4367	0.5180

Means followed by the same letter do not significantly differ (P=.05, LSD).

[1]Number of seed that was planted per foot of row, 2 seed=27,800, 4 seed=55,600, and 83,400 plants per acre.

[2]Number of seed per foot of row that emerged, 1.64 seed= 22,796, 3.08 seed=42,812, and 3.92 seed=54,488 plants per acre.

[3]Price based on USDA report 9/29/11 which averaged 97.95 for this test.

Table 3. Comparison of number of seed per foot, seed costs, lint yield, and income returned above seed costs, Lawhon farm, Nueces County, 2011.

Targeted Seed/Foot[1]	Actual Plants/Foot[2]	Seed Cost/Acre[3]	Lint Yield (lbs/acre)	$ Return Per Acre Above Seed Cost
2	1.64	$34.06	822	$771.33
4	3.08	$68.13	869	$784.53
6	3.92	$102.19	852	$730.64

[1]Number of seed that was planted per foot of row, 2 seed=27,800, 4 seed=55,600, and 83,400 plants per acre.
[2]Number of seed per foot of row that emerged, 1.64 seed= 22,796, 3.08 seed=42,812, and 3.92 seed=54,488 plants per acre.
[3]Technolgy fees are included in the seed cost.

Conclusions

There was not a statistical difference in lint yield per acre between the three treatments. However, when seed cost per acre is considered, the 4 seed per foot treatment shows an economic advantage of $13.20 per acre over the 2 seed per foot and $53.89 per acre over the 6 seed per foot treatment. A similar trial conducted in 2010 also showed that the 4 seed per foot density was the most economical.

Acknowledgements

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