THE COTTON GINNING INDUSTRY: PAST, PRESENT AND FUTURE

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Abstract

The cotton ginning industry has adopted many changes in cotton production, processing and marketing over the past years. Current trends show reduced cotton acreage, shifts in cotton production regions, and changes in cotton markets. To be competitive, gins must look for every opportunity to improve the bottom line by increasing capacity (bales per hour), volume (bales per season), and cotton value by improving processing efficiency and preserving fiber quality. Gins must continue to educate managers and workers in programs to improve operational and maintenance practices and incorporate best management practices for efficient ginning to maintain fiber quality and improve profitability. Gins must become increasingly sophisticated with the use of new technology to reduce labor and operating costs, while optimizing market value.

Introduction

The United States cotton ginning industry has seen many new trends over the past years. These trends include the consolidation of gin plants, adoption of mechanically harvested and moduled cotton, universal density bales and net weight trading, long-term cottonseed storage at the gin, adoption of HVI cotton classing, computerized gin process control, electronic data handling, and increasing environmental regulations. Gin numbers have steadily declined while annual volume and operational costs continue to increase (Valco, 2006). In addition, cotton's customers have shifted from primarily the domestic textile industry to an export market (75% export and 25% domestic) within the past 10 years. Gin owners are looking for every opportunity to improve the bottom line by increasing capacity, volume, and value to the customer. Over the years, there has been a steady increase in producer ownership of gins and vertical integration into cotton warehousing and cottonseed storage. Gins must become increasingly sophisticated with the use of new technology to reduce labor and operating costs, while optimizing market value.

Cotton Production and Ginning Statistics

Cotton production in the last 15 years has generally remained above the 15 million bale mark and above the 20 million bale mark for the past three years. The largest US cotton crop, 23 million bales, occurred in 2005 (NASS, 2007). The current 2007 crop, which has not been completely harvested and ginned, is estimated to be 19 million bales. As shown in Figure 1, the number of gin plants in the US has steadily deceased over that time period, at a rate of about 47 gins per year. In 1982, there were 2000 gins with an average of 5,700 bales per gin. In 2006, 835 gins operated producing over 25,000 bales and in 2007, an estimated 800 gins operated with a slightly lower annual volume of 23,600 bales per gin, due to the reduced 2007 crop size. Since 1982, there has been a 60 percent reduction in gin numbers and a 339 percent increase in annual volume. All indications are that these trends in gin numbers and volume will continue, which means increased ginning volumes and increased module transportation distances and costs. To meet this demand, remaining gins will have to adopt new technology to increase capacity and deliver a quality product.

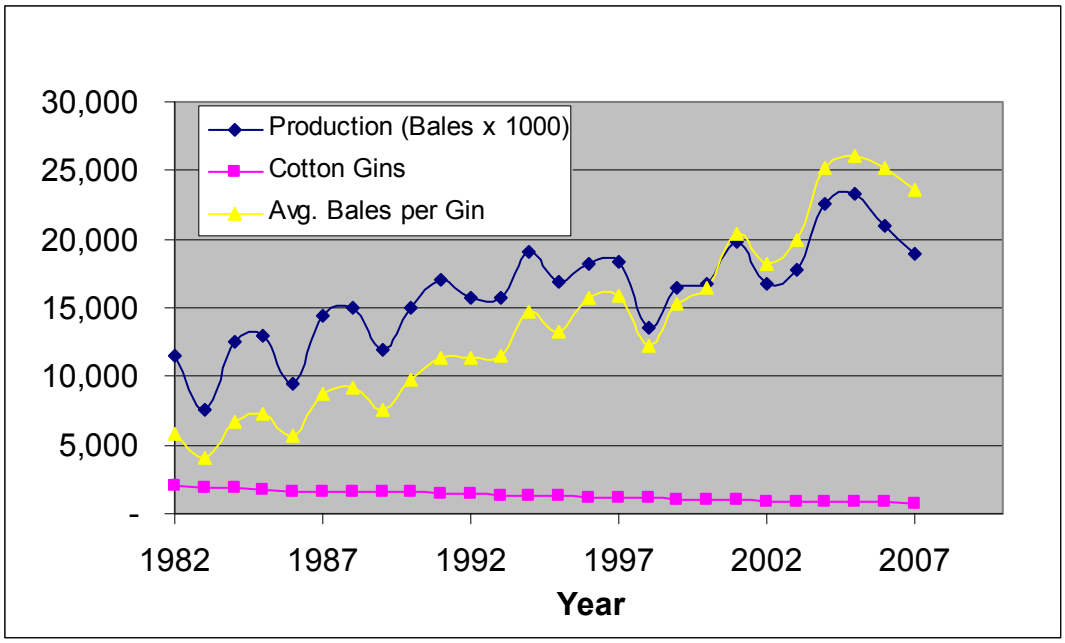

Figure 1. Cotton Production and Ginning Statistics for the US.

Table 1 shows the number of active gins in 2002 and 2006. Also identified is the number of gins in each of the production zones, West, Southwest, Mid-South and Southeast and the percent reduction between the two years. There was a 9 percent reduction in beltwide gin numbers during the five-year period of 2002 to 2006. Each state and region reductions are shown during that same period. The Western region has the greatest reduction in gins since 2002, followed closely by the Southwest and Mid-South.

Table 1. Gin Numbers by State and Production Region

	2002	2006	% Reduction
AZ	35	27	23%
CA	76	64	16%
NM	12	7	42%
KS	3	4	Increased
OK	25	23	8%
TX	286	258	10%
AR	69	61	12%
LA	51	46	10%
MS	96	89	7%
MO	31	31	0%
TN	34	32	6%
GA	68	70	Increased
AL	47	40	15%
FL	4	4	0%
NC	48	48	0%
SC	31	26	16%
VA	5	5	0%
US (total)	921	835	9%

Regional Data			
West	123	98	20%
Southwest	314	285	9%
Mid-South	281	259	8%
Southeast	203	193	5%

The average US cotton yield and trend line shows that cotton yields have increased since 1980, with the typical up and down variability expected in crop production (Figure 2). This current year, 2007, US cotton yields have reached an all time high of over 850 lb/acre and have maintained an average above 750 lb/acre over the last four years. This new level in cotton yields is a result of many factors which include; new varieties, transgenic insect and herbicide resistance, boll weevil eradication and many other factors. Mother Nature will always limit some production regions in both yield and quality, but there seems to be a new productivity level.

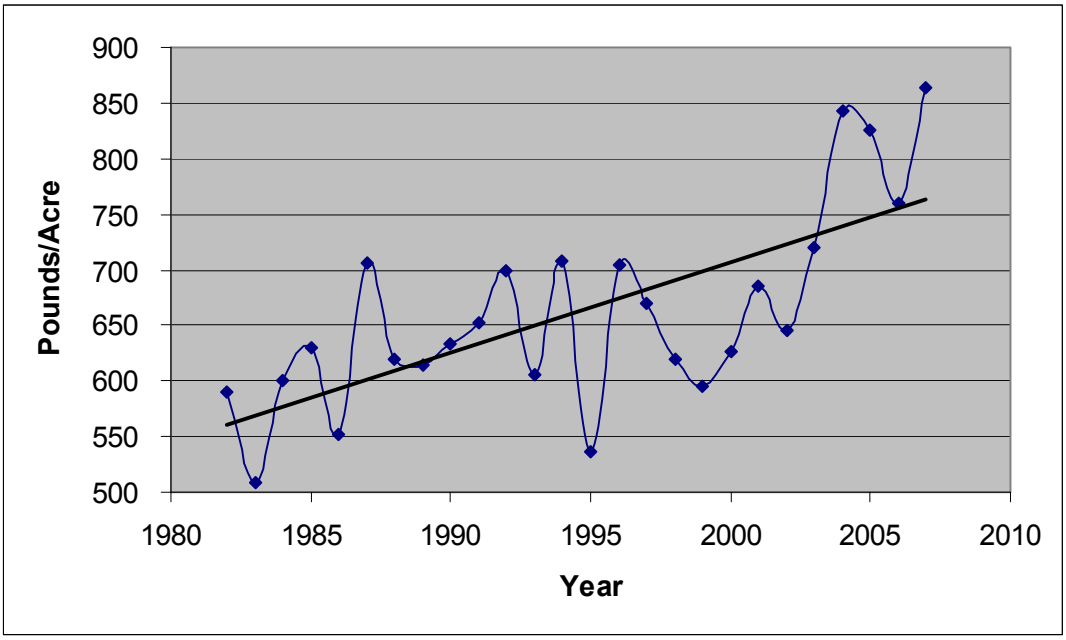

Figure 2. Average US Cotton Yield Since 1980.

Figure 3 shows the US harvested acres in relation to the cotton production (bales). This again illustrates that yield improvement has elevated the level of US cotton production, to all time highs. About 11 million acres are expected to be harvested for the 2007 crop, yielding almost 19 million bales – far beyond earlier predictions. Much of this is due to the Southwest's two-hundred pound increase over the five-year average of 628 pounds per acre. Next year's production acres and yields are likely to be smaller and may result in a 16 to 18 million bale crop, which could be the US cotton production norm.

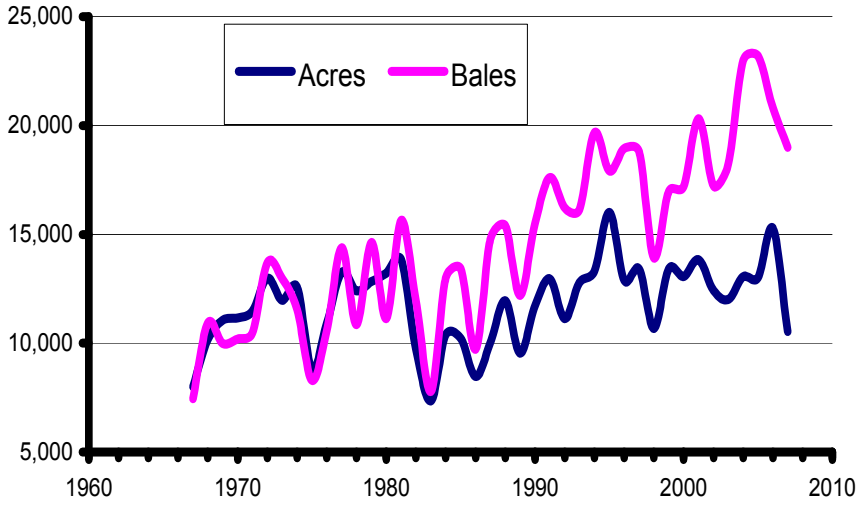

Figure 3. US Cotton Land and Production Acres and Bales

It is no surprise that the US textile industry has been significantly reduced in the last eight years. The domestic use of cotton is less then five million bales and in fact less than a million bales of cotton are spun, woven and manufactured into apparels within the US. The US has rapidly become an export market and will have to adjust to World Market demands in quality and bale packaging.

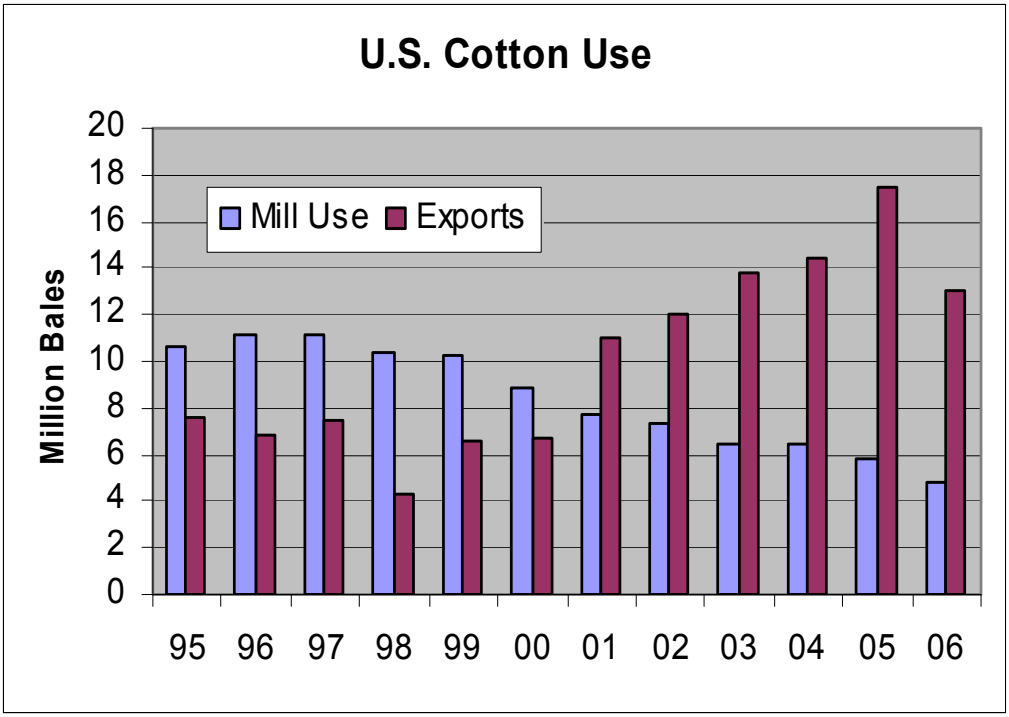

Figure 4. United States Cotton Domestic and Export Use

Although World demand for cotton continues to climb, the question is who will feed this demand? In past years the US has been the number two producer of cotton with China as number one. However, over the last two years the US has relinquished their second place spot to India. Not so far behind India is Pakistan, which increased its production to over 11 million bales in 2007 (Figure 5). As India and Pakistan cotton producers continue to improve their production practices to increase yields, the US may continue to lose their share of the World cotton production.

No doubt that the US has the most efficient production system in the World, but the economics in the Global Market will likely continue to limit US production.

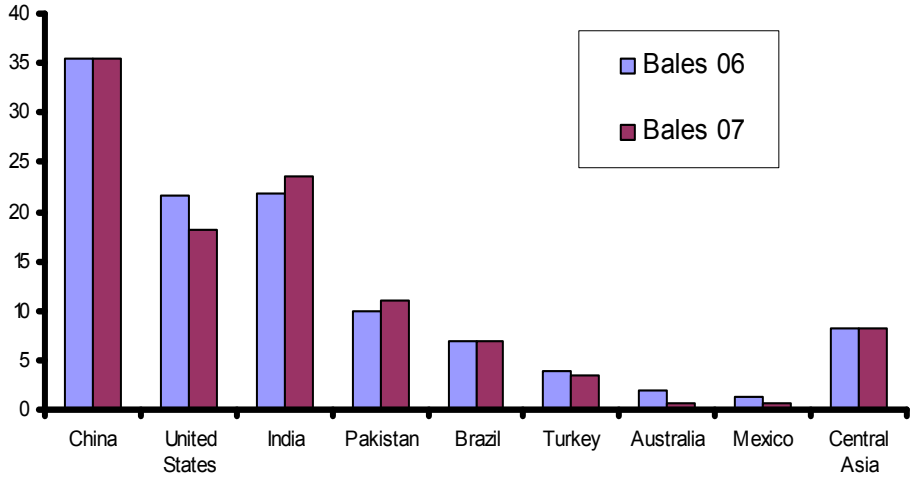

Figure 5. Global Competition of Major Cotton Production Countries 2006 and 2007.

How does the US compete? Although some of the statistics are disturbing, the US cotton industry must continue to change to meet these needs. As ginners, what is important to the gin is the region's potential to maintain a strong and continuous supply of cotton. There are four major areas that ginners must consider to stay competitive in this environment. Ginners must adopt and utilize the new technology. They must continue to educate gin management and workers in operational, maintenance and safety principals and safety training. They must incorporate the best management practices into gin operation and must continue to support a ginning research program to improve both fiber quality and processing efficiency.

New Ginning Technology

New technology in the gin should help to improve the efficiency and profitability of the ginning operation. Keep in mind that the function of the gin is to create a marketable product of the highest value from the seed cotton input. Gins must adjust moisture, provide a continuous and uniform feed rate, remove foreign matter, separate the seed from the lint, package the lint in a marketable package and protect fiber quality, and prevent contamination. The gin also becomes a system to separate product streams into different value levels, lint and seed with the most value, motes and trash with less but still some economic value. The adoption of new technology in the gin can help to improve the efficiency of the ginning operation and reduce the number of employees. However, the gins must hire well trained workers to take advantage of some of the technological advancements. Many times, ginners focus more on production throughput (bales per hour) than on producing high quality fiber. The incorporation of new technology such as computer process control, moisture and fiber quality sensors, energy saving burners, dryers, and motor controls, new technology lint cleaners, high speed roller ginning, high speed bale presses and automated bale tying systems can help ginners compete in domestic and world production markets.

Education

Gin management and workers require continued education to keep up-to-date on new ginning technology and improved practices. No doubt that gin managers get swamped with so called "experts" that want to sell them the latest and greatest ginning equipment. The ginner sees this information being presented in a public forum, such as the Beltwide Cotton Conference or Cotton Ginner Schools, the ginner has little verifiable information to base their decision. The Cotton Ginner Schools have been in place since 1986, with over 8000 students attending during that time period and the ginner schools continue to thrive with yearly enrollments of over 300 students. The schools are supported by the USDA gin labs, National Cotton Ginners Association (NCGA), land-grant universities, industry experts, and regional ginner associations. This past year, a special effort was made to get industry more involved, not only to help teach some of the basics but to introduce new ginning technology. After completing the three levels at the ginner school and passing an exam, NCGA provides certification to those qualified individuals. Today, there are over 350 active ginners that have met the stringent certification requirements. For those ginners, as well as gin

managers, the ginner schools offer continuing educational courses to provide the latest industry information and issues. Topics have included moisture measurement and moisture restoration systems, problems with miss-shaped bales, fan and motor sizing, and energy conservation. In 2008, the ginner schools will be conducted at the USDA ARS gin labs on:

March 31 - Ap 2, 2008	Lubbock, Texas
May 13-15, 2008	Mesilla Park, New Mexico
June 17-19, 2008	Stoneville, Mississippi.

In addition to this, state and regional ginner associations conduct meetings to highlight industry concerns, new technology and safety training. All gins should take advantage of these educational opportunities.

Best Management Practices

Best Management Practices (BMP) for gins are important operational processes and conditions needed for efficient ginning to maintain fiber quality and improve profitability. When seed cotton conditions are ideal, being a good ginner is not as challenging. But when moisture or excessive trash levels cause problems at the gin, the ginning process can go sour fast, costing both the gin and grower. BMP starts at the grower level with variety selection, defoliation and desiccation methods, harvest equipment usage and harvest scheduling, and field storage of modules. Ginners need to remind growers that good quality depends on cotton variety, proper insect and weed control, irrigation timing, harvest management and proper module storage. If a producer brings the ginner a module that is a variety that has inherently poor fiber quality, high trash or moisture levels or poor color, there is no magic a ginner can do that will improve the inevitable outcome. Keeping equipment properly maintained and periodically adjusted is essential for having an efficient ginning operation. Ginners must have properly set dryer temperatures, correct air velocities in air ducts, proper sized fans and motors, correct adjustments for the gin stand and lint cleaners, and uniformly formed bales for an efficient operation. Ginners continually are updated on environmental regulatory requirements and safety training for all gin workers. Most of these factors are covered during the ginner school and are discussed in the Cotton Ginners Handbook (1994).

Current Ginning Research

The USDA, ARS gin labs and land-grant universities continue to provide research that is important to gins. Most of the new technologies offered by industry and best management practices were developed as a result of this research. Ginning research scientists work closely with machinery manufactures, whereby new equipment and processes are evaluated long before they are commercially available. Ginning researchers were among some of the first to look at the relationship between moisture and the impact on fiber quality during processing. Research at the USDA gin labs has developed technology to accurately measure the amount of moisture in the fiber during processing and in the bale. Research has also identified ways to add value to gin by-products, such as fiberboard, hydromulch, bio-fuels and animal feeds. Both USDA gin labs and land-grant universities continue to work on environmental controls that help to keep gins in regulatory compliance.

Summary

In summary, gins are looking for every opportunity to improve the bottom line by increasing capacity (bales per hour), increasing volume (bales per season), and increasing value by increasing efficiency and preserving fiber quality. To be competitive in the market, gins have in the past and continue to adopt new technology to reduce labor costs and operating cost. Gins must continue to educate managers and workers in programs to improve operational and maintenance practices and incorporate best management practices for efficient ginning to maintain fiber quality and improve profitability. Gins must have an active safety training program that supports the importance of safe ginning practices from the management down to all gin workers. Gins must also provide additional services, seed storage, warehousing, etc., to extend their operational times throughout the year. Additional information is available on the Ginning Technology web site "GinTech" at http://msa.ars.usda.gov/gintech/. Additional cotton websites are the NCGA website (http://www.cotton.org/ncga/) and/or the National Cotton Council (http://www.cotton.org/) to provide additional information to cotton producers and ginners.

Disclaimer

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