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QUALITY REQUIREMENTS ON EXPORT MARKETS FOR U.S. COTTON

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Abstract

Exports are vital to the U.S. cotton industry. U.S. exports are rising from record to record since 2001/02. However, over the last decade, the average quality of the U.S. upland cotton did not improve, while quality requirements on export markets are constantly increasing. Improvements in fiber quality would help U.S. cotton to remain competitive with cotton from other countries as well as chemical fibers worldwide. Yet, the market is not sending the right signals to U.S. producers.

Introduction

U.S. domestic mill consumption of cotton dropped from 2.5 million tons in 1997/98 to 1.6 million tons in 2002/03. Mill consumption is headed lower, while U.S. production remains fairly stable, due in part to the sustaining effect of the government cotton program. Therefore, exports are vital to the U.S. cotton industry. The U.S. cotton industry has been very successful in shifting from the domestic market to the export market. U.S. cotton exports rose to a record of 2.45 million tons in 2002/03, one million tons more than in 2000/01. The export dependency of the U.S. cotton industry is very high, with about two thirds of the crop to be shipped overseas in 2003/04. The U.S. share of world exports is expected to reach 40%, the highest since 1957/58.

In the global cotton market, how important is quality in competitiveness and market share? Do foreign importers buy U.S. cotton quality? Are there special requirements in U.S. exports markets? Have changes in the quality and standards of the production allowed the U.S. to keep pace with advances in the textile technology? In this paper we explore the question of quality in U.S. exports.

U.S. Cotton and the World Market

The marketplace for U.S. cotton exports is truly global. In 2002/03, U.S. cotton was sold to 69 countries, 12 more than in 2000/01. With the exception of the U.S., Brazil Uzbekistan and Egypt, 12 of the 16 countries consuming more than 200,000 tons of cotton (which together account for 88% of world mill use), will be net importers of cotton this season. The share of the developing countries in world mill consumption will reach an estimated 86% this season, up 20 percentage points from 1989/00. The increase in China (Mainland)'s domestic mill use during the last three seasons has been staggering: China added 1.7 million tons to its domestic consumption, while mill use declined by 400,000 tons in the rest of the world. In order to meet challenging competition from developing industrial countries, the only way left for the survival of textile industries in advanced countries is not to compete on price but to produce higher-quality products or to develop new products, upgrading their production of yarns from coarse counts to medium, from medium to fine and from carded to combed.

According to ITMF estimates, 156 million spindles and 8 million open-end rotors were installed worldwide at the end of 2001. The export market is more oriented toward ring spinning than the U.S. domestic market. The U.S. had an installed spinning capacity of about 700,000 open-end rotors and 2.4 million spindles in 2001. The proportion of OE rotors is only greater in the Russian Federation.

U.S. exports are rising thanks to increased imports by China (Mainland), while U.S. exports to the rest of the world are declining. In export markets, U.S. cotton is facing competition at three levels. First, U.S. cotton is competing against other U.S. growths and against offers for the same growth and quality from different shippers. Second, U.S. cotton is competing against foreign growths, African franc zone, Uzbekistan, Australia and Brazil being the largest competitors of the U.S. on the export market. However, the most serious competition facing cotton in general, and U.S. cotton in particular, comes from chemical fibers, principally polyester. The challenge from chemical fibers is seen not only in prices but also in quality, as perceived by customers. Chemical fibers performance in the clothing industry is becoming a benchmark for cotton spinning, because synthetic fibers do not vary, as every fiber is the same within a given lot. Chemical fibers are easier to process, more versatile, stronger and more resistant than cotton fiber.

Quality is an Issue

Cotton, like all commodities, is differentiated by quality parameters for the purposes of trade. Although many types of cotton can substitute for each other in various products, their distinct characteristics prevent them from being perfect substitutes. Buyers may value various attributes differently, depending on the final product and the production technology being used. There is a direct correlation between specific quality characteristics of the fiber and those of the yarn. Raw material is the most important factor influencing yarn quality, and represents about 50% of the cost of yarn. Better fiber quality translates to

better yarn quality and higher processing efficiency. Because cotton is a natural product, lint characteristics vary greatly according to environmental and genetic factors, as well as with picking and ginning conditions.

Domestic and foreign mill customers for U.S. and foreign cottons are demanding higher quality fiber. Traditionally, cotton pricing was largely determined by factors such as staple length, grade, color and micronaire. Spinners are more interested in the fiber properties that affect the quality of their yarns and the efficiency at which they produce those yarns. The textile industry has been striving to improve quality and efficiency through automatic high-speed machinery. New technologies place increasingly severe technical demands on textile fibers, raising the importance of other properties of cotton: strength, uniformity, maturity, fineness, elongation, neps, short fiber content, spinning performance and dyeing ability. Customers also want shipments uniform and consistent from the first bale of a sale to the last, with even-running cotton in all its characteristics, free of contamination and wrapped in cotton. Foreign matter, stickiness and seed coat fragments continue to be among the most serious problems affecting the cotton industry worldwide. With quality requirements in the textile pipeline rising all the time, neps are becoming an increasing problem.

The modern high-speed machinery requires more exacting fiber characteristics to operate at maximum efficiency:

- Middling, or preferably Strict Middling white
- Staple length 2.5% span length should be a minimum of 1.08" or 27.4 mm (1-3/32"), preferably 1-1/8"
- Micronaire minimum 3.8 maximum 4.4
- Color reflectance Rd ≥ 75
- Yellowness = 10
- Nep content < 200 per gram
- Strength > 28 g/tex
- Length uniformity ratio ≥ 83%
- Maturity ≥ 80%
- Elongation ≥ 6%
- Short fiber content = 5% index
- Seed coat fragments = 15 per gram

If cotton does not meet those benchmarks, export customers expect discounts. These benchmarks come along with the usual commercial requirements of: price competitiveness, year round availability, improved grading and classing systems, fidelity in delivery, and sanctity of contracts.

No matter which spinning system is used, longer and finer fibers result in longer and finer yarns. Nevertheless, the order of importance of the fiber properties varies from one system to the other: length is ranked first, before strength and micronaire in ring spinning, while rotor spinning ranks strength first, before micronaire and length.

U.S. Average Quality is not Keeping Up with Importers' Needs

In 1994, in a paper called paper called "New U.S. Efforts to Meet Spinners Needs", Preston Sasser of Cotton Incorporated concluded that: "…over the last two decades our cottons have gotten stronger, longer and more uniform in length, while the micronaire remained fairly stable in level. The quality data show that U.S. cotton growers are meeting the needs of spinners for higher quality fiber." If the trends were to continue, the U.S. upland crop would have reached the following averages by the year 2000: strength 30 g/tex; staple length of 1-1/8 inches (1.12); length uniformity index 82.6; micronaire 4.1.

However, over the past seven years, fiber characteristics have not improved and in some cases have deteriorated. In 2002/03, the U.S. crop had an average strength of 28.6 g/tex, an average staple length of 34.3 (1.07), uniformity of 81.2 and 4.6 micronaire. The average length and strength rose since 2000 the 2003/04 crop is showing an improvement, probably weather-related, but the average quality of the U.S. crop remains inferior to that in 1995. Certain growing regions in the U.S. are not producing the fiber characteristics that the new modern spinning technology needs for optimum efficiency. The trend in micronaire is definitely moving in the opposite direction from the spinning industry's needs because higher yield potential is correlated with higher micronaire potential.

Growers and merchants need to concentrate on particular qualities or production and marketing practices to better produce for the export market. Producers in the Mid-South and Southeast are the most affected by the decrease in domestic consumption because the major proportion of their cotton has been used by the U.S. mills. They produce medium-staple cotton used for manufacture 6-40s carded and combed yarns made by open-end spinning machines. The predominant varieties in the Mid-South are early-maturing varieties that have a genetic predisposition to shorter staple, higher micronaire and lower strength. These varieties will have to go into the export market at a discount. Texas, the largest cotton producing state in the Southwest mainly produces slightly shorter-staple cotton used to manufacture 1-18s carded yarn. Almost half of cotton grown in the Southwest region is exported. Most of the cotton grown in the West, ELS (Pima) and LS (Acala SJV), is exported.

Textile mill concerns with the quality of cotton fiber produced in the U.S. include fiber quality factors such as short fiber, neps, seed-coat fragments and fine trash. Machine harvesting is certainly not a plus for quality because machine-picked cotton is more liable to deteriorate by ginning practices. Spinners criticize the general tendency in producing countries to promote an increased premium by producing higher-grade cotton or lowering the cost of processing by increasing the speed of ginning. By drying the seed cotton to the extreme and increasing lint cleaning, the cotton processed is undoubtedly cleaner and more marketable. However, pin leaf, short fiber, neps and seed-coat fragments have been sharply increasing, lowering the spinnability of the cotton, which, in the end, lowers the quality of cotton products.

Although the ITMF 2003 contamination survey rated the U.S. among the least contaminated origins, the National Cotton Council of America NCC warns that contamination constitutes "a serious threat to U.S. cotton". Most serious contaminants are woven plastic, plastic strings and film, sand/dust, leaves. Stickiness is also a problem in California. Specific complaints from China include moisture, packaging, and contamination. Being machine-picked, U.S. cotton contains more neps and short fiber than handpicked cotton. In a move to improve the quality of cotton and to satisfy the needs of textile mills for high quality cotton, China (Mainland) considered introducing standards in 2002 related to neps and short fiber content.

The deterioration in the average quality of U.S. cotton is widening the gap between the product and the spinners' needs as well as causing to fall behind most of its competitors. During the last decade, the average quality of cotton production in Australia, Brazil and the African franc zone has improved. Significant progress has also been made in the quality of synthetic fibers.

But U.S. Market Share is Up

Changes in quality and in the standards of production have not resulted in the U.S. keeping pace with advances in the textile technology. Nevertheless, U.S. exports have risen. The export performance of the U.S. cotton industry is due to several factors. These include efficiency of the marketing system and of export promotion programs, high industry standards, volume offered, year-round availability, reliability of deliveries, shipping efficiency, and fast and cheap transportation. Reliable and dependable classification data, (95% HVI) are also a factor. However, due to the wide variation in quality parameters, HVI classing is more necessary for U.S. cotton than for West African cotton, for example, where the range of parameters is much narrower. Weather (in other words, luck) was also a factor in the success of U.S. exports during the last two seasons. In 2002/03, adverse weather lowered the quality of the U.S. crop, making it easier to market thanks to quality discounts. In 2003/04, catastrophic weather in China (Mainland) created a huge gap between production and consumption to absorb U.S. surplus. Last but not least, is the U.S. price competitiveness mechanism; the farm bill is a true safety net, with marketing competitiveness provisions enabling U.S. cotton to be offered competitively price without limitation in volume and regardless of the actual cost of production.

Summary and Conclusions

With U.S. domestic mill use heading lower, exports are vital to the U.S. cotton industry. However, overall upland cotton quality has been declining in the U.S. over the last decade. During the same period, the quality requirements of the world spinning industry have increased. Therefore, improvements in fiber quality would help U.S. cotton to remain competitive with cotton from other countries as well as chemical fibers worldwide. Nevertheless, cotton producers are more influenced by government programs and cotton merchants than by the ultimate customers for their fiber. As a result, the price of cotton cannot be directly correlated with the quality of yarn produced. Spinners want to change and raise the standards, but the marketplace is not sending the right signals to growers, ginners and breeders. The valuation of cotton should be based on the true spinning value of fibers, changing the present cotton marketing system from its present grade and staple orientation to a system based on the fiber characteristics that the spinner in the export market desires.

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Table 1. U.S. Cotton Exports, 1989/90 - 2003/04.

Marketing Year	Total	China	ROW	Mexico	Turkey	Indonesia	Korea	Japan
				Tons				
1989/90	1,675,120	145,862	1,529,259	25,429	26,068	108,718	297,095	346,946
1990/91	1,695,059	268,424	1,426,635	43,926	18,794	122,223	254,246	312,897
1991/92	1,446,188	172,386	1,273,803	46,317	15,993	160,889	222,995	241,012
1992/93	1,130,831	261	1,130,571	121,179	25,335	93,396	224,539	182,737
1993/94	1,490,839	257,575	1,233,264	142,190	11,346	142,278	212,523	172,040
1994/95	2,046,829	491,486	1,555,343	121,464	44,576	201,465	207,114	231,085
1995/96	1,670,868	401,808	1,269,060	134,544	13,423	172,790	167,387	204,700
1996/97	1,494,121	382,324	1,111,797	159,663	89,410	129,245	123,713	137,135
1997/98	1,567,963	160,394	1,407,570	314,991	127,303	100,933	154,943	138,766
1998/99	935,801	15,376	920,425	295,785	30,586	49,906	82,882	88,295
1999/00	1,393,632	31,911	1,361,721	326,654	171,294	124,852	66,795	92,223
2000/01	1,467,427	27,070	1,440,357	383,220	132,667	121,416	106,563	77,329
2001/02	2,263,696	66,591	2,197,105	330,104	348,643	206,230	125,522	83,763
2002/03	2,446,151	391,925	2,054,226	388,383	341,826	183,411	84,836	77,289
2003/04*	2,700,000	840,000	1,860,000					

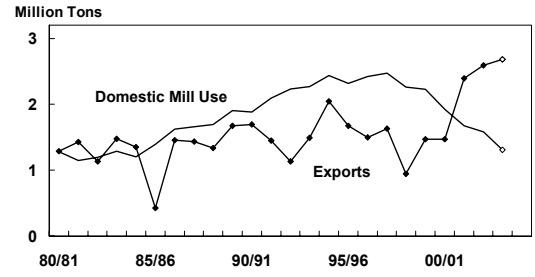
Source: U.S. Trade Statistics, USDA/FAS.
* ICAC forecast.

Table 2. U.S. Upland Cotton Quality, 1987 -2003.

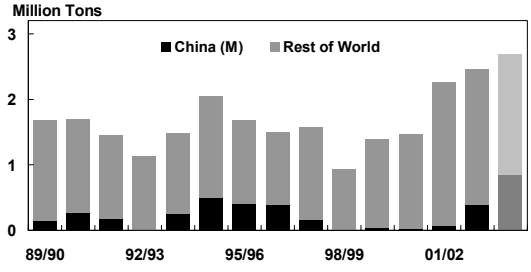
Crop Year	Grade	Length		Strength	Micronaire	Uniformity
		1/32"	Inches			%
1987		34.7	1.085	27.0	4.1	80.2
1988		34.5	1.078	25.6	4.1	80.1
1989		34.7	1.084	26.8	4.0	80.9
1990		34.4	1.075	26.3	4.1	80.2
1991		35.2	1.100	27.6	4.2	81.5
1992		35.1	1.097	27.7	4.1	81.4
1993		35.0	1.094	28.5	4.4	81.5
1994	38.0%	35.2	1.100	28.5	4.2	81.2
1995	49.5%	35.0	1.094	29.1	4.4	81.6
1996	40.8%	35.2	1.100	28.4	4.3	81.4
1997	38.1%	35.1	1.097	28.9	4.3	81.4
1998	20.4%	34.3	1.072	28.0	4.5	81.9
1999	26.7%	34.1	1.066	28.3	4.4	81.3
2000	25.7%	34.2	1.069	27.6	4.3	81.1
2001	30.4%	34.5	1.078	28.3	4.3	81.3
2002	19.2%	34.3	1.072	28.6	4.6	81.2
2003*	38.2%	34.7	1.084	28.8	4.4	81.3

Source: Cotton Quality Reports, USDA/AMS.
* Through December 2003.

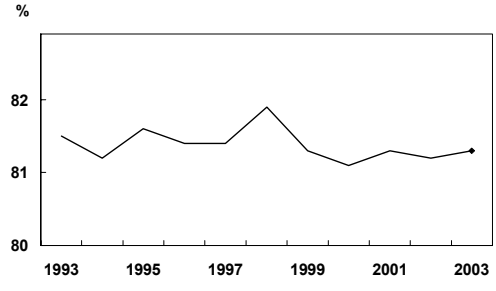
U.S. COTTON DISTRIBUTION



U.S. EXPORTS



U.S. UPLAND AVERAGE UNIFORMITY



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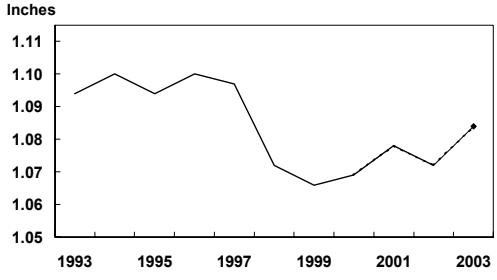
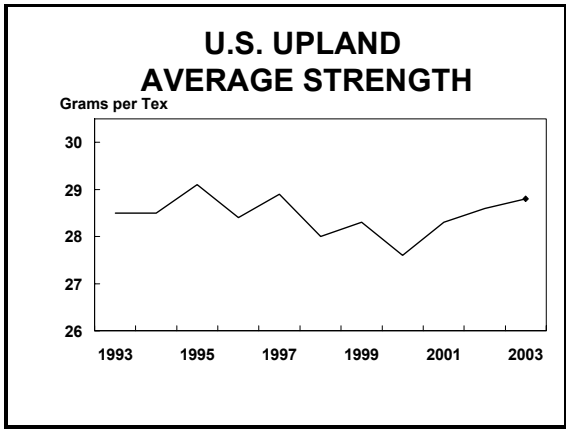
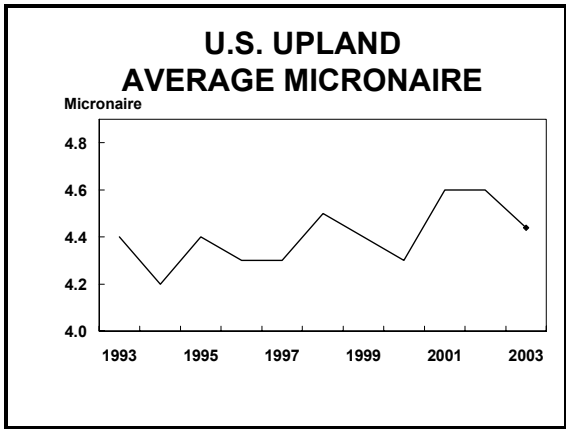



U.S. UPLAND
AVERAGE STRENGTH
Grams per Tex
30
29
28
27
26
1993
1995
1997
1999
2001
2003


U.S. UPLAND
AVERAGE MICRONAIRE
Micronaire
4.8
4.6
4.4
4.2
4.0
1993
1995
1997
1999
2001
2003