ESTIMATING MINIMUM GLOBAL COTTON STOCKS FOR 2010/11 BASED ON PRODUCTION AVAILABILITY Hunter Colby James Johnson James Kiawu Leslie Meyer Carol Skelly U.S. Department of Agriculture Washington, DC

<u>Abstract</u>

The purpose of this analysis is to estimate monthly cotton supply availability at the point of consumption early in the 2011/12 marketing year, in order to determine the minimum stocks needed on July 31, 2011 to avoid disruption of mill operations. With cotton consumption exceeding new-crop availability in the early months of the marketing year, the study indicates that the seasonal low point for world stocks occurs at the end of October. Thus, ending stocks on July 31 must cover mill requirements during August-October and provide the minimum level of stocks required on October 31. Estimates of supply availability at the point of consumption were made by developing monthly crop calendars and estimating lags in processing and transportation for major cotton producing and exporting countries. Preliminary results indicate that a minimum of about 42.5 million bales of stocks will be needed on July 31, 2011 to keep mills operating until the 2011 cotton crop is available, a level comparable to USDA's January 2011 forecast. However, this projection is affected by a number of variables and assumptions that are subject to change based on further analysis and market developments.

Introduction

USDA estimates supply, demand, and stocks for over 100 cotton producing and consuming countries for an August 1–July 31 marketing year. For the 2009/10 marketing year, world production fell while demand recovered, reducing cotton stocks by nearly 30 percent. Stocks in 2010/11 are declining to such a level that continued strong demand is restricting consumption and raising world prices to record levels. With consumption limited by supply availability, determination of the minimum stocks required to maintain mill operations at the beginning of 2011/12 has become critical to estimating world supply and demand.

The purpose of this analysis is to estimate supply availability at the point of consumption during the early months of the 2011/12 marketing year, in order to determine the minimum stocks needed on July 31, 2011 to avoid disruption of mill operations. With consumption exceeding new-crop availability in the early months of the marketing year, the study indicates that the seasonal low point for world stocks is October 31. Thus, ending stocks on July 31 must cover mill requirements during August-October and provide the minimum level of stocks required on October 31. Preliminary results indicate that a minimum of about 42.5 million bales of stocks will be needed on July 31, 2011 to keep mills operating until the 2011 crop is available, a level comparable to USDA's January 2011 forecast. However, this projection is affected by a number of variables and assumptions, which are subject to change based on further analysis and market developments.

Methods

Using USDA's official estimates for supply and demand by country, a monthly schedule of supply available to mills at the point of consumption was developed for: (1) countries that supply over half of their own consumption (producer-consumer countries); and (2) countries that rely primarily on imports (importing countries). Crop calendars were estimated for the major cotton-producing countries and lags in delivery of the cotton to the point of consumption were estimated based on the destination of the cotton either domestically or for export. Sources used to estimate supply availability included: (1) crop calendars developed by USDA's Foreign Agricultural Service (see http://www.pecad.fas.usda.gov); official data on ginning and classing for several major cotton-producing countries; reports of harvest and ginning progress from Cotlook, Ltd. and trade sources; and (4) official country data on imports and exports.

The timing of availability of traded cotton was based on delivery to Far Eastern mills. Once the monthly availability of supply was developed, a comparison of monthly supply to consumption indicated that the seasonal low point for world stocks is October 31. Projections of mill requirements for August-October 2011, net of new-crop supply availability, resulted in a calculation of the minimum stocks needed on July 31, 2011 in order to avoid market disruption.

Availability of Production at the Point of Consumption

A handful of countries produce about 90 percent of the world's cotton, including China, India, the United States, Pakistan, Brazil, Australia, Turkey, and the countries of Central Asia and West Africa. Crop calendars for these countries, weighted by their 2010/11 estimated production levels, indicate that 37 percent of cotton is harvested during the months of August-October, rising to just under 75 percent by the end of December.



Mills in countries that supply most of their own consumption generally have access to cotton sooner than those countries that rely primarily on imports. For mills in these cotton-producing countries, which include China, India, Pakistan, Turkey, Brazil, and the United States, supply availability is a function of their harvest calendars plus lags for ginning and transport to mills. Some countries have the capacity to gin and transport cotton shortly after harvest while others have longer ginning seasons. Estimation of lags indicates that about 11 percent of the cotton supply in these "producer-consumer countries" is available at mills by the end of October, and just under 50 percent by the end of December.



An estimated 55 percent of world consumption is accounted for by mills in countries that rely primarily on imported cotton. Supply availability to these mills depends on the harvest calendars in producing countries and lags in processing, shipping, and delivery to the importer. In addition, competition from domestic mills in the producing countries may affect the timing of supplies available for export. Since the majority of traded cotton consumption is shipped to mills in the Far East, the analysis estimates lags in delivery of cotton from the major exporting countries to Far Eastern mills.



Given the current strong demand and limited world supplies, the world's major northern hemisphere exporters are under pressure to accelerate shipments in 2010/11, leaving lower balances available in the early months of 2011/12. At the same time, however, sharply higher production in southern hemisphere countries, such as Brazil and Australia, will help to cushion the impact. USDA's January 2011 estimates include an increase of about 3.5 million bales in southern hemisphere stocks during 2010/11, and much of this cotton is expected to be available to importing countries during the key August-October 2011 period.

China's Special Circumstances

China is the world's largest producer and consumer of cotton; however, since production is not adequate to supply consumption, China is also the world's largest importer. Delivery of China's domestic production varies according to the production region. The majority of China's mills, accounting for about 96 percent of China's consumption, are located in eastern China, where over half of the cotton is produced. Eastern China production can be delivered to these mills within a month or so of ginning, approximating the availability schedules of other producer-consumer countries. In contrast, about 45 percent of China's production is produced in the far northwestern Xinjiang Autonomous Region. Although most Xinjiang production is harvested and ginned by the end of December, availability in the east is limited by a shortage of rail cars to transport the cotton. Based on past years' data, maximum shipments are estimated at 1.75 million bales per month, thereby delaying the flow of cotton to the point of consumption.



China's Mills Supplied with Eastern Production, Xinjiang Production, and Imports

Since China is also heavily reliant on imports, a portion of its consumption depends upon the timing of world exports, giving it a third availability schedule. For the purposes of estimating world supplies available at the point of consumption, China's eastern production is included in the producer-consumer category, while Xinjiang production is included with imported cotton, due to its later availability.

Determination of a Seasonal Low Point for World Stocks

In general, with limited supplies available from both new-crop production and imports in the fall months, world stocks are drawn down during the period July-October, reaching a seasonal low point at the end of October. For the fall of 2011, a deficit of 15 million bales is projected for October 31. This calculation is based on approximately 10 million bales per month of world consumption, for a total of 30 million bales, offset by about 7.5 million bales of availability from the 2011-crop harvest and 7.5 million bales of exports which will be delivered during the August-October period.



Consumption Exceeds Global Availability in August-October

Source: Based on USDA calculations

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Cumulative Availability at Point of Consumption (deficit largest at end of October)

Projecting a Minimum Stocks Level for July 31, 2011

In order for mills to continue to operate without supply-induced disruption, ending stocks on July 31 must be adequate to: (1) fill the shortfall in monthly supplies between July 31 and the end of October, and (2) provide for the minimum mill and pipeline stocks that are needed on October 31. As stated above, world consumption is estimated at roughly 10 million bales per month in the fall of 2011, for a total of 30 million bales for August-October. In addition, mills are assumed to require a minimum of one month's equivalent of use in stocks on hand plus another month's equivalent of use in the delivery pipeline to replace the on-hand stocks as they are used in the subsequent month. The pipeline includes all stocks held by non-mill entities, including producers and merchants, plus stocks in transit to the point of consumption. Thus, the total supply requirement for August-October 2011 is projected at roughly 50 million bales.

As stated above, supplies available at the point of consumption from new-crop production are projected at 7.5 million bales. The source of the additional 7.5 million bales of imports arriving at mills in August-October is mainly 2010-crop production already captured as July 31 stocks in the exporting countries; therefore, the imported cotton excluded from the calculation of minimum stocks. The resulting projection of minimum stocks on July 31, 2011 is approximately 42.5 million bales (50 million bales required less 7.5 million bales of new-crop availability), similar to USDA's January 2011 world stocks forecasts.

Topics for Further Study and Analysis

This study was undertaken to provide an independent method for estimating the minimum stocks needed in the context of the extreme cotton shortages that characterize the 2010/11 marketing year. USDA's primary method of estimating annual stocks by aggregating 2010/11 supply-demand balance sheets for individual countries, while constructive, does not provide the "flow" information needed to determine whether stocks would be adequate in the early months of 2011/12. Superficially, the consistency of results using the two methods suggests that, to avoid supply-induced disruption, ending stocks should not fall below the forecast level of approximately 42.5 million bales. However, these results are preliminary and dependent upon the validity of a number of estimates and assumptions.

The study makes the key assumption that 2010/11 ending stocks will not fall to levels that will "short the market" in early 2011/12; however, given the current tightness, it is entirely possible that mills will respond by slowing operations as supplies tighten and use less cotton during August-October. Indeed, the recent rise in world prices to record levels may indicate that an atypical slowdown in consumption is likely. In connection with this, the study does not address seasonality in world consumption, which could also affect the supplies needed during the critical early fall months.

A further assumption that requires additional analysis is the premise that 10 million bales of pipeline stocks are needed at the October 31 low point. Since increasing quantities of new-crop supplies will be delivered in

November, these may offset the pipeline requirements from stocks, reducing the minimum needed on July 31. Other developments affecting the timing of harvest, such as weather factors, and the pace of transportation and delivery are difficult to project at this juncture, but may affect stock holding.

Finally, the study assumes that, given strong demand and high prices, world supplies will be delivered to the point of consumption efficiently, based on historical average or somewhat accelerated delivery schedules. Some factors which could interfere with delivery and raise the demand for stocks by mills include: (1) withholding of cotton from the market by producers; (2) government policies which encourage stock-holding above the levels needed to support demand; and (3) a mismatch of available qualities with mill requirements.