

OVERVIEW OF UNRC SITUATION FROM A GINNER'S PERSPECTIVE

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Abstract

The cost/price squeeze is causing cotton producers to scramble for technologies and management systems which will reduce production costs. Ultra narrow row (UNR) cotton produced in 7.5-10 inch rows at plant populations about 125,000/acre has improved yields at some traditional spindle picked locations while maintaining or reducing production costs. Until recently, insufficient attention was given to ginning, marketing, and textile utilization. A survey of ginner in machine picked areas who processed UNR cotton indicated that they reduced their processing rate 20-50 percent, most experienced trash handling system overload, grades were lower, and bales classified as barmy were very common. If UNR cotton becomes common, gins can be equipped to process the trashier seed cotton for a reasonable investment, but producers must plan to pay increased ginning charges.

Introduction

The cost/price squeeze is making it very difficult for even the most efficient U.S. cotton growers to make a profit. With limited potential for increased prices, cotton growers are very interested in technologies and management systems which will reduce their production costs. Ultra narrow row (UNR) cotton has shown the potential to reduce the production costs by increasing yields in some areas while maintaining or reducing the costs per acre. UNR cotton is produced in rows 7.5 to 10 inches apart. High plant populations (about 125,000/acre) and uniform stands are necessary to help keep the plant small enough for the finger stripper to work satisfactorily.

Stripper harvesting in traditional spindle picked areas seems to come in cycles. Those of us who have experienced a few cycles are tempted to think that the interest will fade away like it always has. This attitude would be a mistake because of recent improvements in cotton production technology.

In an article published in 1978, I indicated that the two factors limiting the production of narrow row, stripper harvested cotton in traditional spindle harvested areas were: (1) reliable weed control technology, and (2) technology to control plant size. Today, technologies to effectively deal with both of these problems are well established. Thus, ultra narrow row (UNR) cotton deserves a fresh, thorough scientific and economic evaluation.

Background

Agronomic results, both from controlled experiments and on-farm experiences in the last few years, have shown increased yields in some areas, especially on marginal cotton soils. However, very little attention has been paid to ginning, marketing, and textile utility. Currently, research is focused on these areas so a better evaluation will be possible soon. Preliminary ginning and quality result from seed cotton grown in several locations across the cotton belt will be presented by Stanley Anthony in our technical sessions later this week. Spinning tests will also be conducted on the lint at the USDA Spinning Laboratory at Clemson, SC, and results will be available later in the year. Several textile manufacturers are trying limited volumes in their plants.

Stripper harvesting is attractive to producers because it is less expensive than picking. The initial cost of the machine is about half the cost of spindle pickers and maintenance is much less. When the capacity of strippers in the traditional stripper harvested area is considered, the total cost per acre for stripping seems to be about half the cost of picking, a potential savings of as much as \$30-40 per acre. However, strippers cannot operate as many hours per day as pickers in humid areas. The stalks get tough and the on-board field cleaners choke up. Thus, the harvesting cost advantage is not nearly as great as first thought.

In their West Texas/Oklahoma home, strippers also get a higher percentage of the crop off the stalk. But these are predominantly brush type strippers, operating on short compact varieties specifically bred for the region and for stripper harvesting. From field observations, I doubt that finger strippers will beat the 90-95 percent efficiency which is common for well-operated spindle pickers.

Stripped cotton contains much more foreign material per bale than spindle picked cotton. Typical stripped cotton will contain about 700 pounds of foreign material while spindle picked will contain 80 to 150 pounds. A field cleaner on the stripper would be expected to remove about half of the foreign material, leaving about 350 pounds, three times the trash in spindle picked cotton. However, under ideal harvesting conditions it is not uncommon to see field cleaned stripped cotton with no more foreign material than rough picked cotton. Field cleaners used on strippers are gin stick machines modified to handle the very high volumes they experience in good yielding fields. The effectiveness of these cleaners is highly dependent on the moisture of the cotton.

Annually 1/4 to 1/3 of the U.S. crop is harvested with strippers. Gins in stripper areas are equipped to handle the extra plant material and ginning charges are based on seed cotton weight, providing extra income for the gins when cotton contains more trash. In recent years, some producers have purchased strippers equipped with field cleaners which

reduce the foreign material content in the seed cotton and thus reduce their ginning charges.

Harvesting Equipment

Until this year, the headers used for UNR cotton have been salvaged from Allis Chalmers machines which are about 20 years old. These old headers have been mounted onto new Deere and Case strippers and sometimes painted to match. In many cases, these old AC strippers have been reconditioned and are being used. Finger stripper technology was not used much and did not improve in at least two decades, but some manufacturers are now offering updated headers. Both Case and Deere have UNR harvester development work in progress.

Ginning UNR Cotton

In order to properly gin UNR cotton, the ginning system should include more seed cotton drying and cleaning equipment to handle the extra foreign material. In general, gins for picker cotton would need an additional stick machine or an additional combination burr and stick machine as the first cleaner. The second stage of lint cleaning is more likely to be needed for stripped cotton. Also, the trash handling system from individual cleaners all the way to the trash pile would need to be of higher capacity.

The more aggressive gin cleaning necessary to remove the increased foreign matter may slightly lower the fiber quality and thus its value in the textile industry, but the differences in certain quality factors may not be detectable. Seed cotton cleaners do not cause much quality damage, but any cleaning has the potential to increase neps or short fibers slightly.

There are several potential problems for picker gins processing stripped cotton. Without the extra machinery in the system to handle the trash in the seed cotton, unsatisfactory levels of trash in the lint and excessive quality reduction due to bark are likely. Trash conveyors, pneumatic conveying lines, trash augers, and trash disposal systems will be overloaded. Increased trash content puts an extra load on the drying system, forcing a reduced processing rate. Too much trash will make it to the feeder where the feeder trash auger may be overloaded. More trash will accumulate in the roll box of the gin stand where it is chewed up by the gin saws, increasing the bark content of the lint and the trash content of the cottonseed. The high trash contents increase the repair and maintenance costs, contributing to higher ginning costs.

For gins that are not properly equipped, the only way to handle UNR cotton is to reduce the processing rate to match the capacity of the system bottleneck (driers, seed cotton cleaners, or trash handling system). This can cause very serious cost increases for the gin because the hourly cost of

operating a particular gin is basically constant regardless of the processing rate. For example, a thirty-bale per hour gin requires no more energy or labor to process thirty bales per hour than to process twenty bales per hour.

Ginner Experiences With UNR Cotton

In early December, a survey was sent to Mid-South and Southeastern gins to quantify ginner's experiences with UNR cotton. The experiences of the 51 gins who processed 21,602 bales of UNR cotton in 1998 are presented in Table 1. Generally, the following observations seem to summarize their experiences:

1. Very few gins in these regions are adequately equipped to handle stripper harvested cotton.
2. Ginning rates were reduced 20-50 percent.
3. Trash handling systems are the usual bottleneck.
4. Grades tend to be lower, leaf levels somewhat higher, bark comments common.
5. General position of ginner's range from 'no problem' to 'terrible!! no mill in their right mind would buy this cotton...'
6. When producers get a good stand, control weeds and plant size and do a good job of defoliation, desiccation and harvesting, UNR cotton gins much like spindle harvested cotton. But production failures which pass on to the gin are extremely difficult to process and are quite unprofitable and unwelcome.

Summary

Ultra narrow row cotton is a very hot topic among cotton producers who are struggling to find ways to reduce their costs so they can produce cotton at current prices. Controlled experiments and producer experiences have shown significant yield increased in some areas with UNR cotton, especially on marginal land. The reduced cost of stripper harvesting is widely known and somewhat exaggerated. Production costs vary, but seem to be about the same as for conventional systems.

Gins in traditional spindle picked areas are not equipped to handle the extra trash in UNR cotton. Without the extra seed cotton cleaning equipment, the only way for a gin to handle UNR cotton is to reduce the processing rate to the level that the trash handling equipment will not be overloaded. This seems to be about 75-80 percent of the normal ginning rate if the UNR cotton is well managed. The reduced ginning rate increases the ginner's cost, so higher ginning charges should be expected.

As a ginner, think about UNR as a possible way to increase, maintain, or increase your volume. If some of your customers can plant UNR cotton on marginal land and make more profit than from soybeans, you will have more to gin and your customer will be more likely to remain a cotton

producer. Thus, I urge you to cooperate with producers who are trying this new production system. Wrestle with a few bales that someone in your community produces as a trial. Let them know that you will have to charge more for ginning stripper harvested cotton so they can get accurate cost information for comparison.

In order for UNR to be successful, several challenges must be met. Harvesting equipment must be improved.

- Gins must be equipped to handle the extra foreign material.
- The textile industry must determine the fair utility value of UNR cotton.
- The marketing system must relay the fair value to the producer.

Stripper harvested, narrow row cotton production systems have been tried many times, but the complete package of production technology has never before been available. For some producers UNR cotton seems to offer an alternative which can compete with other crops such as corn and soybeans. Thus, we should keep an open mind and give UNR cotton a thorough, unbiased, scientific, and economic evaluation.