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The World Cotton Situation[*]

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World production trending higher

World cotton production is estimated at 114 million bales in 2005/06, 6% lower than the record reached in 2004/05. It is expected to increase slightly in 2006/07 to reach 116 million bales (+2%), and more significantly in 2007/08 to a record 123 million bales (+6%). Consequently, for the next two seasons, as has been the case for the past two, world cotton production is forecast to remain at levels significantly higher than the long-term trend.

Since 2004/05, world area dedicated to cotton has fluctuated between 34 and 36 million hectares, in the upper range of the historical interval of 28 to 36 million hectares maintained since the beginning of the 1950s. In addition, the world cotton yield has remained very high since the record 664 pounds per acre reached in 2004/05. The average yield is estimated at 645 pounds this season, 90 pounds above the ten-year average yield, and the world yield is expected to continue to increase in the next two seasons assuming average weather. Near-ideal weather worldwide contributed to the jump in world yields (+15%) in 2004/05, but yields improved also thanks to technical progress. Cotton yields in many countries are benefiting from the expanded use of existing techniques, such as IPM, better water management and improved use of fertilizers, as well as new technologies (such as biotech cotton).

In 2005/06, production decreased significantly in China (Mainland) (-9%), Pakistan (-15%), and the CFA Zone (-5%). However, it increased in the United States to reach a record 24 million bales (+3%) and in Uzbekistan to 1.2 million tons (+8%). Production in India is estimated slightly down at 4.0 million tons (-2%).

Harvesting of the 2005/06 crop has started in the southern hemisphere. Due in part to the lower revenues received by farmers in 2004/05, cotton area is estimated down 10% to 3.3 million hectares. As average yields are expected to decline by 4% from their high of 648 pounds per acre in 2004/05, production is forecast down 13% to 11 million bales. The southern hemisphere will account for an estimated 9% of world production in 2005/06, down from 10% in 2004/05 and 11% in 2003/04. In Brazil, where the cotton sector is negatively affected by the exchange rate of the real, production is expected to decline to 1.1 million tons, down 18%. Production in Australia is forecast at 580,000 tons, down 12%.

2006/07 plantings are now taking place in the northern hemisphere, which accounts for 90% of world production. Cotton area is projected up 500,000 hectares (+2%) to 31.5 million hectares in 2006/07, 1.8 million hectares above the 10-year average. Production in China (Mainland) is forecast at 6.2 million tons in 2006/07, up 7%. Production in the United States is expected to decline to 22 million bales, down 8%. Production in India is expected to reach a record 4.3 million tons, up 240,000 tons (+6%). Production in Pakistan is expected to increase to 2.3 million tons, up 160,000 tons (+7%).

Global mill use record high

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[*] Paper presented to the 82nd Annual Convention of the American Cotton Shippers Association, May 11-13, 2006, Palm Beach, Florida.

World cotton consumption is affected by economic growth, population growth, trade rules, promotion, and fiber prices. IMF projections released in April 2006 suggest that the world GDP will increase by 4.9% in 2006 and 4.7% in 2007, about the same as last year (4.8%). This global economic growth will continue to lift the world textile industry.

International polyester prices have been higher than cotton prices since 2004/05, which should continue to encourage world cotton mill use. In addition, the impact of the elimination of quotas in the international trade of textiles and clothing in January 2005 is benefiting demand for cotton worldwide, even if this impact is decreasing over time.

Global cotton mill use rose by an estimated 10% in 2004/05, to 108 million bales. In 2005/06, it is expected to reach 115 million bales, up 6%. The projected increase in cotton prices in 2006/07 is likely to slow the rate of growth of world cotton mill use from 6% this season to 3%. It is worth noting that world cotton consumption is expected to rise by 23 million bales, or 24%, between 2003/04 and 2007/08. Such growth in world cotton demand has not been seen since the period from 1984/85 through 1986/87 when world use rose by 20%.

Most of the increase in global mill use since 2003/04 has taken place in Asia. Combined mill use in China (Mainland), India and Pakistan rose from 56 million bales in 2003/04 to an estimated 73 million in 2005/06, and is projected to reach 77 million bales in 2006/07. These three countries are forecast to account for 65% of global mill use in 2006/07, up from 56% in 2003/04. In contrast, cotton mill use in the rest of the world is projected at 41 million bales in 2006/07, down 3% from 2003/04.

China (Mainland) has been the main force driving world cotton demand in recent years. A significant increase in textile exports and domestic textile consumption has pushed its domestic textile industry to expand. Mill use in China (Mainland) rose by an estimated 19% in 2004/05 and 18% in 2005/06, to 9.8 million tons or almost 40% of world cotton mill use. Since 1998/99, cotton mill use in China (Mainland) has increased by an estimated 5.5 million tons, or almost 130%, accounting for about 85% of the increase in global mill use.

World trade also at record levels

In recent seasons, China (Mainland)'s cotton production, despite being the largest in the world, has been unable to meet the substantial increase in domestic cotton mill use. Chinese imports have exceeded 1 million tons each season since 2003/04. In 2005/06, they are expected to reach a record 4.1 million tons, triple last season's imports. In 2006/07, despite a projected increase in domestic cotton production, Chinese cotton imports are expected to remain at about the same level as this season. Due to this tremendous increase in Chinese imports, world trade is expected to reach a record 43 million bales in 2005/06, 25% higher than in 2004/05, and is expected to remain at the same level in 2006/07. This season exports are expected to increase significantly from many exporting countries, including the United States, the CFA Zone, Uzbekistan, Australia and Brazil. The United States is expected to account for about 40% of world exports this season and next, similar to previous seasons.

World stocks decline

World ending stocks are expected to remain essentially unchanged this season, reaching an estimated 49 million bales on July 31st, 2006. This will still be 9 million bales above the level of world stocks at the end of 2003/04. However stocks are forecast lower in 2006/07 to an estimated 47 million bales.

World prices

Despite projected record world demand and imports by China (Mainland) this season, the projected Cotlook A Index for 2005/06 is only four cents higher than in 2004/05. Initial projections for the 2006/07 season suggest that world consumption will reach a record of 116 million bales, about 2 million bales higher than world production. Net imports by China (Mainland) are projected at 4.2 million tons, around the same record level as this year. These market forces suggest that the season-average Cotlook A Index will increase in 2006/07, for the second consecutive season.

Modeling Cotton Prices

The ICAC price model relates season averages of the Cotlook A Index to a ratio of stocks-to-use outside China (Mainland) and the ratio of net exports (exports minus imports) by China (Mainland) to use outside China[1]. In general, or as a simple rule of thumb, other things equal, an increase in production or decrease in consumption of 500,000 bales outside China (Mainland) results in a decline of about one cent per pound in average cotton prices. A decrease in net exports by China (Mainland) of about 500,000 bales causes season average cotton prices to drop by about two cents a pound. This model explains about 80% of the year-to-year variation in average cotton prices, meaning that even if supply and use statistics were known perfectly, we could still have errors between forecasts and actual average prices of about 20%.

For most commodities, prices are related to a single variable, the ratio of world ending stocks to world use. As the stocks-to-use ratio rises, prices tend to fall, and vice versa. For many commodities, the biggest problem in forecasting prices is gathering the basic data on stocks and use, and for cotton, measures of stocks in China (Mainland) are probably inaccurate. Therefore, an innovation used in the ICAC price model is that the ratio of world stocks to use is disaggregated into two variables, the ratio of non-China stocks-to-use and the ratio of China net exports-to-use. Arithmetically, the two ICAC variables are equivalent to the world ending stocks-to-use ratio because net exports from China add or subtract from world ending stocks. But by forming the model as we do, the ICAC avoids the empirical difficulty of having to rely on estimates of ending stocks in China (Mainland), probably the least-accurate number for major producers and consumers on the cotton supply and use balance sheet. The tradeoff is that while we have accurate data on China (Mainland) cotton imports and exports after the fact, out-of-season forecasts of China (Mainland) trade are often very wrong.

The ICAC Secretariat has been forecasting the season average Cotlook A Index for 18 years since 1988[2]. The average error for season-ahead forecasts is 5% of the eventual true number.

There are two sources of error in any statistical modeling exercise, the model itself and the variables used in the model. The ICAC statistical model is statistically unbiased, meaning that the model itself does not tend to over-predict or under-predict. At the end of each season, when supply, use and trade statistics are known, the average residual with the model is about 7 cents and the residuals are random. The second source of error is the statistics themselves that are used in the model, and this is the greater source of forecast error for cotton and for most commodities.

However, during 2005/06, the relationships between prices and the variables of non-China (Mainland) stocks to use and China net exports seems to have changed, and the model error has more than doubled to about 15 cents. In looking at the statistics and trying to evaluate what is going wrong, it seems that the model is overestimating the impacts of Chinese imports at this new import level, but additional work to identify the new relationship between trade and prices will need to be undertaken.

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[1] ICAC, COTTON: Review of the World Situation, Vol. 53, number 6, July/August 2000.
[2] A history of ICAC forecasts of prices, production, consumption and trade for major countries is published twice each year in COTTON: WORLD STATISTICS, available at www.ICAC.org.

The World Cotton Situation
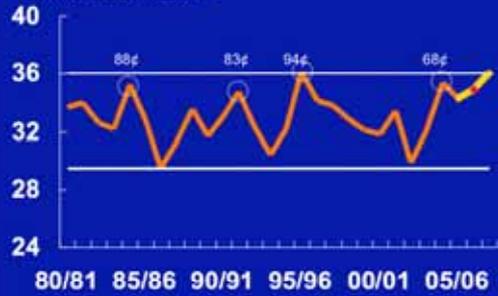
ACSA Convention
May 11-13, 2006

World Production

Million Bales

130
110
90
70
50

121
123
116
114

Prod = 1300 yr + 67000
$R^2 = 0.64$

80/81   88/89   96/97   04/05

COTLOOK A INDEX

Season-average, U.S. Cents per Pound

100
75
50
25
0

30-Year Average (1974/75 – 2003/04)

60
56

70/71   77/78   84/85   91/92   98/99   05/06
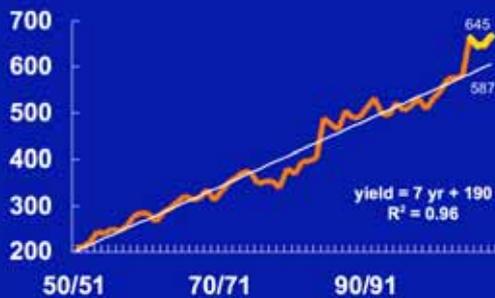
World Area

Million Hectares

40
36
32
28
24

88¢   83¢   94¢   68¢

80/81   85/86   90/91   95/96   00/01   05/06

World Yield

Lbs/Acre

700
600
500
400
300
200

645
587

yield = 7 yr + 190
$R^2 = 0.96$

50/51   70/71   90/91

Biotech Cotton

% of World Cotton Area

50
40
30
20
10
0

2   4   7   12   16   17   21   22   24   28   30   40

96/97   99/00   02/03   05/06   09/10

1
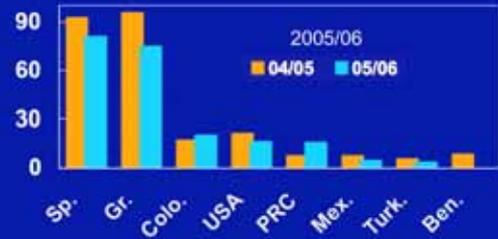
DIRECT GOVERNMENT ASSISTANCE TO COTTON

Billion $

(Bar chart: 97/98, 01/02, 05/06; values ranging 0–6)
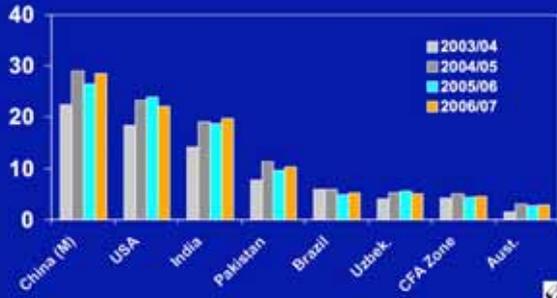
DIRECT GOVERNMENT ASSISTANCE TO COTTON

Cents/Lb.

2005/06
■ 04/05   ■ 05/06

(Bar chart countries: Sp., Gr., Colo., USA, PRC, Mex., Turk., Ben.; values 0–90)

Production

Million Bales

■ 2003/04
■ 2004/05
■ 2005/06
■ 2006/07

(Bar chart countries: China (M), USA, India, Pakistan, Brazil, Uzbek., CFA Zone, Aust.; values 0–40)
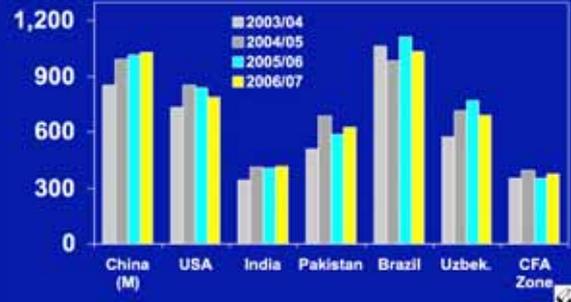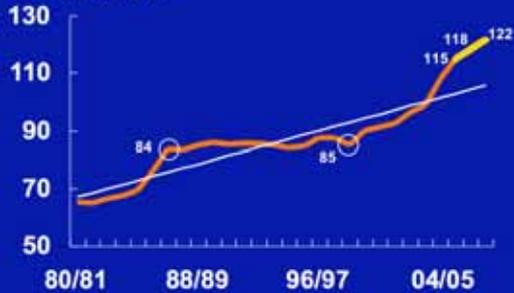
Yield by Country

Pounds/Acre

■ 2003/04
■ 2004/05
■ 2005/06
■ 2006/07

(Bar chart countries: China (M), USA, India, Pakistan, Brazil, Uzbek., CFA Zone; values 0–1,200)
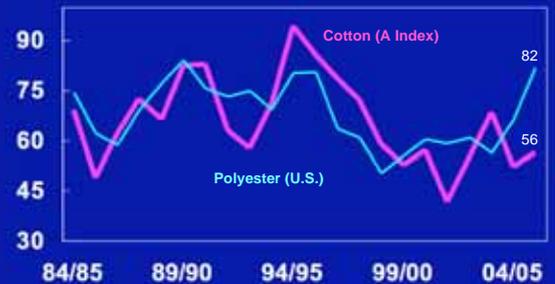
World Consumption

Million Bales

(Line chart 80/81 to 04/05; values: 84, 85, 115, 118, 122; axis 50–130)
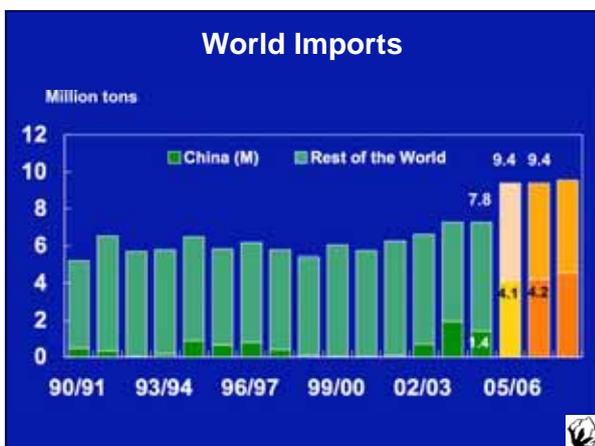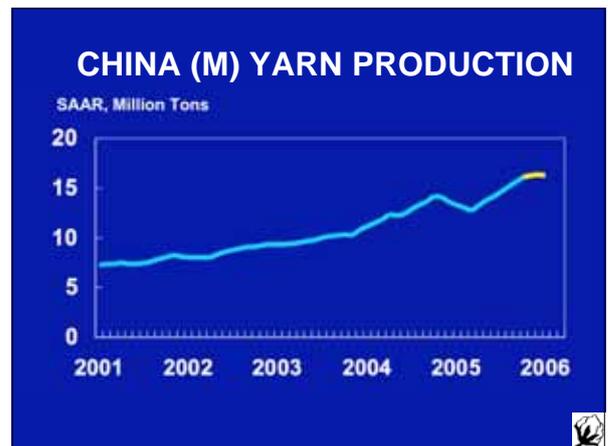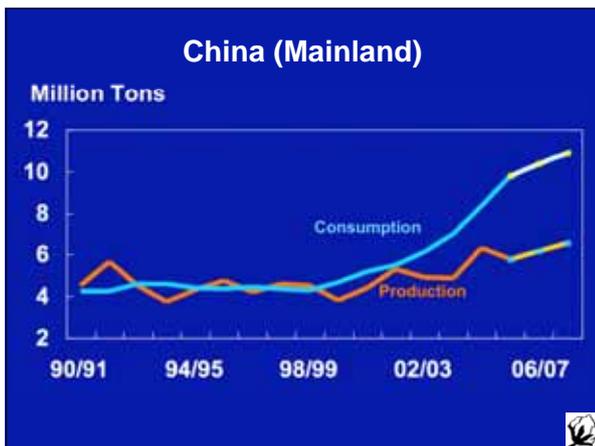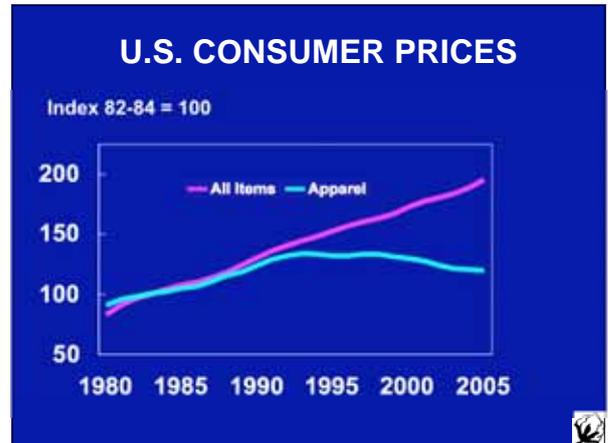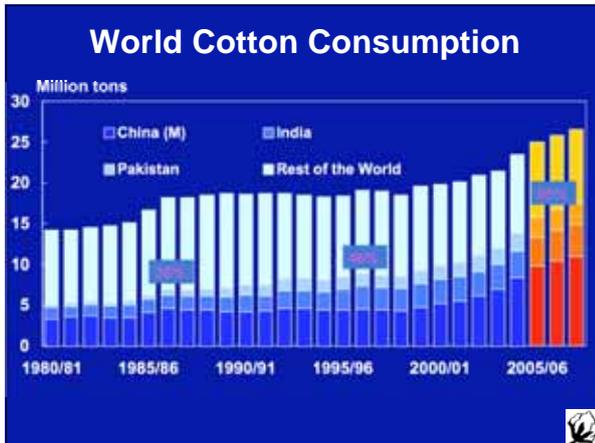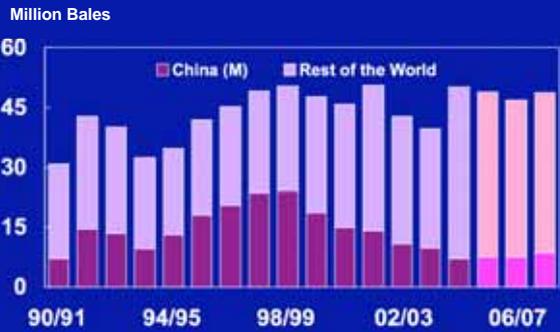
Prices of Fibers

Cotlook Quotes (cents/lb)

Cotton (A Index) — 82

Polyester (U.S.) — 56

(Line chart 84/85, 89/90, 94/95, 99/00, 04/05; axis 30–90)

World Cotton Consumption

U.S. CONSUMER PRICES

China (Mainland)

CHINA (M) YARN PRODUCTION

World Imports

World Exports

World Ending Stocks

Million Bales

COTLOOK A INDEX MODEL
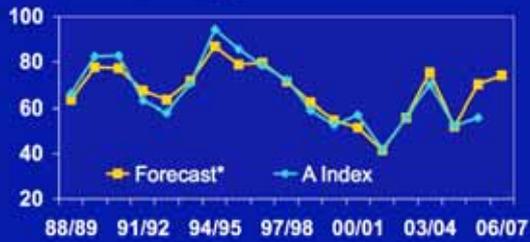
X1: Non-China Stocks/Non-China Use

X2: China Net Exports/Non-China Use

COTLOOK A INDEX MODEL

Cents per Pound

Model Forecast Using Current Data

Stocks-to-use Ratio
World less China (Mainland)

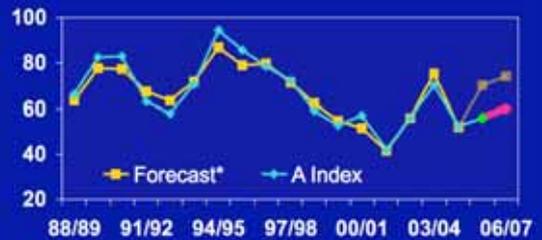**Net Imports by China (M) and International Cotton Prices**

COTLOOK A INDEX MODEL

Cents per Pound

Model Forecast Using Current Data

International Cotton Advisory Committee