



Volume 72 - Number 3
March 2019



Cotton:

Review of the World Situation

ICAC International Cotton Advisory Committee

Table of Contents

Summary of the Outlook for Cotton.....	3
Global Cotton Consumption Growth Slows	3
Changes in US Cotton Policies in the 2018 Farm Bill	4
Tariff Activities and Their Effect on the Cotton Trade	6
Cotton and Textile Innovation.....	9
French Terry & Fleece	10
Indigo Knits	10
Performance through Technologies.....	10
Cotton Fleece – Steps towards Synthetic Fleece Alternatives.....	11
Lightweight Performance Blend – Cotton / Nylon 6,6.....	11
Novelty Indigo Wovens.....	11
Denim – New Garment Finishing Processes.....	11
Natural Performance Blends – Cotton/Wool Denim	12
Zimbabwean Cotton Sector	13
Production Challenges.....	13

Tables

Supply and Distribution of Cotton 2013-2019.....	2
2016/17 Supply and Use of Cotton by Country.....	16
2017/18 Supply and Use of Cotton by Country.....	18
2018/19 Supply and Use of Cotton by Country.....	20



INTERNATIONAL COTTON ADVISORY COMMITTEE

Supply and Distribution of Cotton 15 March 2019

Seasons begin on August 1

	2013/14	2014/15	2015/16	2016/17 Est.	2017/18 Est.	2018/19 Proj.
Million Metric Tonnes						
Beginning Stocks						
World Total	19.428	21.331	22.959	20.311	18.76	18.32
China	10.811	13.280	14.118	12.650	10.63	8.54
Usa	0.827	0.512	0.795	0.827	0.60	0.94
Production						
World Total	26.225	26.235	21.476	23.076	26.72	25.88
India	6.766	6.562	5.746	5.865	6.35	5.58
China	7.000	6.600	5.200	4.900	5.89	6.04
USA	2.811	3.553	2.806	3.738	4.56	4.00
Pakistan	2.076	2.305	1.537	1.663	1.80	1.69
Brazil	1.734	1.563	1.289	1.530	2.01	2.56
Uzbekistan	0.910	0.885	0.832	0.789	0.80	0.64
Others	4.928	4.767	4.066	4.591	5.32	5.36
Consumption						
World Total	24.101	24.587	24.135	24.506	27.04	26.89
China	7.600	7.550	7.600	8.000	9.20	8.45
India	5.087	5.377	5.296	5.148	5.42	5.31
Pakistan	2.470	2.467	2.147	2.147	2.35	2.35
Europe & Turkey	1.611	1.692	1.684	1.610	1.63	1.77
Bangladesh	1.129	1.197	1.316	1.409	1.66	1.75
Vietnam	0.673	0.875	1.007	1.168	1.53	1.57
USA	0.773	0.778	0.751	0.708	0.77	0.74
Brazil	0.862	0.797	0.660	0.685	0.68	0.73
Others	3.896	3.854	3.674	3.632	3.80	4.21
Exports						
World Total	9.015	7.772	7.538	8.189	9.07	9.78
Usa	2.293	2.449	1.993	3.248	3.45	3.27
India	2.015	0.914	1.258	0.991	1.13	0.80
CFA Zone	0.973	0.974	0.980	0.993	1.10	1.27
Brazil	0.485	0.851	0.939	0.607	0.91	1.92
Uzbekistan	0.615	0.550	0.500	0.403	0.34	0.13
Australia	1.058	0.527	0.616	0.812	0.85	0.90
Imports						
World Total	8.858	7.800	7.583	8.083	8.95	9.78
Bangladesh	1.112	1.183	1.378	1.412	1.67	1.73
Vietnam	0.687	0.934	1.001	1.198	1.57	1.63
China	3.075	1.804	0.959	1.096	1.24	2.00
Turkey	0.924	0.800	0.918	0.801	0.88	0.68
Indonesia	0.651	0.728	0.640	0.738	0.76	0.87
Trade Imbalance 1/	-0.157	0.028	0.045	-0.106	-0.12	0.00
Stocks Adjustment 2/	-0.063	-0.047	-0.034	-0.013	0.00	0.00
Ending Stocks						
World Total	21.331	22.959	20.311	18.763	18.32	17.31
China	13.280	14.118	12.650	10.632	8.54	8.07
USA	0.512	0.795	0.827	0.599	0.94	0.94
Ending Stocks/Mill Use (%)						
World-Less-China 3/	49	52	46	49	55	50
China 4/	175	187	166	133	93	95
Cotlook A Index 5/	91	71	70	83	88	

1/ The inclusion of linters and waste, changes in weight during transit, differences in reporting periods and measurement error account for differences between world imports and exports.

2/ Difference between calculated stocks and actual; amounts for forward seasons are anticipated.

3/ World-less-China's ending stocks divided by World-less-China's mill use, multiplied by 100.

4/ China's ending stocks divided by China's mill use, multiplied by 100.

5/ US cents per pound.

Summary of the Outlook for Cotton

Global Cotton Consumption Growth Slows

Global consumption growth is expected to slow in 2018/19 after two consecutive seasons of expansion. In the East Asia region, where cotton use has driven global consumption over the past 7 seasons, cotton mill-use is expected to slow to 6% in 2018/19, following double digit growth of 14% the previous season. Consumption in China, following 15% growth in 2017/18 is expected to decline by 8% in 2018/19 with an estimated 8.45 million tonnes of mill-use. Growth in mill-use is expected in Bangladesh with a 5.5% increase to 1.75 million tonnes, however this still represents a slow-down in use from the previous 15% growth in 2017/18. Consumption growth in Vietnam is expected to slow to 3% growth with 1.57 million tonnes in 2018/19, following 7 seasons of steady expansion with double-digit growth.

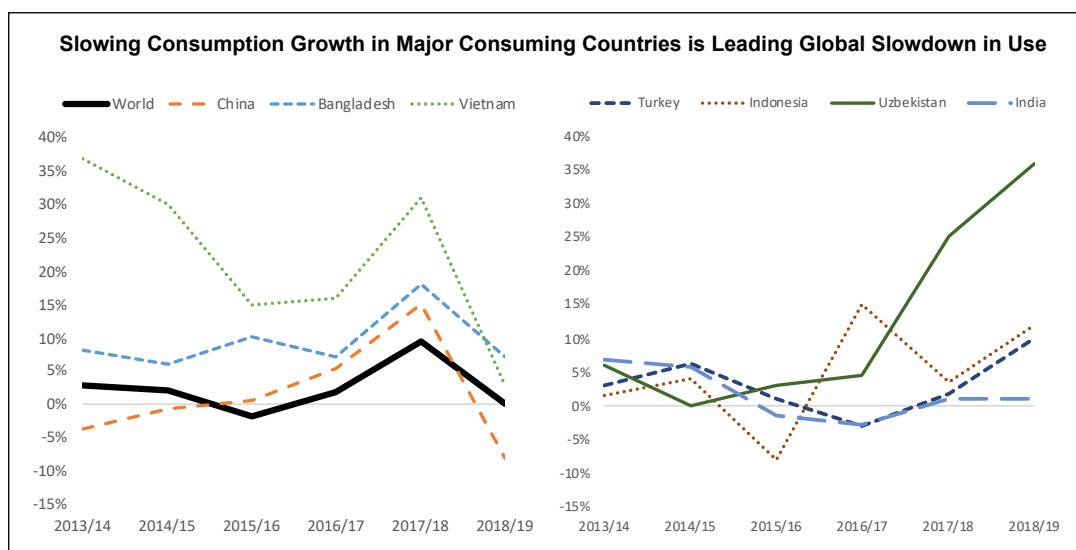
Consumption growth is expected in Turkey where increased investments have led to an expansion of domestic manufacturing. Following a 2% growth in 2017/18, this season a 10% growth is expected with final mill-use reaching an estimated 1.6 million tonnes. Mill-use is expected to increase in Indonesia with a 12% growth this season to 872,000 tonnes. Continued expansion of the domestic textile sector under the cluster reform has sustained strong domestic consumption growth in Uzbekistan with a second consecutive year of double-digit growth.

Consumption growth in India has slowed with 1% growth expected in 2018/19 to 5.25 million tonnes of mill-use. Production has decreased 7% to 5.9 million tonnes from

the previous season due to uneven distribution of monsoon rainfall in Gujarat and Maharashtra and the pink bollworm infestation in the irrigated cotton areas of Gujarat.

Global trade tensions continue to impact economic growth which in turn influences textile demand and manufacturing. While the US-China trade stand-off has the potential of being resolved in early March, the risk of further escalation also remains a possibility. Planting decisions are being made for Northern Hemisphere regions in the midst of continued tariff uncertainty including price volatility this season in reaction to global trade tensions, economic uncertainty and the slowdown in economic expansion.

Despite the US-China tariff impasse, the US is expected to continue to lead global exports of cotton lint at 3.3 million tonnes. While this would represent a 5% decline from the previous season, US exports would still compose more than 1/3 of total global exports of cotton lint. In 2017/18, the United States exported half of China's total global import of cotton. In 2018/19, exports from the US to China have fallen, but a range of other countries have increased exports to China. With imports for China expected at 2 million tonnes for the 2018/19 season, thus far in the season exports from Australia, India, Brazil and West Africa are outpacing the previous season and by the end of the season are expected to compose a larger proportion of Chinese imports than in 2017/18. While trade tensions have slowed growth, global demand remains steady. While the tariff impasse has slowed trade between the US and China, other exporting countries are expected to increase their share to China while the US is also expected to diversify the countries of their export markets for cotton.



Changes in US Cotton Policies in the 2018 Farm Bill

By Andrei Guitchounts, Director of Trade Analysis, ICAC

On 20 December 2018, the President of the USA signed the Agriculture Improvement Act of 2018 (Farm Bill). The Bill includes the continuation of the designation of seed cotton (unginned upland cotton that includes both lint and cottonseed) as a covered commodity under the Title 1 Price Loss Coverage (PLC) and Agriculture Risk Coverage (ARC) programs. These programs were enacted in February 2018 by the Budget Bipartisan Act of 2018 and were already in effect for the 2018/19 cotton season. The 2018 Farm Bill marks a significant change in cotton farm policies, from mostly insurance programs to a guaranteed and enhanced safety net and payments based on reference price, similar to the counter-cyclical payments that were in effect under the 2008 Farm Bill. This change will mean a significant increase in support to upland cotton production. Although the new program is based on seed cotton rather than lint, it could still result in increased income support to cotton producers in a manner similar to the pre-2014 Farm Bill, and it could result in increased U.S. cotton plantings. In addition to seed cotton ARC/PLC programs, the new Farm Bill includes full access to the marketing loan program, funding for a textile competitiveness program, and crop insurance products.

Under the new legislation there will no longer be a generic base on a farm. Generic base is the former cotton base on a farm under the 2008 Farm Bill. Landowners will have options on how to convert the generic base to a seed cotton base, or to a base of seed cotton and other covered commodities (such as peanuts, corn, soybean, and wheat) based on planting history.

Beginning with the 2019 crop, the Farm Bill provides a PLC/ARC election choice that will be in place for the 2019 and 2020 crops. Annual election between ARC and PLC will be allowed annually beginning in 2021. Decisions between ARC and PLC are based on a farmer's expectation of price movement compared to program yields. Farmers can elect the supplemental crop insurance under Title XI on a yearly basis for commodities not covered by the ARC program. Federal crop insurance programs subsidize 65% of the premium paid by farmers for the individual private crop insurance policy they purchase.

The price-based program, Price Loss Coverage (PLC), is similar to the counter-cyclical payments program. PLC makes a payment to producers (now at a rate of 85% of base acres) when the market price for a commodity falls below the fixed reference price. PLC cannot be combined with ARC-CO (county level) for the selected commodity. Although reference prices are fixed by legislation, farmers may be able to increase payments for years when produc-

tion falls by updating farm yields. For commodities covered under PLC, a Supplemental Coverage Option is available to provide additional protection against yield losses.

The payment rate under the PLC rate has yet to be established. The PLC reference price is set at 36.7 cents per pound and the price floor is at 25 cents per pound. Seed cotton Marketing Year Average (MYA) price is a weighted average of the upland cotton lint price and the cottonseed price. Lint and cottonseed prices are weighted based on annual shares of production. The MYA price is not final until the end of the marketing year (1 Aug. – 31 July), but the USDA publishes monthly estimates.

To calculate payment, payment yield has to be established. If a farm has generic base (former cotton base), that base also has a cotton counter-cyclical payment (CCP) yield already established for it under the 2008 Farm Bill. This was the yield used to make counter-cyclical payments. In the seed cotton program, landowners will be given the option to keep this current CCP yield or to update it to 90% of the average yield from 2008-2012. The seed cotton payment yield will be lint yield multiplied by 2.4. Upland cotton lint payment yield will be the higher of the CCP lint yield or the updated yield. Payment is made when the reference price exceeds the higher of the MYA price and the price floor. About 85% of seed cotton base acres are eligible for payment.

The ARC-CO program provides revenue loss coverage at the county level. Farms select revenue loss protection on a commodity-by-commodity basis at the county level. The ARC-CO payments are issued when the actual county seed cotton revenue is less than the ARC-CO guarantee. ARC-CO replaces the previous Farm Bill's state-based revenue program, Average Crop Revenue Enhancement (ACRE). Commodity revenues are benchmarked against county revenues for each commodity, calculated using a moving five-year Olympic average (excluding the years with the highest and the lowest price) of county yields and national prices. Revenue payments are based on 85% of the covered commodity's base acres when county revenue is 86% to 76% below the benchmark county revenue, capped to be no more than 10% of the benchmarked revenue. High average county yields could eliminate payments and payments will likely vary among neighboring counties.

The ARC-CO guarantee is 86% multiplied by the Benchmark Seed Cotton MYA price multiplied by the Benchmark Seed Cotton yield. The Benchmark Seed Cotton MYA price is an average of the Seed Cotton MYA price from the prior five years Olympic Average. If the MYA price in any of the 5 years is below the reference price (36.7 cents per pound),

the reference price is substituted for the MYA price. The Benchmark Seed Cotton Yield is a county average of Seed Cotton Yield from the prior five years. If the county yield in any of the five years is below 70% of the county transitional yield (T yield), then 70% of the T yield is substituted for each year the county yield is less than 70% of T yield.

PLC/ARC payments for seed cotton are subject to the payment limit of \$125,000 applicable to covered commodities (other than peanuts), with the adjusted gross income test set unchanged at \$900,000.

The provisions of the non-recourse marketing assistance loan for upland cotton lint remain unchanged with the marketing loan rate set at no more than 52 cents per pound and no less than 45 cents per pound. The loan rate formula is based on the two-year moving average of the Adjusted World Price (AWP), with any annual decline limited to 2% of the previous year's loan rate. The extra-long staple cotton (ELS) loan rate was raised from 79.77 cents per pound to 95 cents per pound.

The ELS competitiveness program (export and domestic users' subsidy) continues with the maximum price trigger changed from 134% to 113% of the ELS loan rate to adjust for the increase in the ELS loan rate. Under the

program, payments are made to domestic users of ELS cotton produced in the USA and to exporters of US ELS cotton whenever - for a consecutive 4-week period, the world market price for the lowest-priced competing growth of ELS cotton (adjusted to US quality and location and for other factors affecting the competitiveness of such cotton) as determined by the Secretary of Agriculture, is below the prevailing US price for a competing growth of extra long staple cotton, and the lowest-priced competing growth of ELS cotton is less than 113 percent of the loan rate for ELS cotton. The payment rate is the difference between the US prevailing price and the competing cotton price as described above.

The 2018 Farm Bill continues the economic adjustment assistance to users of upland cotton at the rate of 3 cents per pound. This payment is made on a monthly basis to domestic users of documented volumes of cotton used during the preceding month regardless of the origin of cotton used.

Reference: Agriculture Improvement Act of 2018, published materials and presentations by the National Cotton Council.



Tariff Activities and Their Effect on the Cotton Trade

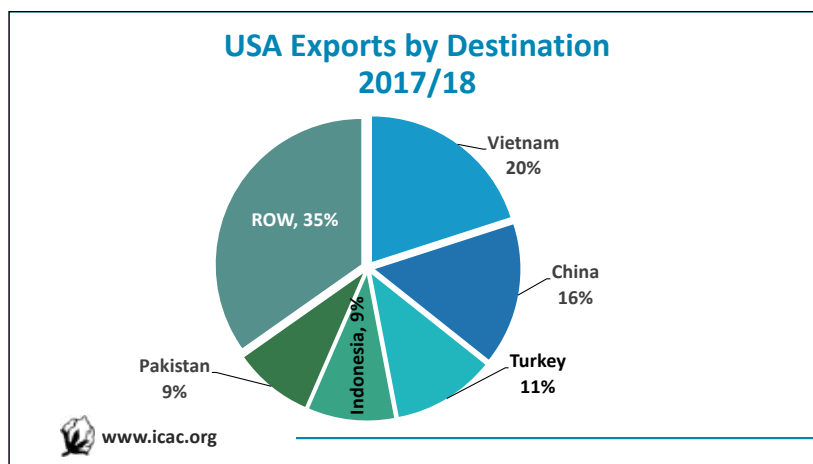
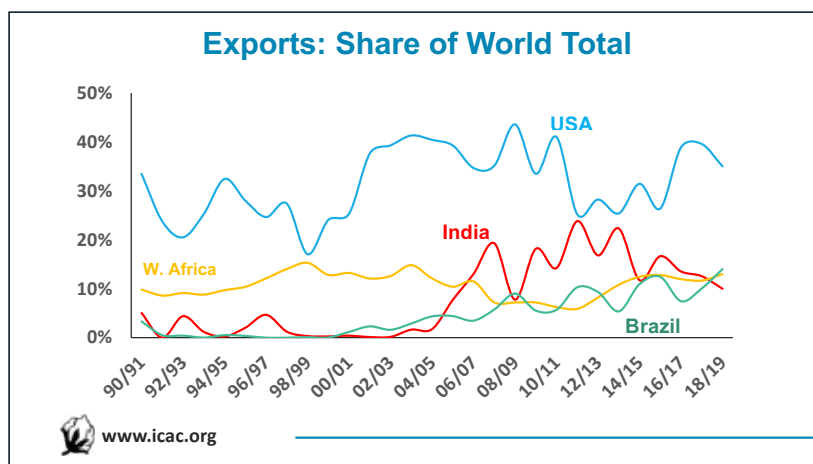
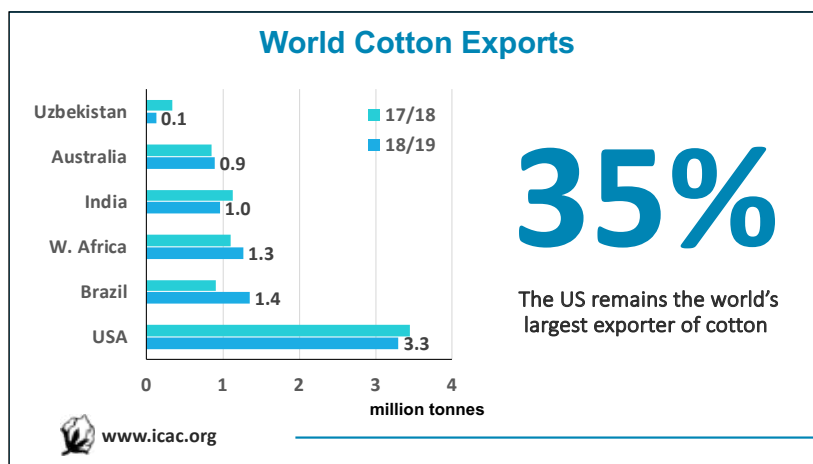
By Andrei Guitchounts, Director of Trade Analysis, ICAC

In July 2018, China imposed a 25% tariff on about \$50 billion of US imports (including various US agricultural products, including cotton) as retaliation against tariffs imposed earlier by the USA on Chinese products. The value of US agricultural products affected by Chinese tariffs total about \$19.6 billion (imported from US in 2017), including about \$1.1 billion of US cotton exported to China in 2017/18. US soybeans exports, valued at \$14 billion, were the commodity most affected by Chinese tariffs. To date, the USA has not imposed tariffs on imported Chinese textile and apparel products, which were valued at \$38.8 billion in 2017. Trade talks between the USA and China are ongoing and failure to reach a compromise may lead to additional tariffs on \$200 billion of trade could be imposed by both countries.

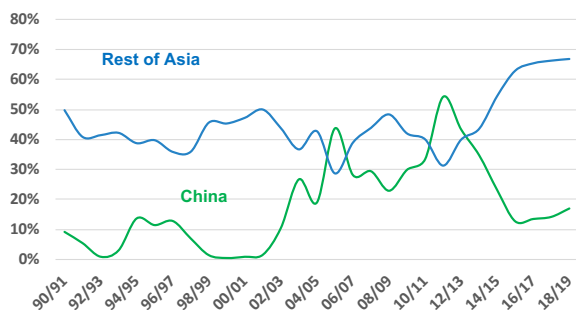
Despite the tariff escalation by the two major cotton-trading countries, world cotton trade is projected to grow in 2018/19 by 3.5 % to 9.3 million tonnes. USA was the world's largest exporter of cotton in 2017/18, accounting for 3.5 million tonnes (38% of world exports). China was the second-largest destination for US cotton (after Vietnam), importing 560,000 tonnes and accounting for 16% of all US exports. It is projected that US exports will decline in 2018/19 by 3% due to decreasing production.

China was the third-largest importer of cotton in 2017/18 (after Bangladesh and Vietnam) and imported 1.2 million tonnes of cotton, with the largest volume supplied by the US, which accounted for 45% of Chinese imports. India accounted for 10% of Chinese imports in 2017/18. It is projected that China will increase its imports to 1.6 million tonnes in 2018/19.

India was the second-largest exporter of cotton in 2017/18, accounting for 12% of world exports, or 1.1 million tonnes. Close to 130,000 tonnes, or 11% of all Indian exports were shipped to China. It is



Share of World Imports



www.icac.org

At the same time, it is expected that USA will increase shipments to other major markets, including Vietnam, Bangladesh and Indonesia. Even though total US commitments for 2018/19 are about at the same level as at this time in 2017/18 (as of December 2018), US export sales to some countries are exceeding those from the prior year:

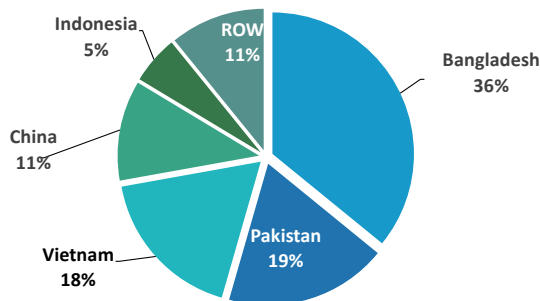
- Bangladesh (up 29%),
- Vietnam (up 43%), and
- Indonesia (up 11%).

At the same time, cumulative US sales to China during the first five months of 2018/19 were 18% lower than the same period last year. However, there are indications that Chinese importers have been shifting delivery dates for some of those commitments to 2019/20, while focusing their purchasing activities on Brazilian, Indian and Australian growths. US shipments to China declined by 30% from August through December 2018 compared to the same period of 2017, but shipments from Brazil rose by 200%; shipments from Australia rose by 87%; and shipments from India rose by 226%. It is also expected that some cotton importers — especially Vietnam, India and Pakistan — could increase exports of yarn made from US cotton to China throughout 2018/19.

In the past decade, US cotton exports to Vietnam have undergone extremely rapid growth, rising from 125,215 tonnes in 2008 to 626,539 tonnes in 2017. This increase has been possible thanks to the growing demand for cotton yarn in export markets, especially China. Similarly, Vietnam's cotton yarn exports to China — which do not have any quota restrictions and are duty-free — have almost tripled over the last five years, increasing from 258,085 tonnes in 2013 to 716,080 tonnes in 2017.

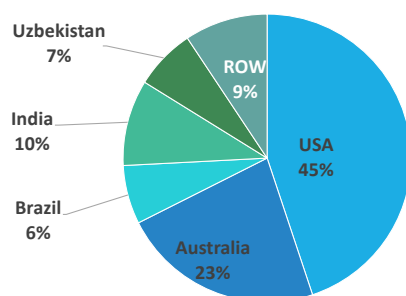
Tariff increases on US cotton exports to China might also have been a driver of the recently declining cotton prices. The cotton futures #2 nearby contract, traded at the Intercontinental Exchange (ICE), declined from almost 90.3 cents per pound on 31 July 2018, to 74.4 cents per pound on 1 February 2019. That represents an 18% decline since the 25% tariff on US cotton was implemented. A similar decline was recorded in the Cotlook A Index during the same period.

India Exports by Destination 2017/18



www.icac.org

China Imports by Origin 2017/18



www.icac.org

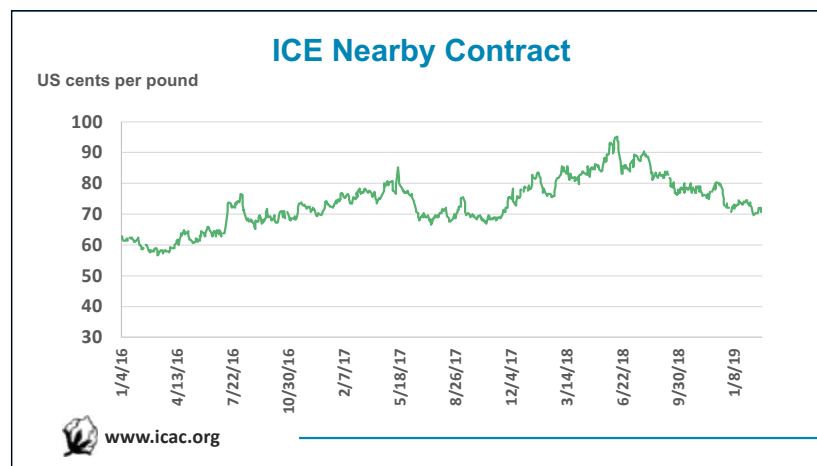
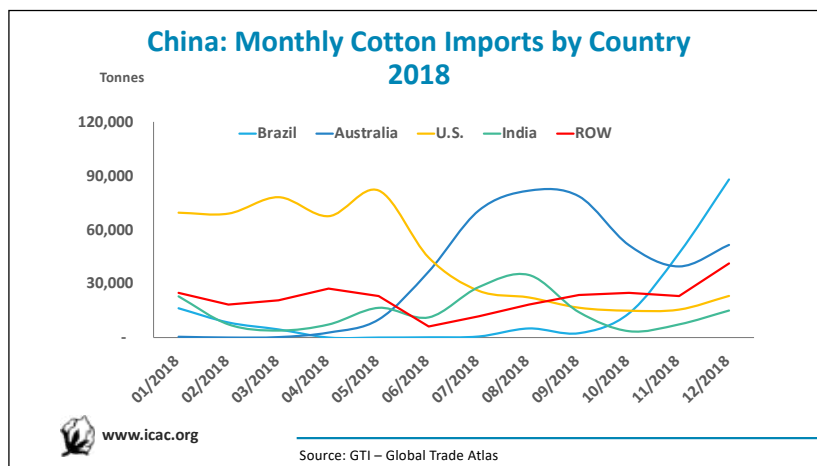
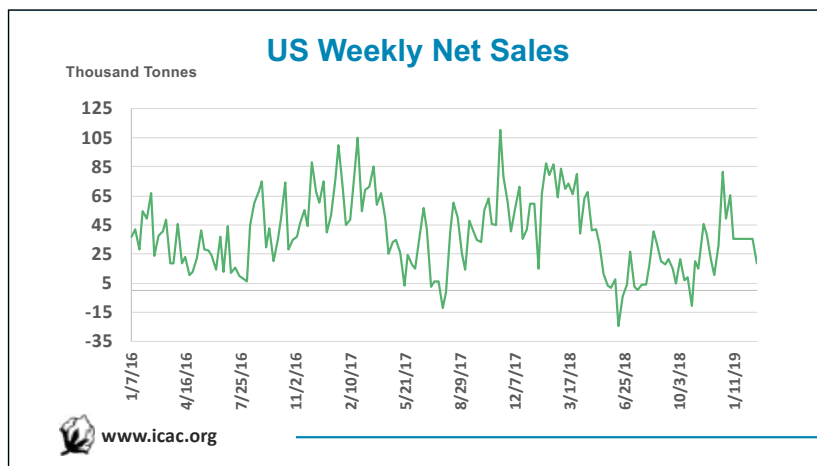
projected that in 2018/19, Indian exports could decline moderately to about 1 million tons, with a higher percentage being shipped to China.

Because of the 25% tariff imposed by China on imports of US cotton, it is likely that the US share of Chinese imports will decline substantially, while other major exporters such as Brazil, India, Australia, and West Africa could increase their share of the Chinese market.

Tariff increases on US cotton exports to China might also have been a driver of the recently declining cotton prices. The cotton futures #2 nearby contract, traded at the Intercontinental Exchange (ICE), declined from almost 90.3 cents per pound on 31 July 2018, to 74.4 cents per pound on 1 February 2019. That represents an 18% decline since the 25% tariff on US cotton was implemented. A similar decline was recorded in the Cotlook A Index during the same period.

The US government announced a program to assist farmers negatively affected by the retaliatory Chinese tariffs by providing \$12 billion in aid. The plan includes a component to assist farmers (including cotton producers) called the Market Facilitation Program. The Market Facilitation Program will provide 6 cents per pound on at least half of a producer's 2018 cotton production (upland and extra-long staple). The payment rate on the second half of 2018 production will be determined later.

The Market Facilitation payments are subject to the existing \$900,000 adjusted gross income means test, and a separate \$125,000-per-person payment limit for the eligible crops. If every pound of projected US production in 2018/19 receives the 6-cent facilitation payment, the total amount paid would be \$570 million. However, because of the payment limitations, the actual payments are expected to be between 25% and 50% of the maximum amount — between \$140 million and \$280 million.



Cotton and Textile Innovation

By Yvonne Johnson, Senior Director, Product Development, Cotton Incorporated

Cotton Incorporated's Product Development Department (PD), headquartered within the company's Textile Research Center in Cary, North Carolina, focuses on the design and development of fabric concepts. The ever-growing archive of constructions are meant to serve as inspiration for apparel and home markets. Throughout the year, textile designers and engineers keep the knitting machines and looms busy designing and developing new and innovative cotton fabrics. Building innovative textiles begins with the selection of the right cotton fibre for the job, depending on whether the fabric will be intended for a heavy weight denim or a tissue weight tee-shirt. Fibre length and uniformity are key factors in determining which spinning system will be employed and will impact the type of fabric structure that will ultimately be created.

Many of the new developments introduced by Cotton Incorporated PD revolve around performance and sustainability. As length uniformity of cotton fibre increases, the ability to develop finer yarns is possible. Finer yarns allow for the creation of lighter weight cotton fabrics, enabling cotton to be more competitive against the light weight synthetic products that dominate the activewear market. Working with the Fiber Processing Department at Cotton Incorporated, the development of finer yarns using upland varieties is improving the odds to offer more options for the active and leisure markets.

Sustainability and performance are major drivers in

Product Development Staff at Cotton Incorporated Working on Equipment



Product Development Laboratory at Cotton Incorporated's Research Center



the textile space and are likely to remain front and centre of decision making for a while. With that in mind, the PD team keeps a steady stream of new ideas and concepts at the ready to inspire mills, brands and retailers on cotton's ability to meet these demands. New technologies are emerging that offer performance without sacrificing the importance of sustainability. Fabric constructions that offer performance without the use of chemistry are a prime example of this. For instance, to decrease air permeability and increase insulative properties, PD developed a knitted textile with numerous layers of knitted tubes stacked one atop the other forming openings to trap air. Recent work placed an emphasis on performance cotton and alternatives to synthetic microfibers in both 100% cotton, and cotton and wool blends. Placing an emphasis on sustainability, a purely natural story of 100% cotton knits and wovens maintained the natural colour of cotton. This collection encompassed fabrics minimally processed with enzymes and then left undyed to highlight cotton's natural hue. To enhance durability through construction and yarn selection, PD developed fabrics with Invista's CORDURA® in base layer and outerwear knits and wovens, as well as Cone Denim's CONESTRONG™ abrasion resistant construction for jeans and chambray shirts. Cotton flat knit fabrications for outerwear, treated with either

STORM COTTON™ or TransDRY® technologies propelled knitwear to be water resistant or faster drying.

Some of the most notable developments for inspiration are described further in the following text.

French Terry & Fleece

Three-end French terry fabrics were constructed using a unique loop configuration, creating alternative visual interests in this collection. Blending a cotton and polyester loop yarn yielded lighter weight, flame resistant fabric; adding polyester aided in passing flammability testing. Additionally, fibre blending allows for a wider range of dyestuffs to be utilized, providing more flexible dyeing options. In another blend development, cotton and wool yarn was placed on the loop side of a three-end fleece. The addition of wool was a natural solution for passing flammability testing on this development. Furthermore, a cotton and nylon 6,6 fibre blended yarn was placed in the ground structure providing strength and abrasion resistance for the outside of a garment.

French Terry Knit with Unique Looped Back



Digitally Printed French Terry Knit



Indigo Knits

The indigo knits in this collection were procured from a European indigo yarn and fabric supplier. The quality of this sourced yarn yielded sought-after aesthetics. The textural quality of the fabric in combination with the ring dyed indigo (the outside of the yarn is blue, while the centre is natural) provided a canvas for unique garment processing effects such as laser etching and bleaching with non-permanganate alternatives.

Performance through Technologies

To amplify cotton's performance abilities, an assortment of cotton rich fabrics was developed using Cotton Incorporated technologies to optimize this collection for the performance and outdoor market. These fabrics can also be incorporated into apparel for everyday wear with additional performance features further enhancing the wearer's comfort. This collection included: a group of 100% cotton fabrics featuring TransDRY® technology for moisture management; a cotton/nylon mid-weight twill, and a warp stretch denim with yarns in the filling

Indigo Cotton Pique Knit with Shibori Technique



Cotton and Wool Knit Fleece



treated with TransDRY® technology; a water resistant cotton-stretch oxford and a wide-wale corduroy treated with STORM COTTON™ technology; and lastly, a double-face double knit, and jersey fabrics were all enhanced with Cotton Incorporated's STORM COTTON™ and WICKING WINDOWS™ technologies for outdoor active sports.

Cotton Fleece – Steps towards Synthetic Fleece Alternatives

This collection of natural cotton fabrics offers alternatives to synthetic fleeces that are a main staple in the current apparel markets. Dobby and jacquard wovens were enhanced with napping and shearing in this collec-

tion for soft raised surfaces. They also feature single- and double-sided surface treatments that work for both apparel and home markets. Jacquard patterned fabrics were dyed with reactive dyes that enhanced the matte/sheen, high/low contrast of the textile surface.

Lightweight Performance Blend – Cotton / Nylon 6,6

This is a cotton-rich performance textile, that is both technical and soft. Playing on a two-sided twill construction, a nylon 6,6 warp provided strength, thinness, and a lighter weight, while a ring spun cotton provided softness. A high sheen, warp-face filament side complements a matte-soft spun side. Cross and union dyeing helps illustrate the versatility of this active blend.

Novelty Indigo Wovens

Indigo continues to be an important colorant in all apparel markets. A wide variety of woven indigo fabrics was developed to highlight unique weave structures, novelty yarns, and interesting garment processing techniques, and then grouped together to create a stimulating indigo collection.

Denim – New Garment Finishing Processes

In collaboration with Cotton Incorporated's Textile Chemistry Research area, two-new finishing techniques were applied to a bull denim (natural cotton) and an indigo base, black-sulphur topped denim, creating a more contemporary collection. An indigo, 3x1

Cotton and Nylon Performance Blend with Iridescent Coloration



twill denim, with a black sulphur top, was laser marked and then finished with a Tonello NoStone™ process. The resulting fabric is a modern version of the wash down effect but was completed in a more sustainable way through mechanical means. A natural colour denim was pre-treated with a cationic solution prior to dyeing in pant leg form, fixing the dyes to the surface of the fabric to prevent them from distributing evenly, and producing a novel mottled colour effect.

Natural Performance Blends – Cotton/Wool Denim

When combining two natural fibres, cotton and wool, one can benefit from the best properties of both; cotton with its softness and breathability, and wool with its thermal regulating and odour control properties. Denims in this collection have a plied indigo warp; one version has a cotton/wool yarn in the filling, and the other has cotton/wool and cotton/spandex yarn in the filling.

100% Cotton Honeycomb Weave with Indigo



Cotton/Spandex Denim with Unique Garment Dyeing Effect



Zimbabwean Cotton Sector

By Nyasha Gandiwa, Cotton Breeder - Cotton Research Programme, SeedCo Group Research, Kadoma Research Centre, Vumba Road, Kadoma

Cotton is an important strategic crop in Zimbabwe with both economic and political significance. It is the 2nd most important foreign currency earner in the agriculture sector after tobacco. The crop also directly supports an estimated 300,000 farmers in marginalised low rainfall areas where other crops would struggle. Indirectly, cotton benefits industry as it provides raw materials to textile, oil spinning and stock feed sectors.

Over 99 % of the crop is produced by small holder farmers with an average land holding of 1-2 ha under rain-fed conditions. Production areas are mainly concentrated in hot marginal areas with erratic rainfall that usually receive annual totals of between 400-600mm. The important production areas are as follows:

- Central and North-West regions. The major areas here include Gokwe and Sanyathi areas which accounts for around 50 % of national production. Kadoma and Chinhoyi are the other important areas in this region.
- Northern region covering important areas like Mzarabani, Mt. Darwin and Bindura in Mashonaland Central and Mutoko in Mashonaland East.

- SouthEast Lowveld areas including Chiredzi, Ngundu, Rutenga and Checheche in Masvingo province and Chipinge in Manicaland province.

Most of the small farm holders are resource poor and cannot afford inputs for their production. Thus, the crop is mainly grown under contract farming where ginners provide input support to farmers on loan who in turn are obligated to sell their produce to the same ginners. The government has also recently introduced a program to provide free input support to cotton farmers in a bid to revive the cotton sector which had been plagued with low production highlighted by the lowest figure of 28,600 metric tonnes of seed cotton recorded in 2015/16 season. This has seen production improving to an estimated 150,000 metric tonnes of seed cotton for the 2017/18 season.

Production Challenges

Though national production has seen a resurgence of late, farm level cotton productivity has remained static at around 200 kg/ha lint way below the world average of 750 kg/ha and over 1500 kg/ha for best countries (Figure 2).

This low productivity has been a cause of much concern as it seems efforts to increase the yield levels have not been effective. New approaches in this regard are therefore needed. Three main factors affecting farm level cotton yields together with possible solutions that can be explored are discussed as follows.

Insufficient fertilizer use

Most cotton farmers are resource poor and depend on the government or ginning contractors for inputs (seed + chemicals). Currently the government's free input scheme provides a package of 100 kg/ha Compound L (NPK: 5:10:10) and 50 kg/ha AN (34.5 %N). As such, they always tend to use less inputs than the recommended levels (Figure 3).

Additionally, since farmers are resource poor, some of the provided fertilizer is diverted to food crops like maize which is the local staple. It has been reported that for a yield level of 1000 kg/ha of lint, 45kg N, 12kg K and 15kg P is required (Rochester, 2014 Final Report).

Figure 1: Zimbabwe Cotton Growing Areas (in yellow)

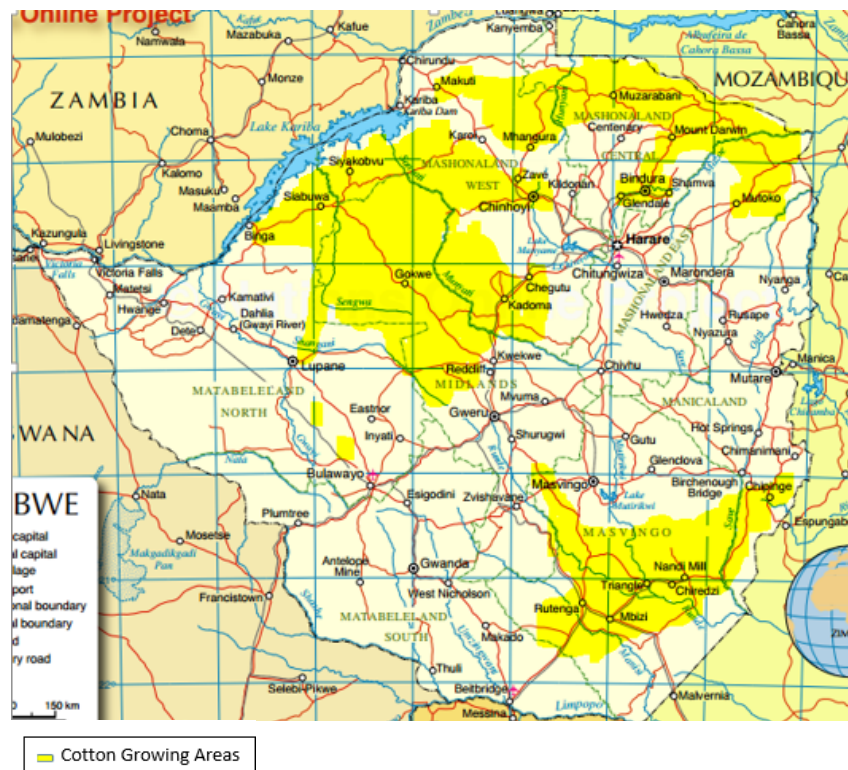
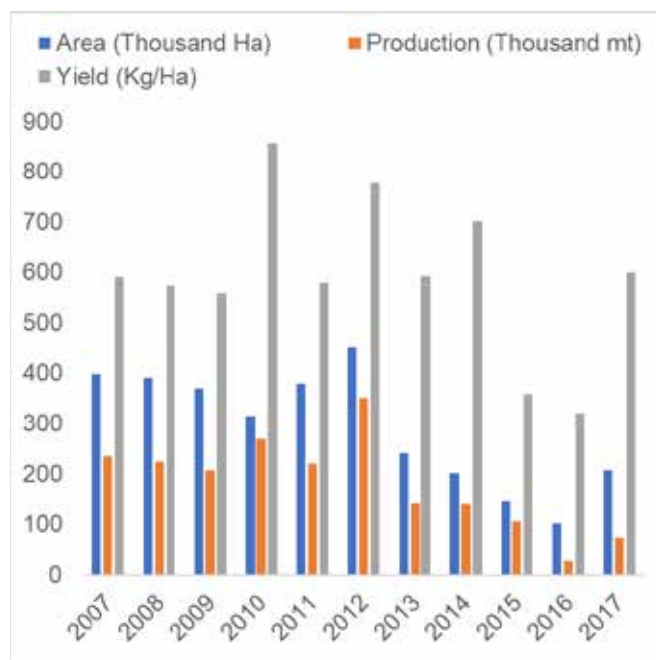


Figure 2: Zimbabwe Seed Cotton Production Data



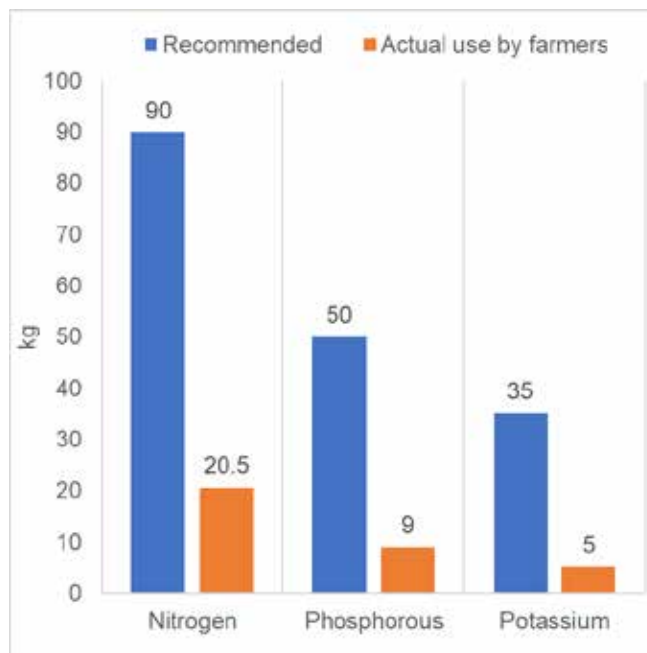
Source: AMA, 2017.

This shows that although the fertilizers being applied by local farmers are inadequate for yield levels of 1000 kg/ha lint, they should be enough for yields of around 500 kg lint/ha. This would at least double the current national yield levels. Therefore, agronomic practices and adaptable varieties are needed to enhance nutrient use efficiency so that yields can be increased without necessarily increasing fertilizer levels. It will also be crucial to adopt some concepts of precision agriculture (PA) by ensuring that soil tests can be accessed easily at local community levels so that nutrient recommendations are specific as inherent nutrient levels are variable depending on the areas.

Pest control

Bollworms particularly the *Heliothis* bollworm are the major cotton pest in Zimbabwe and their infestation can result in total yield loss of the cotton crop. Red bollworm (*Diparopsis spp.*) and Fall Armyworm (FAW – *Spodoptera spp.*) are also key pests. Farmers rely mainly on pyrethroids to control the *Heliothis* bollworm. Usually chemical pesticides are obtained as part of an input package from ginners or from the government scheme. However, due to extensive use, these pests have developed resistance to the major pyrethroids in use such as Fenkill 200EC. In addition, the pesticides supplied are inadequate to enable pest control for entire critical window (from flowering to maturity) given that varieties are long season requiring up to 180 days.

Figure 3: Fertilizer Use by Farmers



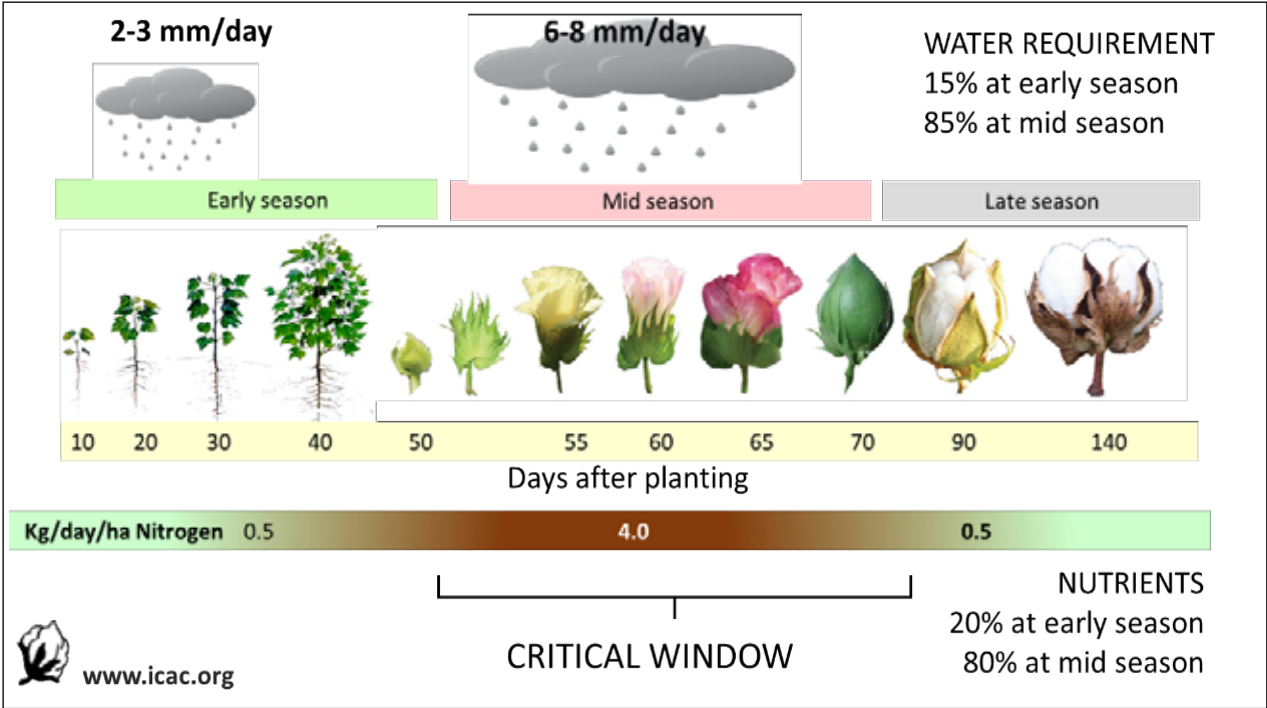
Given that most farmers cannot afford to supplement the provided insecticides, there is a need to adopt better strategies that will enhance bollworm control without the need for additional sprays. This is also important given the global push for sustainable cotton production which has emphasized reduction in pesticide use. Approaches that emphasize Integrated Pest Management (IPM) are thus required which involve alternative control mechanisms instead of just depending on chemical control.

Biological control methods which encourage preserving of population of native natural enemies like egg parasitoids by delaying the spraying of broad-spectrum pesticides could be explored. Another approach would be to reduce the critical window in which bollworms are most problematic (squaring to boll maturity). Varieties and management practices currently utilized in Zimbabwe are such that there is a long critical window of 90 to 120 days. The longer duration critical window leads to an increased number of sprays for bollworm control. Early maturing varieties and management practices which result in shortening of the critical window without sacrificing yield potential can be adopted as a method to better manage bollworms.

Erratic and poorly distributed rainfall

Zimbabwe cotton is produced 100 percent under rain-fed conditions. The growing season has of late been characterized by a late start to the rains and an early cut-off

Figure 4: Critical Window in Cotton



which effectively reduces the season length from 180 to around 120 days. Since local varieties require a long duration, yields are negatively affected by these late periods of moisture stress. Due to climate change, these low rainfall instances are expected to continue. Frequency of El Niño events, one of whose effects is reduced rainfall in Southern Africa, have increased in recent years. While investment in irrigation facilities for cotton production is the desirable solution, the costs will be prohibitive. Farmers could adopt techniques which improve soil health such as reduced tillage and integrating organic matter to soil. Good soil health encourages root development and soil water holding capacity which enables the plant to be more tolerable to water stress situations.

Varieties and management practices that reduce the critical window when most water is required (repro-

ductive phase) could be explored as a strategy to escape drought. Figure 4 illustrates the critical window. Early maturing varieties planted in high plant densities of up to 200000 plants/ha require each plant to have only 4-5 bolls to achieve high yield levels of up to 1600 kg lint/ha. This will reduce the amount time the required for the reproductive phase and hence the critical window for moisture availability without affecting yield levels.

Therefore, the constraints to cotton production faced by Zimbabwean farmers - inadequate nutrient use, bollworm control and low erratic rainfall - could be mitigated by approaches which do not require extensive investments that would be out of reach for farmers. These approaches centre on the adoption of management practices which would reduce the critical cotton growing window, and which would allow the crop to efficiently utilise available resources.





2016/17 Supply and Use of Cotton by Country 15 March 2019

	Area	Yield	Prod	Beg Stocks	Imports	Cons	Exports	End Stocks	S/U *	S/MU **
	000 Ha	Kgs/Ha	000 Metric Tonnes						Ratio	Ratio
Canada				0	0	0		0	0.11	0.11
Cuba	4	269	1	1	2	3		1	0.19	0.19
Dom. Rep.					1	1		0	0.47	0.47
Mexico	104	1,573	164	168	225	387	28	141	0.34	0.37
USA	3,848	972	3,738	827	2	708	3,248	599	0.15	0.85
N. America	3,961	986	3,905	996	230	1,100	3,276	742	0.17	0.67
El Salvador				9	34	34		9	0.27	0.27
Guatemala				7	26	26		7	0.27	0.27
Honduras	0	318	0	0				0		
C. America	2	512	1	16	60	61	0	16	0.27	0.27
Argentina	247	727	180	320	3	143	58	301	1.49	2.10
Bolivia	4	639	3	2	0	3	0	2	0.50	0.53
Brazil	939	1,629	1,530	884	41	685	607	1,163	0.90	1.70
Chile				0	0	0		0	0.41	0.41
Colombia	8	948	8	16	26	43	1	6	0.14	0.15
Ecuador	1	439	1	3	10	11		3	0.25	0.25
Paraguay	10	450	5	1	1	3	3	1	0.21	0.41
Peru	27	814	22	19	41	57	1	25	0.43	0.43
Uruguay				0		0		0	0.06	0.06
Venezuela	15	390	6	4	4	10		3	0.30	0.30
S. America	1,252	1,400	1,753	1,250	128	956	670	1,504	0.92	1.57
Algeria				1	1	2		0	0.03	0.03
Egypt	55	694	38	93	111	127	26	90	0.59	0.71
Morocco				4	10	11		3	0.25	0.25
Sudan	70	561	39	20		18	28	14	0.31	0.78
Tunisia				3	12	12		3	0.22	0.22
N. Africa	125	620	78	120	134	169	54	109	0.49	0.65
Benin	418	416	174	58		4	142	87	0.60	21.78
Burkina Faso	740	385	285	85		4	247	120	0.48	29.93
Cameroon	224	488	109	64		2	113	58	0.50	30.53
Cent. Afr. Rep.	32	216	7	2			7	3	0.42	
Chad	298	239	71	23		1	42	51	1.19	102.19
Cote d'Ivoire	343	408	140	19	0	2	136	21	0.15	10.25
Guinea	12	276	3	1			3	1	0.40	
Madagascar				3				3		
Mali	656	404	265	61		5	260	61	0.23	12.20
Niger	5	447	2	0		1	1	0	0.11	0.25
Senegal	20	355	7	2	0	1	7	2	0.29	2.80
Togo	133	293	39	12			38	14	0.36	
F. Africa	2,881	383	1,103	333	0	19	996	421	0.42	21.96
Angola	3	302	1	0		1	0	0	0.33	0.48
Ethiopia	82	629	52	19	4	55	0	19	0.34	0.34
Ghana	15	370	6	9	0	1	1	12	4.42	9.33
Kenya	29	183	5	1	0	5	0	1	0.12	0.12
Malawi	90	232	21	10		3	16	12	0.61	3.94
Mozambique	116	263	31	26			37	20	0.53	
Nigeria	253	202	51	22	1	25	31	18	0.32	0.71
South Africa	18	898	16	9	18	22	9	12	0.39	0.54
Tanzania	350	127	45	69		39	24	51	0.82	1.31
Uganda	72	388	28	21		1	26	22	0.83	25.26
Congo, Dr				2	8	8		2	0.27	0.27
Zambia	120	332	40	40		2	44	34	0.76	
Zimbabwe	155	271	42	7		3	24	22	0.83	7.83
S. Africa	1,324	257	341	249	53	190	214	238	0.59	1.25
Kazakhstan	111	634	70	25	0	12	47	36	0.62	3.06
Kyrgyzstan	14	810	12	4	4	1	14	4	0.27	4.19
Tajikistan	162	525	85	27		11	74	27	0.32	2.40
Turkmenistan	545	542	296	74		140	143	86	0.30	0.61
Uzbekistan	1,250	631	789	242	1	371	403	259	0.34	0.70
C. Asia	2,082	601	1,252	372	5	535	680	413	1.85	0.77



2016/17 Supply and Use of Cotton by Country (cont'd) 15 March 2019

	Area	Yield	Prod	Beg Stocks	Imports	Cons	Exports	End Stocks	S/U *	S/MU **
	000 Ha	Kgs/Ha			000 Metric Tonnes				Ratio	Ratio
Austria				0	4	3	1	1	0.14	0.17
Azerbaijan	51	626	32	9		16	10	15	0.59	0.96
Belarus				4	11	11		4	0.34	0.34
Belgium				2	7	3	4	1	0.18	0.40
Bulgaria	1	324	0	1	5	5	0	1	0.18	0.19
Czech Rep.				0	3	3		0	0.13	0.13
Denmark					0	0				
Estonia										
Finland										
France				2	12	9	3	2	0.13	0.18
Germany				9	30	24	6	9	0.30	0.38
Greece	211	1,009	213	45	6	18	221	24	0.10	1.34
Hungary				0	1		1	0	0.03	
Ireland				0	0	0		0	0.09	0.09
Italy				7	37	35	2	6	0.17	0.17
Latvia				0	0	0	0	0	0.03	0.04
Lithuania				0				0		
Moldova				1	2	2		1	0.34	0.34
Netherlands				0	4	4		0	0.10	
Norway										
Poland				0	3	3	0	1	0.21	0.22
Portugal				7	34	34	0	6	0.19	0.19
Romania				0	0	0		0	0.09	0.09
Russia	1	520	1	16	32	37	5	8	0.20	0.22
Slovak Rep.										
Spain	61	903	55	25	2	3	54	25	0.44	7.18
Sweden				0	0	0		0	0.74	0.74
Switzerland				0	1	1	0	0	0.17	0.29
Ukraine				0	2	2		0	0.25	0.25
United Kingdom				0	0	0		0	0.14	0.14
Former Yugoslavia				1	7	7		1	0.19	0.19
Europe	327	922	301	132	204	223	307	108	0.20	0.48
Including EU-28	273	982	268	99	149	147	292	77	0.18	0.53
China	3,100	1,581	4,900	12,650	1,096	8,000	13	10,632	1.33	1.33
Taiwan				41	140	153		29	0.19	0.19
Hong Kong				30	1	0	0	30	62.05	
Sub Total	3,100	1,581	4,900	12,722	1,237	8,154	13	10,691	1.31	1.31
Australia	557	1,598	891	180		7	812	252	0.31	37.72
Indonesia	8	615	5	95	738	752	2	85	0.11	0.11
Japan				16	55	62		8	0.14	0.14
Korea, D.R.				1	5	5		1	0.24	0.24
Korea, Rep.				54	223	229	1	47	0.21	0.21
Malaysia				17	85	65	24	13	0.15	0.20
Philippines	0	567	0	3	14	13		4	0.31	0.31
Singapore				0	7		7	0	0.05	
Thailand	2	517	1	46	267	261	0	52	0.20	0.20
Vietnam	2	750	1	149	1,198	1,168		181	0.16	0.16
E. Asia	588	1,541	905	565	2,592	2,569	846	648	0.19	0.25
Afghanistan	40	387	16	5		4	10	7	0.48	1.56
Bangladesh	43	665	28	346	1,412	1,409		379	0.27	0.27
India	10,845	541	5,865	1,507	596	5,148	991	1,829	0.30	0.36
Myanmar	244	634	155	104	10	207		62	0.30	0.30
Pakistan	2,496	666	1,663	704	538	2,147	24	734	0.34	0.34
Sri Lanka				0	2	2		0	0.09	0.09
S. Asia	13,671	565	7,729	2,667	2,558	8,919	1,024	3,011	0.30	0.34
Iran	75	702	53	33	66	110	0	42	0.38	0.38
Iraq	13	361	5	2	4	9		2	0.21	0.21
Israel	8	1,761	14	2			14	2	0.13	
Syria	35	983	35	22		24	22	11	0.23	0.45
Turkey	420	1,674	703	826	801	1,455	73	802	0.53	0.55
Sub Total	554	1,462	810	889	882	1,610	109	861	0.50	0.53
World Total	29,867	773	23,076	20,311	8,083	24,506	8,189	18,763	0.77	0.77

*/ Ending stocks divided by consumption plus exports.

Subtotals and total include countries not shown.

**/ Ending stocks divided by consumption.



2017/18 Supply and Use of Cotton by Country 15 March 2019

	Area	Yield	Prod	Beq Stocks	Imports	Cons	Exports	End Stocks	S/U *	S/MU **
	000 Ha	Kgs/Ha	000 Metric Tonnes						Ratio	Ratio
Canada				0	0	0		0	0.12	0.12
Cuba	4	269	1	1	2	3		1	0.19	0.19
Dom. Rep.					1	1		0	0.47	0.47
Mexico	212	1,580	335	141	212	435	71	182	0.36	0.42
USA	4,492	1,014	4,555	599	1	768	3,450	936	0.22	1.22
N. America	4,713	1,038	4,893	742	217	1,209	3,522	1,120	0.24	0.93
El Salvador				9	35	35		9	0.27	0.27
Guatemala				7	27	27		7	0.26	0.26
Honduras	0	318	0	0				0		
C. America	2	512	1	16	62	63	0	16	0.26	0.26
Argentina	328	688	226	301	2	146	34	349	1.94	2.40
Bolivia	4	639	3	2	1	3	0	2	0.50	0.53
Brazil	1,175	1,707	2,006	1,163	18	680	909	1,598	1.01	2.35
Chile				0	0	0		0	0.41	0.41
Colombia	10	937	10	6	28	40		4	0.10	0.10
Ecuador	1	439	1	3	10	10		3	0.31	0.31
Paraguay	10	419	4	1	2	3	3	2	0.34	0.65
Peru	26	814	22	25	53	60	1	39	0.64	0.64
Uruguay				0	0	0		0	0.06	0.06
Venezuela	14	390	6	3	5	11		3	0.30	0.30
S. America	1,570	1,450	2,276	1,504	119	953	946	1,999	1.05	2.10
Algeria				0	2	2		0	0.04	0.04
Egypt	91	747	68	90	117	139	50	86	0.45	0.61
Morocco				3	8	8		3	0.35	0.35
Sudan	84	952	80	14		18	60	16	0.21	0.90
Tunisia				3	12	12		3	0.22	0.22
N. Africa	175	846	148	109	139	179	110	107	0.37	0.60
Benin	530	485	257	87		4	194	146	0.74	36.48
Burkina Faso	879	311	273	120		4	244	145	0.58	36.19
Cameroon	183	635	116	58		2	107	65	0.60	34.36
Cent. Afr. Rep.	33	21	1	3			3	0	0.10	
Chad	150	213	32	51		1	57	26	0.44	51.13
Cote d'Ivoire	326	538	176	21		2	152	42	0.28	20.77
Guinea	12	245	3	1			3	1	0.38	
Madagascar				3				3		
Mali	704	424	299	61		5	289	66	0.22	13.17
Niger	5	429	2	0		1	1	0	0.12	0.25
Senegal	20	353	7	2	1	1	7	3	0.33	3.20
Togo	169	285	48	14			42	19	0.45	
F. Africa	3,010	403	1,213	421	1	19	1,099	516	0.46	26.93
Angola	3	301	1	0		1	0	0	0.33	0.48
Ethiopia	60	700	42	19	21	60	3	19	0.29	0.31
Ghana	15	132	2	12		1	1	12	6.03	9.33
Kenya	25	184	5	1	0	5	0	1	0.13	0.13
Malawi	90	78	7	12		3	13	3	0.16	0.87
Mozambique	124	201	25	20			30	15	0.49	
Nigeria	261	196	51	18	1	28	20	22	0.45	0.79
South Africa	34	1,120	38	12	14	20	8	35	1.26	1.74
Tanzania	350	153	54	51		43	39	23	0.27	0.53
Uganda	77	486	37	22		1	34	25	0.73	28.44
Congo, Dr				2	7	7		2	0.30	0.30
Zambia	126	326	41	34		2	40	34	0.80	
Zimbabwe	202	203	41	22		3	35	25	0.65	8.80
S. Africa	1,387	249	346	238	68	200	225	227	0.53	1.13
Kazakhstan	116	634	73	36	0	13	46	51	0.87	3.90
Kyrgyzstan	14	810	11	4	3	1	13	4	0.28	4.19
Tajikistan	187	532	100	27		15	78	34	0.36	2.29
Turkmenistan	545	559	304	86		140	159	91	0.30	0.65
Uzbekistan	1,208	662	800	259	1	464	337	259	0.32	0.56
C. Asia	2,069	622	1,288	413	4	632	634	439	2.14	0.69



2017/18 Supply and Use of Cotton by Country (cont'd) 15 March 2019

	Area	Yield	Prod	Beg Stocks	Imports	Cons	Exports	End Stocks	S/U *	S/MU **
	000 Ha	Kgs/Ha			000 Metric Tonnes				Ratio	Ratio
Austria				1	3	3		1	0.18	0.18
Azerbaijan	139	537	75	15		17	39	34	0.61	2.00
Belarus				4	11	11		4	0.34	0.34
Belgium				1	7	3	4	1	0.19	0.42
Bulgaria	1	324	0	1	5	5	0	1	0.18	0.19
Czech Rep.				0	2	2		0	0.09	0.09
Denmark					0	0			0.12	
Estonia										
Finland										
France				2	10	8	2	2	0.15	0.19
Germany				9	26	22	4	9	0.34	0.41
Greece	243	906	220	24	7	16	234	0	0.00	0.01
Hungary				0				0		
Ireland				0	0	0		0	0.10	0.10
Italy				6	37	34	2	8	0.21	0.22
Latvia				0	0	0	0	0	0.03	0.04
Lithuania				0				0		
Moldova				1	2	2		1	0.34	0.34
Netherlands				0	4	4		0	0.11	
Norway										
Poland				1	4	3	0	1	0.51	0.56
Portugal				6	40	32	1	14	0.43	0.44
Romania				0	0	0		0	0.10	0.10
Russia	1	520	1	8	41	40	0	10	0.24	0.24
Slovak Rep.										
Spain	70	943	66	25	3	3	52	38	0.69	11.04
Sweden				0	0	0		0		
Switzerland				0	1	0	0	0	0.19	0.32
Ukraine				0	2	2		0	0.26	0.26
United Kingdom				0	0	0		0	0.13	0.13
Former Yugoslavia				1	7	7		1	0.19	0.19
Europe	455	795	362	108	216	220	338	127	0.23	0.58
Including EU-28	314	912	286	77	151	139	299	76	0.17	0.55
China	3,350	1,758	5,890	10,632	1,243	9,200	30	8,536	0.92	0.93
Taiwan				29	138	146		21	0.14	0.14
Hong Kong				30	1	0	0	30	61.83	
Sub Total	3,350	1,758	5,890	10,691	1,382	9,346	30	8,587	0.92	0.92
Australia	500	2,088	1,044	252		6	852	437	0.51	68.84
Indonesia	8	615	5	85	762	778	2	72	0.09	0.09
Japan				8	57	58		8	0.13	0.13
Korea, D.R.				1	5	5		1	0.24	0.24
Korea, Rep.				47	197	195		49	0.25	0.25
Malaysia				13	161	98	33	43	0.33	0.44
Philippines	0	567	0	4	14	13		5	0.35	0.35
Singapore				0	6		6	0	0.05	
Thailand	2	517	1	52	250	248		56	0.22	0.22
Vietnam	2	750	1	181	1,566	1,530		219	0.14	0.14
E. Asia	528	2,001	1,058	648	3,017	2,937	893	893	0.23	0.30
Afghanistan	38	387	15	7		4	12	5	0.31	1.20
Bangladesh	45	764	34	379	1,671	1,662		422	0.25	0.25
India	12,235	519	6,350	1,829	365	5,423	1,128	1,993	0.30	0.37
Myanmar	249	634	158	62	57	207		69	0.34	0.34
Pakistan	2,665	674	1,795	734	671	2,346	46	808	0.34	0.34
Sri Lanka				0	2	2		0	0.12	0.12
S. Asia	15,235	548	8,354	3,011	2,766	9,647	1,186	3,299	0.30	0.34
Iran	79	709	56	42	71	116	0	52	0.45	0.45
Iraq	10	361	3	2	5	8		2	0.24	0.24
Israel	7	1,853	13	2			13	2	0.14	
Syria	25	954	23	11		22	4	9	0.34	0.39
Turkey	462	1,714	792	802	876	1,481	71	918	0.59	0.62
Sub Total	585	1,519	889	861	961	1,638	87	986	0.57	0.60
World Total	33,081	808	26,717	18,763	8,951	27,042	9,070	18,318	0.68	0.68

*/ Ending stocks divided by consumption plus exports.

Subtotals and total include countries not shown.

**/ Ending stocks divided by consumption.


2018/19 Supply and Use of Cotton by Country 15 March 2019

	Area	Yield	Prod	Beg Stocks	Imports	Cons	Exports	End Stocks	S/U *	S/MU **
	000 Ha	Kgs/Ha	000 Metric Tonnes						Ratio	Ratio
Canada				0	0	0		0	0.12	0.12
Cuba	4	269	1	1	2	3		1	0.19	0.19
Dom. Rep.					1	1		0	0.47	0.47
Mexico	245	1,692	414	182	95	440	69	182	0.36	0.41
USA	4,262	939	4,004	936	1	739	3,266	936	0.23	1.27
N. America	4,516	979	4,420	1,120	100	1,185	3,335	1,120	0.25	0.95
El Salvador				9	35	35		9	0.26	0.26
Guatemala				7	27	27		7	0.26	0.26
Honduras	0	318	0	0				0		
C. America	1	522	1	16	62	63		16	0.26	0.26
Argentina	372	651	243	349	2	167	77	349	1.43	2.09
Bolivia	4	640	3	2	1	3	0	2	0.50	0.53
Brazil	1,563	1,641	2,565	1,598	18	730	1,921	1,529	0.58	2.10
Chile				0	0	0		0	0.41	0.41
Colombia	15	870	13	4	27	40		4	0.10	0.10
Ecuador	1	439	1	3	10	11		3	0.31	0.31
Paraguay	10	420	4	2	2	3	2	3	0.72	1.35
Peru	27	819	22	39	38	59	1	39	0.64	0.65
Uruguay				0	0	0		0	0.06	0.06
Venezuela	15	392	6	3	5	10		3	0.30	0.30
S. America	2,007	1,423	2,856	1,999	102	1,024	2,001	1,933	0.64	1.89
Algeria				0	1	1		0	0.05	0.05
Egypt	141	787	111	86	131	167	75	86	0.35	0.51
Morocco				3	7	7		3	0.38	0.38
Sudan	88	702	62	16		18	44	16	0.26	0.89
Tunisia				3	12	12		3	0.22	0.22
N. Africa	229	754	173	107	152	206	119	107	0.33	0.52
Benin	550	509	280	146		4	282	140	0.49	35.00
Burkina Faso	864	334	289	145		4	285	145	0.50	36.13
Cameroon	230	530	122	65		2	124	61	0.48	32.05
Cent. Afr. Rep.	32	251	8	0			4	4	0.93	
Chad	144	245	35	26		1	43	17	0.39	34.33
Cote D'Ivoire	333	554	184	42		2	173	52	0.30	25.45
Guinea	12	286	3	1			3	2	0.58	
Madagascar				3				3		
Mali	736	390	287	66		5	300	48	0.16	9.57
Niger	4	469	2	0		1	1	0	0.11	0.25
Senegal	25	300	7	3		1	5	4	0.60	4.71
Togo	180	300	54	19			46	27	0.58	
F. Africa	3,109	409	1,272	516		19	1,267	502	0.39	26.19
Angola	3	304	1	0		1	0	0	0.34	0.48
Ethiopia	65	735	47	19	21	62	3	22	0.34	0.36
Ghana	15	373	5	12		1	4	12	2.22	9.28
Kenya	25	221	6	1	0	5	0	2	0.32	0.33
Malawi	86	248	21	3		3	9	12	0.99	3.99
Mozambique	119	222	26	15			27	15	0.55	
Nigeria	250	205	51	22	1	50	22	2	0.03	0.04
South Africa	42	1,071	45	35	14	18	24	52	1.22	2.83
Tanzania	438	183	80	23		44	42	17	0.20	0.39
Uganda	74	369	27	25		1	42	9	0.21	10.42
Congo, Dr				2	7	7		2	0.30	0.30
Zambia	121	392	47	34		2	47	32	0.67	
Zimbabwe	193	292	57	25		3	43	36	0.78	12.66
S. Africa	1,451	288	418	227	68	223	265	226	0.46	1.01
Kazakhstan	113	665	75	51	0	13	58	55	0.76	4.14
Kyrgyzstan	14	851	12	4	3	1	13	5	0.33	4.79
Taiikistan	191	535	102	34		15	85	36	0.36	2.43
Turkmenistan	534	561	300	91		141	143	106	0.37	0.75



2018/19 Supply and Use of Cotton by Country (cont'd) 15 March 2019

	Area	Yield	Prod	Beg Stocks	Imports	Cons	Exports	End Stocks	S/U *	S/MU **
	000 Ha	Kgs/Ha			000 Metric Tonnes				Ratio	Ratio
Austria				1	3	3		1	0.18	0.18
Azerbaijan	143	672	96	34		20	66	44	0.50	2.13
Belarus				4	11	11		4	0.34	0.34
Belgium				1	7	3	4	1	0.19	0.43
Bulgaria	1	324	0	1	6	6	0	1	0.17	0.17
Czech Rep.				0	2	2		0	0.04	0.04
Denmark					0	0			0.12	
Estonia										
Finland										
France				2	9	8	1	1	0.14	0.17
Germany				9	24	21	4	8	0.31	0.36
Greece	243	1,132	275	0	7	16	265	0	0.00	0.01
Hungary				0				0		
Ireland				0	0	0		0	0.11	0.11
Italy				8	34	32	2	8	0.22	0.23
Latvia				0	0	0	0	0	0.03	0.04
Lithuania				0				0		
Moldova				1	2	2		1	0.34	0.34
Netherlands				0	4	4		0	0.11	
Norway										
Poland				1	2	2	0	1	0.60	0.63
Portugal				14	30	31	1	14	0.45	0.45
Romania				0	0	0		0	0.10	0.10
Russia	1	523	1	10	39	39	0	10	0.25	0.25
Slovak Rep.										
Spain	70	933	65	38	3	3	52	37	0.54	11.08
Sweden				0	0	0		0		
Switzerland				0	1	0	0	0	0.19	0.33
Ukraine				0	2	2		0	0.26	0.26
United Kingdom				0	0	0		0	0.12	0.12
Former Yugoslavia				1	7	7		1	0.19	0.19
Europe	772	673	520	127	217	52	545	221	0.37	4.24
Including EU-28	314	1,086	341	76	133	134	299	73	0.17	0.55
China	3,367	1,794	6,040	8,536	2,000	8,450	30	8,066	0.95	0.95
Taiwan				21	175	175		21	0.12	0.12
Hong Kong				30	0	0	0	30	51.93	
Sub Total	3,367	1,794	6,040	8,587	2,175	8,625	30	8,117	0.93	0.94
Australia	280	2,071	580	437		6	895	116	0.13	19.28
Indonesia	8	618	5	72	867	872		72	0.08	0.08
Japan				8	56	57		7	0.11	0.11
Korea, D.R.				1	5	5		1	0.24	0.24
Korea, Rep.				49	185	185		49	0.27	0.27
Malaysia				43	177	141	36	43	0.24	0.31
Philippines	0	570	0	5	13	13		5	0.35	0.35
Singapore				0	6		6	0	0.05	
Thailand	2	520	1	56	264	260		61	0.23	0.23
Vietnam	2	754	1	219	1,632	1,572		279	0.18	0.18
E. Asia	308	1,925	594	893	3,205	3,118	937	636	0.16	0.20
Afghanistan	36	387	14	5		4	11	4	0.25	0.90
Bangladesh	45	768	35	422	1,729	1,754		433	0.25	0.25
India	12,200	457	5,576	1,993	459	5,315	800	1,914	0.31	0.36
Myanmar	239	637	152	69	55	207	0	69	0.33	0.34
Pakistan	2,682	630	1,690	808	702	2,346	46	808	0.34	0.34
Sri Lanka				0	2	2		0	0.12	0.12
S. Asia	15,205	491	7,469	3,299	2,947	9,630	1,186	3,229	0.31	0.34
Iran	71	710	50	52	71	116		58	0.50	0.50
Iraq	9	362	3	2	5	8		2	0.24	0.24
Israel	7	1,485	10	2			10	2	0.24	
Syria	18	958	18	9		14	4	9	0.49	0.61
Turkey	508	1,944	988	918	680	1,629	84	873	0.51	0.54
Sub Total	616	1,737	1,070	986	765	1,778	97	947	0.51	0.53
World Total	33,023	784	25,881	18,318	9,775	26,887	9,775	17,312	0.64	0.64

*/ Ending stocks divided by consumption plus exports.

Subtotals and total include countries not shown.

**/ Ending stocks divided by consumption.



Stay current on ICAC news, trends and developments from throughout the cotton value chain by following ICAC on Twitter [@ICAC_cotton](https://twitter.com/ICAC_cotton)



Check out the new ICAC website at www.icac.org where you can also subscribe for publications and find documents from the 77th Plenary Meeting of the ICAC.



INTERNATIONAL COTTON ADVISORY COMMITTEE