





Cotton has long enjoyed royal status in the Southeast. Once a major cash crop and an important export for the United States, cotton has endured numerous challenges since it was first planted here more than 400 years ago. Cotton's future is brightening again as a result of strong demand from foreign mills, yet the industry must overcome stiff competition and fallout from the recession for cotton to maintain its status as the South's reigning crop.



Cotton's deep historical and cultural roots in the Southeast are well documented, and to date the cotton industry continues to make significant contributions to the regional economy. Cotton is grown in all southeastern states; in 2009, the region produced nearly 3.6 million bales of cotton (one bale weighs 480 pounds). Georgia leads the region in production, with nearly 1.9 million bales in 2009, followed by Tennessee and Mississippi, with roughly 492,000 and 415,000 bales, respectively (see chart 1).

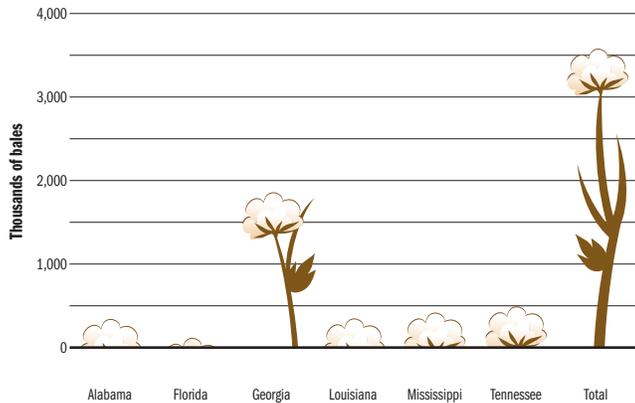
The industry generates jobs more than just the cotton itself; it creates jobs and revenues in the Southeast through other parts of the production chain that include the gins, cottonseed oil mills, textile mills, warehouses, and merchants. According to the National Cotton Council and based on U.S. Department of Agriculture (USDA) data from 2002 and 2007, the southeastern cotton industry supports roughly 6,800 businesses and more than 52,000 jobs. Further, the industry generated an estimated \$8.7 billion in business revenue for the region, according to the council.

#### Thriving despite obstacles

Like many agricultural products, cotton is vulnerable to unpredictable factors such as weather conditions, price swings, and politics. Several impediments—including reduced cotton acreage, poor growing conditions, and weak global demand—combined to make 2009 a difficult year for the industry. Partly as a result of the global economic downturn, cotton demand fell 11 percent in 2009, said Berry Worsham, president and chief executive officer of Cotton Incorporated, the industry's research and marketing arm. Although demand began to pick up toward the end of the year and into 2010, it remains below prerecession levels and may not fully recover for some time, he added.

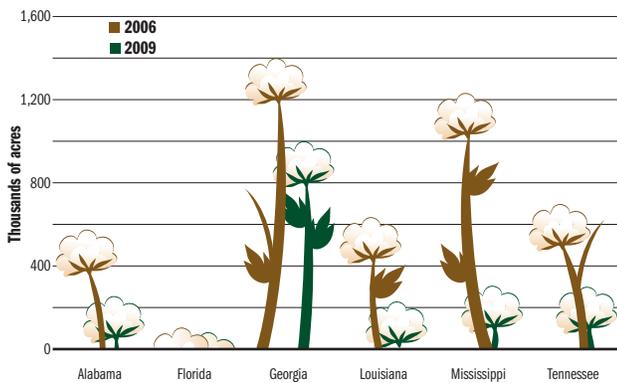
Because cotton is used mostly to manufacture other products, the crop's fortunes rely on the economic health of both the manufacturing industries and the final consumer. Clothing, a major end use of cotton, is largely a discretionary purchase, Worsham said, "so consumers, who are trying to shed debt and improve household balance sheets, are not likely to dramatically increase spending levels on apparel and home textiles."

Chart 1  
2009 Southeast Cotton Production



Note: One bale = 480 lbs.  
Source: U.S. Department of Agriculture

Chart 2  
Southeast Cotton Acreage



Source: U.S. Department of Agriculture

Nevertheless, the rebound thus far has boosted cotton's fortunes in 2010. According to *Cotton Market Comments*, a newsletter by Carl G. Anderson, professor emeritus at Texas A&M University, the U.S. export market will benefit from stronger demand for cotton from textile mills and apparel factories around the world. Stronger demand, coupled with several years of reduced acreage, has resulted in record-low global cotton stocks, boosting prices well above last year's average. Spot prices for cotton in the first six months of 2010 averaged 72 cents per pound compared with 52 cents in 2009, noted Cotton Incorporated's Worsham.

### Cotton competes for ground

Despite improving market conditions, cotton must confront several long-term challenges, including competition with more profitable crops for acreage, product from other cotton-producing countries, and synthetic fibers.

After hitting a recent peak of roughly 15 million acres in 2006, U.S. cotton acreage declined for three consecutive years—from 2007 to 2009—as it lost ground to other crops (see chart 2). For instance, in 2006, U.S. farmers planted roughly 15.2 million acres of cotton, which brought in an average price of 46 cents a pound, compared with estimated U.S. acreage this year of 10.9 million acres at an average price of 72 cents a pound. Farmers decide whether to plant cotton based on more than simply the price they receive for the crop, explained Don Shurley, a professor and cotton economist at the University of Georgia.

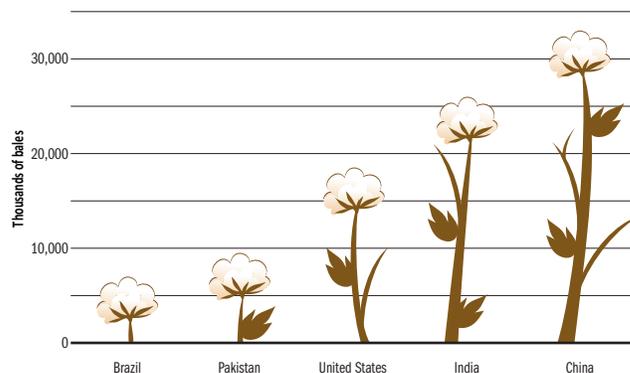
Farmers also consider other factors such as the input costs (fertilizer, for example) involved with growing each crop as well as the support received from U.S. government farm programs. But "what really drives cotton acreage more than anything else is the price of other crops," Shurley said. Skyrocketing prices for corn and soybeans during the past several years have made these crops relatively more profitable, and farmers responded by planting less cotton. At the same time, high energy prices contributed to rising costs for inputs like fertilizer and diesel. In addition to requiring a significant financial commitment, cotton is also management-intensive, Shurley said. "I think farmers would tell you that cotton is one of the most difficult crops to grow," he said. "It's very technical and very involved; you can't just plant it and walk away from it."

The decline in acreage has been hard on cotton-related businesses in the Southeast. An extensive infrastructure has evolved around cotton production, much of which is specific to the crop. Ginners and warehouses especially have been strained because their profitability depends on a certain number of acres being harvested. As a result, many ginning operations have shut down, consolidated, or reduced capacity. Others "have gone into survival mode and are just hoping cotton acreage will go up," explained Larkin Martin, managing partner of Martin Farms and former chair of the Atlanta Fed's board of directors. From 2006 to 2009, cotton bales ginned in the Southeast fell more than 50 percent, while the number of active cotton gins has declined roughly 20 percent to just 218, according to data from the U.S. Department of Agriculture (USDA). Even the descendants of cotton gin inventor Eli Whitney are not immune to the shrinking U.S. cotton industry. As American farmers switch to more profitable crops, such as soybeans and corn, cotton-related businesses like S.M. Whitney Co. are feeling the pinch. After 142 years in business, the cotton company owned by Barry Whitney, a distant relative of the legendary inventor, is shutting its doors.

The increase in cotton acreage in 2010 comes as U.S. farmers respond to higher relative prices for cotton and favorable growing



Chart 3  
Cotton Production by Top Five Producers



Note: Data represent the 2010–11 marketing year.  
Source: U.S. Department of Agriculture

On one hand, the global increase in cotton mill use presents opportunities for U.S. cotton growers to sell their crop. As mills and apparel factories began moving to lower-cost overseas markets, making foreign markets crucial to U.S. cotton farmers, the domestic textile industry has steadily declined. (Cotton consumption by domestic mills peaked in 1997 and has since dropped sharply, falling nearly 70 percent by 2009, according to the USDA.) As a result, America now exports about 70 percent of the cotton it produces, said Shurley.

On the other hand, the industry’s reliance on exports has introduced a host of new challenges, “primarily in terms of the actors that impact prices from week to week,” Shurley said. Among other things, the industry must consider external factors such as the value of the U.S. dollar in relation to other currencies as well as the cotton production, stocks, and trade policies of other countries. Further, U.S. farmers have had to adjust to growing cotton to the specifications of foreign mills, which are demanding higher fiber quality. As a result, the industry has invested heavily in research to determine which cotton varieties produce in-demand characteristics such as fiber length, strength, and uniformity.

### Synthetics test cotton’s strength

In addition to competing with other crops and foreign producers, cotton also faces competition from manmade fibers, which benefit from key advantages such as a uniform raw product, relatively little waste, and more stable pricing.

Cotton’s battle against synthetics began in earnest when the fiber’s share of the U.S. market for retail apparel and home fabrics declined sharply from about 63 percent in 1960 to a historical low of 33 percent in 1975. In response, the industry

conditions across much of the Cotton Belt. Still, cotton acreage remains below historical levels and is not likely to fully recover until cotton becomes more profitable relative to other crops. “As long as corn and soybeans remain where they are now, it’s going to be difficult for us to get cotton acreage back in that 13 million to 15 million range where it used to be,” Shurley said.

### The world grows along with us

Even as cotton battles for acreage in the Southeast, it also must contend with an increasingly competitive and globalized cotton market. Large cotton producers such as India, Pakistan, and Brazil are key competitors in the global cotton market (see chart 3). Further, many foreign producers have benefited from trade liberalization in the textile and apparel industries and are enjoying higher yields as they adopt new technologies and production practices. As a result, the United States is no longer the dominant force in the cotton market. That role now belongs to China, which—as the world’s largest producer, consumer, and importer of cotton, according to the USDA—has an increasing share of market power. (USDA data now place the United States as the third-largest producer and the largest exporter.)

banded together in an impressive show of organization to rebuild cotton's market share, including the creation of the Cotton Incorporated brand. The industry-funded research and promotion company works to increase demand for cotton among textile mills and final consumers. Largely as a result of its efforts, cotton was able to rebound to a 60 percent market share in the United States in the 1990s, according to *Cotton's Renaissance*, a book by Timothy Jacobson and George Smith recounting the industry's resurgence.

Despite that admirable feat, cotton continues to face stiff competition from synthetics on the global stage. World textile consumption has more than quadrupled since the 1960s, said Alejandro Plastina, an economist for the International Cotton Advisory Committee, but cotton's share of the market has not kept pace with synthetics. Cotton consumption more than doubled during that time period, while consumption of other fibers (synthetics and wool) increased sevenfold. As a result, cotton's global market share has shrunk from an average of 63 percent in the 1960s to just 40 percent recently, Plastina wrote in the *Cotton Promotion Bulletin*, a publication of the International Forum for Cotton Promotion. Consumer preferences in developing nations have been one of the driving forces behind cotton's sagging global market share—nongrain fibers have seen their market share increase twice as fast as that of cotton in these countries, he noted.

A key area where cotton has lost ground to synthetics is in athletic wear, where popular performance fabrics have dented cotton's market share. Cotton used to be the dominant fabric for T-shirts, but "today it's hard to find a cotton T-shirt," Martin said. In fact, the fiber's share of the T-shirt market declined by roughly 20 percent during the past decade, according to Cotton Incorporated's 2008 annual report. "Synthetic products that dry faster or wick away moisture from the body have eroded cotton's share in golf apparel, running, and other performance-based markets," Worsham noted. In response, researchers at Cotton Incorporated have come up with several fabric technologies to help cotton compete with its synthetic counterparts. For instance, athletic gear with similar qualities to the synthetic performance fabrics can now be made with cotton, thanks to Wicking Windows and TransDry, two technologies that enhance cotton's inherent moisture-wicking capabilities.

### Harvesting goes high tech

On the production side, the industry has also harnessed technology. As a result, the practice of growing cotton has become more efficient, less harmful to the environment, and in some cases less costly.

The old, iconic image of workers hand-picking cotton in the field no longer applies to today's modern industry. Cotton growers now use computers and GPS satellites to generate detailed maps of the high- and low-yielding areas of their fields,



High-tech harvesting methods have played a major role in boosting cotton production in the Southeast, helping to satisfy growing export demand.

allowing them to apply seeds, fertilizers, and other chemicals more effectively. Tractors with GPS receptors can navigate their way through the fields with greater accuracy, even at night, and sprayers and planters equipped with the technology can avoid spreading chemicals and seeds outside of the crop area, helping farmers reduce waste.

Another important breakthrough has been the use of genetically modified (GM) cotton seeds. Since being introduced more than a decade ago, GM cotton has gained widespread adoption on farms in this country and elsewhere. Herbicide-tolerant (HT) crops—commonly referred to as "Roundup Ready" because they are resistant to the weed killer Roundup—were first made available to farmers in the late 1990s. Cotton growers "used to have to plow their fields or use a myriad of chemistries that were potentially harmful to the crop," explained Martin, who grows cotton on her family's Courtland, Ala., farm. By planting HT cotton, farmers are able to apply glyphosate (the generic name for Roundup) without damaging the crop. By 2010, HT cotton made up 78 percent of cotton acreage compared with just 10 percent when it was introduced in 1997, according to the USDA. Another



variety, this one insect-resistant, contains a gene from *Bacillus thuringiensis* (Bt), a naturally occurring soil bacterium that is toxic to certain insects. Bt crops accounted for 73 percent of cotton acreage in 2010, up from just 15 percent in 1997.

The widespread use of GM cotton has benefited growers and the environment through increased net returns and reduced pesticide use, according to a 2006 study by the USDA's Economic Research Service. A 2002 study by the USDA found that increases in southeastern cotton yields were associated with the adoption of GM cotton. A 10 percent increase in HT and Bt cotton acreage resulted in 1.7 percent and 2.1 percent increases in yield, respectively. Although growers pay a premium to plant GM cotton, they benefit from the convenience of using fewer chemicals and spending less time applying them. In addition, planting HT crops has allowed many cotton growers to adopt conservation tillage practices, which involve minimal plowing, helping to reduce erosion, fuel use, and pollution from chemical runoff.

However, the widespread use of glyphosate has created a new class of "superweeds" that are resistant to the herbicide. Glyphosate-resistant weeds like horseweed and pigweed are

wreaking havoc across the Cotton Belt, forcing farmers to revert to older ways of farming that involve heavier use of chemicals, more plowing, or even hand-pulling weeds. Ten resistant species have been identified in at least 22 states, with cotton, corn, and soybean crops being most affected. According to a recent *New York Times* article, approximately 7 million to 10 million acres of U.S. farmland are affected by the Roundup-resistant weeds. Monsanto, the company that manufactures Roundup, is subsidizing the purchase of other chemicals to supplement the herbicide. Meanwhile, scientists are encouraging farmers to alternate between using glyphosate and other herbicides to help reduce resistance.

As the cotton industry struggles to address complications from the resistant weeds, the next generation of GM cotton is already in the works. Researchers are working to identify the specific genes responsible for heat and drought tolerance, as well as to develop GM varieties that target other important traits like fiber quality and yield.

Another promising development in genetic engineering could eventually be a game changer in the industry. Researchers at Texas A&M University have found a way to remove gossypol, the substance that makes cottonseed toxic to nonruminant animals, from cottonseeds while keeping it in the rest of the plant, where it acts as a natural form of pest control. The development "is very exciting because it could potentially turn the cotton plant into a major source of protein in the animal food chain," said Martin.

Cottonseed is produced in large quantities—about 1.6 pounds for every pound of cotton lint—but it is mostly used as feed for dairy cows or pressed into cottonseed oil. Cottonseed prices are currently held down by the sheer volume and limited demand, but the cottonseed could eventually be more valuable than the fiber once the new strain is commercially available. Edible cottonseed won't be showing up on grocery store shelves anytime soon, though. The gossypol-free seeds, which have been grown only in small trials, must still gain government approval and will likely make their way into more animal feed before being consumed by humans.

With strong global demand for cotton in the forecast and a number of technological advances on the horizon, the Southeast's cotton industry is well positioned to have a strong presence on the U.S. and world stage. The industry's commitment to research and promotion is helping to expand the market for cotton among textile mills and consumers, while investments in technology continue to improve the way cotton is grown and manufactured into finished products, helping to ensure the crop's continued reign. King Cotton may no longer be the economic monarch he once was in the Southeast, but he's a long way from losing royal status. ■

*This article was written by Lela Pratte, a staff writer for EconSouth.*