

COMPARISON OF CONVENTIONAL AND UNR COTTON PRODUCTION SYSTEMS

Michael J. Bader and Stanley Culpepper
The University of Georgia
Tifton, GA

Abstract

Recent studies involving ultra narrow row (UNR) cotton production has indicated that UNR cotton can be grown successfully in Georgia. Yields have been comparable or greater when compared to conventional wide row cotton. Exactly if and where a UNR cotton production system is feasible is still under scrutiny. Field demonstrations were conducted in 2000 and 2001 to obtain more information to compare UNR cotton to wide row cotton. None of the yield comparisons were statistically different at the 0.05 percent level. In 2000, non-irrigated UNR cotton out yielded the conventional cotton by 71 pounds of lint per acre. In 2001, UNR cotton out yielded conventional cotton by 179 pounds of lint per acre. UNR cotton out yielded conventional cotton by 86 pounds of lint per acre in one of the irrigated fields. Conventional cotton out yielded UNR cotton in the other irrigated field. One general observation about where UNR cotton may fit is in a double crop situation or a non-irrigated field that has a low yield potential. The non-irrigated fields in the study were fortunate to have received adequate rainfall to make excellent yields. A growing season which has a short period of rainfall may favor UNR cotton. This could be due to the ability of UNR cotton to set more fruit in a shorter period of time.

Introduction

Narrow row cotton has received cyclical interest and attention over the past 40 years. Theoretically, close row, high population cotton requires only a few bolls per plant for acceptable yields and can be produced in a short period of time with limited resources. In the last few years, the concept of UNR cotton has been re-introduced with the development of broad spectrum over-the-top weed control technology and herbicide-tolerant varieties. Other developments that support UNR cotton are the use of plant growth regulators and the availability of precision drills and close-row planters. Another driving force is the interest in reducing production costs. Until recently, the majority of cotton produced in Georgia has been harvested with spindle pickers. Several field demonstrations were conducted in 1998 comparing UNR cotton to row cotton. In each field demonstration conducted, except one, the UNR cotton out yielded the wide row cotton. The average yield difference was 174 pounds of lint per acre for UNR cotton versus row cotton. In 1999, non-irrigated UNR cotton yielded 424 pounds of lint per acre while conventional cotton yielded 321 pounds of lint per acre. This resulted in a yield difference of 103 pounds per acre. Where and if UNR cotton fits into a production system is still an unanswered question in Georgia.

Material and Methods

In 2000, a non-irrigated field was chosen to perform a replicated trial comparing UNR cotton to conventional cotton. The UNR cotton was planted with a minimum of tillage. The UNR cotton tillage involved two passes with a disk-harrow. One pass was to incorporate herbicides. Sure-grow 125 B/RR was planted in 10" row spacings with a vacuum planter in all plots. A planting rate of 153,000 seeds per acre was used. Cotton was harvested using an AC 860 cotton stripper. The conventional wide row cotton tillage consisted of two passes with a disk-harrow. One pass was to incorporate herbicides. The area was ripper-bedded and Sure-grow 125 B/RR was planted with a vacuum planter at a recommended seeding rate.

In 2001, our locations used replicated trials comparing UNR cotton to conventional cotton. Two of the locations were irrigated and two were non-irrigated. At all locations, the UNR cotton was planted with no tillage into a cover crop. The cover crop was burned down prior to planting. Stoneville 4892 B/RR was planted in 10" row spacings with a vacuum planter in all plots. A planting rate of 153,000 seeds per acre was used. Cotton was harvested using an AC 860 cotton stripper. The conventional wide row cotton tillage consisted of one pass with a strip-till unit into a burned down cover crop. Stoneville 4892 B/RR was planted with a vacuum planter at a recommended seeding rate.

Conclusions

UNR cotton can be produced in Georgia with comparable or better yields than wide row cotton. In 2000, non-irrigated UNR cotton out yielded the conventional cotton by 71 pounds of lint per acre. In 2001, UNR cotton out yielded conventional cotton by 179 and 17 pounds of lint per acre. UNR cotton out yielded conventional cotton by 86 pounds of lint per acre in one of the irrigated fields. Conventional cotton out yielded UNR cotton in the other irrigated field. One general observation about where

UNR cotton may fit in a double crop situation or a non-irrigated field that has a low yield potential. The non-irrigated fields in the study were fortunate to have received adequate rainfall to make excellent yields. A growing season which has a short period of rainfall may favor UNR cotton. This could be due to the ability for UNR cotton to set more fruit in a shorter period of time.

Acknowledgment

The authors express their appreciation to Cotton Incorporated and the Georgia Cotton Commission for providing financial support for these projects.

Table 1. Water Tower Field Non- Irrigated Yields 2000*

	Strip-till	Planted 10" UNR	Difference
Seed cotton (lbs/acre)	2332	3418	1086
Lint (lbs/acre)	886	957	71
Average Plot Acreage			

*Average of 3 replications, strip-till @ 38% turnout, UNR @ 28% turnout.

Table 2. Ponder Farm Irrigated Yields 2001*

	Strip-till	Planted 10" UNR	Difference
Seed cotton (lbs/acre)	3383	4537	1154
Lint (lbs/acre)	1184	1270	86
Average Plot Acreage	0.02	0.10	

*Average of 4 replications, strip-till @ 35% turnout, UNR @ 28% turnout.

Table 3. Ponder Farm Non-irrigated Yields 2001*

	Strip-till	Planted 10"UNR	Difference
Seed cotton (lbs/acre)	2592	3878	1286
Lint (lbs/acre)	907	1086	179
Average Plot Acreage	0.02	0.10	

*Average of 4 replications, strip-till @ 35% turnout, UNR @ 28% turnout.

Table 4. Rural Development Pivot Irrigated Yields 2001*

	Strip-till	Planted 10" UNR	Difference
Seed cotton (lbs/acre)	4605	4980	375
Lint (lbs/acre)	1612	1394	218
Average Plot Acreage	0.01	0.01	

*Average of 4 replications, strip-till @ 35% turnout, UNR @ 28% turnout.

Table 5. Water Tower Non-irrigated Yields 2001*

	Strip-till	Planted 10" UNR	Difference
Seed cotton (lbs/acre)	2942	3740	798
Lint (lbs/acre)	1030	1047	17
Average Plot Acreage	0.18	0.11	

*Average of 4 replications, strip-till @ 35% turnout, UNR @ 28% turnout.