Weekly Publication of

Cotton Association of India

COTTON STATISTICS & NEWS

Edited & Published by Amar Singh

2016-17 • No. 10 • 7th June, 2016 Published every Tuesday

Cotton Exchange Building, 2nd Floor, Cotton Green, Mumbai - 400 033
Phone: 30063400 Fax: 2370 0337 Email: cai@caionline.in
www.caionline.in

A Perspective on Cotton Crop in India – Opportunities and Challenges

GUEST COLUMN

Shri. Rajendra Barwale
Managing Director, Mahyco

Shri. Rajendra Barwale is the Managing Director of Mahyco (Hybrid Seeds Company Private Limited), a well known innovative seed company in India. Taking the initiative to bringing in the best of the seed technologies to Indian agriculture, Mahyco introduced India's first Biotech crop Bt-cotton, in collaboration with Monsanto in 2002, helping the country to become the global leader in cotton production and exports. Believing that science and technology can tackle the challenges facing Indian agriculture, he has built a Research and development facility of global standard and several innovative technology solutions are being worked upon and are in various phases of regulatory evaluation. Under his stewardship, Mahyco has expanded rapidly to reach and make a difference to the lives of over 10 million farming families in the country.

Indian agriculture has made remarkable progress from the difficult time of depending on food grains imports to feed the nation during the early decades of Independence. We have become self sufficient in food grains production with production improving from 50 mil.mt per annum in the fifties to over 260 mil.mt in 2013/14. There are several achievements to the credit of our farmers in the last few decades. Most noteworthy amongst these achievements is the fact that from being a minor player, we have joined the club of largest producers of many crops globally. Cotton is one such great success story in the recent history of Indian agriculture.

Cotton revolution in India

Cotton is and has been a very important commercial crop in India for a long time. Cotton cultivation in India expanded during the British raj and there are a number of references to the same. After Independence, while cotton remained a major cash crop, the productivity remained low, making cotton relatively less remunerative, compared to food grains whose productivity was impacted positively by the green revolution.

While the area under cotton cultivation remained around 7 to 8 million hectare, it took about five decades for the yield to move up from about 100 to 300 kg lint per ha., by the beginning of this century. One of the reasons for this low productivity was the significant damage caused to

the cotton crop by the belligerent bollworm insect. Apart from yield, this affected the quality of fibre also. While the key reason for the improvement in productivity was the introduction of hybrid cotton. It was in the year 2002, that India introduced its first biotech crop – Bt cotton, with an inbuilt protection against bollworms. Bt cotton has the gene from common soil bacterium called Bacillus thuringiensis, which has been in use in the spray form and recommended on many organic crops. Bt cotton helped to revolutionise cotton production in India. Farmers perceived the economic advantages of Bt cotton early, resulting in this technology adoption having the fastest rate of any agricultural technology adoption anywhere in the world.

Following are some of the key achievements in the cotton production in India since the introduction of Bt cotton.

- Cotton production increased from 136 lac bales in 2002 to 375 lac bales in 2013/14 (an increase of 172%).
- Cotton acreage increased from 75 lac hectares to over 115 lac hectares (an increase of 53%) as the relative profitability of cotton cultivation improved with use of this technology.
- Lint cotton yield increased from 302 kg to 552 kg per ha, (an increase of 83%) in 2013/14. While it took five decades for increase in productivity of 200 kg lint per ha, prior to the introduction of Bt cotton; it took only five years for the same by using Bt technology.
- We became the second largest exporter from being the net importer before the introduction of Bt cotton.
- Chemical pesticides consumption for bollworm control came down from 6599 mt in 2003 to 222 mt in 2011.
- Cotton seed oil production increased from 4.88 lac mt in 2002 to 13.05 lac mt in 2013/14, helping to augment the domestic edible oil availability.
- As some of the independent socio-economic studies have shown, with the increased income from Bt cotton farming , farmers improved the quality of their life through better and increased food intake, better investments in education and health, more time for the family, less risk of crop failure due to insect attack and less exposure to health hazards by exposure to chemical spraying.

India today produces about 25% of world's cotton output, compared to only 12% during 2002, making India the largest cotton producer in the world as per ICAC during 2015.

Technology brought in several collateral benefits. Apart from adding an additional farm income of USD 16.7 billion (equivalent to over Rs.110,000 Cr) between 2002 and 2013* increased availability of quality cotton positively impacted the cotton textile industry. Cotton textile industry's consumption grew from 170 lac bales to 260 lac bales per annum. This had a very favourable impact on the employment sector in the cotton industry, making it second largest employment generator in the country today.

A vision document for the Textile and Apparel sector for the year 2024/25, has recently projected that the Indian domestic consumption of textile would grow at 12% per annum and export may grow at 20% per annum. If we have to realise this vision, domestic availability of cotton needs to go up by over two- and-a-half times the current volume during next nine years. This will be a great opportunity for domestic cotton production to grow, but there would also be challenges.

Opportunities

Though we have climbed a new high in cotton production in the last few years, we can still do a great deal to improve the productivity, and thereby farmers' income. Our cotton productivity continues to be one of the lowest amongst the cotton growing countries. Even the world average productivity is at 781 kg lint/ha as compared to 534 kg lint/ha in the country.

There are a number of ways we can increase our cotton productivity further. Some of them are

1. Increased cropping intensity: Density of our plant population in cotton production needs to be improved substantially. Currently, we plant an average of about 5500 plants per acre. We can increase the same to 11000 plants per acre under the high density planting approach, helping to improve yield substantially. This can be achieved through

intensive education about the agronomic practices to be adopted, breeding for development of suitable germplasm, etc. The seed industry has to take up this challenge and deliver the suitable planting materials to farmers and provide extension.

2. Irrigation: Rainfed cotton cultivation is one of the reasons for low productivity. Uncertain behaviour of the monsoon impacts cotton productivity. Our yield levels are higher than the global average in some of the irrigated cotton areas. We should try to achieve higher productivity levels by using modern irrigation methods particularly in rainfed areas of Maharashtra and Andhra Pradesh. This will help to not only improve the crop yield , but also minimise the farmers' distress due to monsoon failures.

3. Technology: The labour cost for various operations in cotton crop cultivation has gone up steeply during the last few years, and accounts for 40% of the cost. Besides the cost, timely availability of labour is another issue before the farmers. Using labour saving technologies like mechanised planting and harvesting, replacing weeding labour by using herbicide tolerant technology, would further help to improve the yield and lower the cost of production.

Challenges

While there is a significant opportunity for improving productivity and total production of cotton in India, we need to overcome the following key challenges:

1. Profitability of crop: With depressed international commodity prices and increasing costs, farm profitability of cotton is on the decline. This situation has been accentuated by the failure of monsoon and increasing intensity of pests like whitefly, etc. Increased risk perceptions to farm profitability, deters farmers from using better inputs and improved farm practices. Ironically, farmers need to adopt better practices to reduce the costs when the external environment is unfavourable. Combined effort by all the stakeholders in educating the farmers and bringing in technology would be helpful in this.

2. Pace of Innovations: As we need to move to more intensive farming, famers need to have access to better improved innovations in planting materials and agronomic practices which are cost effective and productivity enhancing. We need better germplasm that enables high density planting, germplasm providing tolerance to emerging pest threats like whitefly, etc, and scale neutral and cost effective machines for use by small and marginal farmers. The current developmental efforts to bring about these innovations need to be speeded up.

3. Regulatory uncertainties: The cotton seed industry is highly regulated and is under multiple regulations like The Essential Commodities Act, etc While suitable regulations are desirable for quality assurance, excessive control deters entrepreneurship and investments, which is detrimental to the long term interest of farmers.

Besides, our regulatory approach to the introduction of crop biotechnology products has been unclear and inconsistent over the past few years. Biotechnology research involves a long gestation period of 10 to 12 years, in addition to requiring large investments. Added to the current unpredictable policy environment is the new Cotton Seed Price Control Order 2015. These regulatory uncertainties discourage, rather than encourage the confidence of the industry to invest more in new technologies. There is an urgent need to review these regulatory frameworks in the larger interest of the cotton industry and farmers.

With the right policy and regulatory environment, the Indian cotton industry can scale new heights in the coming years, meeting the national requirements and also acting as a major exporter of fibre, cloth, apparels.

Reference :

* *GM Crops : Global Socio economic and Environmental impacts : 1996-2013 by Graham Brookes and Peter Barfoot, PG Economics ltd., UK , published in May 2015.*

Courtesy : Cotton India 2015-16

(The views expressed in this column are of the author and not that of Cotton Association of India)

Bt-Cotton Twenty20?

(Dr. K.R. Kranthi, Director of Central Institute for Cotton Research (CICR), Nagpur has completed his Ph.D in Entomology from IARI, New Delhi. He has more than 20 years of experience in the field of cotton research.)

EXPERT's Column

Dr. K.R. Kranthi

Two high level meetings were held recently on 17th May and 19th May 2016. One was chaired by the Director General, ICAR (Indian Council of Agricultural Research) and the other was chaired by the Director General CSIR (Council for Scientific and Industrial Research). Both meetings discussed a common topic – 'public sector initiatives on GM (genetically modified) crops'.

While the ICAR meeting discussed 17 crops for seven GM traits, the CSIR meeting was focussed on *Bt*-cotton events developed by the public sector institutions. *Bt*-cotton contains cry (crystal) genes derived from *Bt* (*Bacillus thuringiensis*) and inserted into the cotton plant genome (genetic material of the cell) to provide protection against bollworms.

The agenda for these meetings was actually prompted by the pink bollworm. Nobody is in doubt that the bollworms are coming back with a vengeance. The challenge before the country is clear. The underlining concern was 'how best can we sustain the bollworm control efficacy of *Bt*-cotton until 2020?' Why 2020? Because, the closest date for a possible regulatory approval and possible commercialisation of any new *Bt*-cotton technology in India, is not likely before 2020.

New Technologies?

The CSIR meeting narrowed down two options –stacking two *Bt*-toxins 'Cry1Ac and Cry1EC' and use of pink bollworm pheromone technologies of CSIR-IICT (Indian Institute of Chemical Technology) Hyderabad. The Cry1EC *Bt*-cotton event developed by NBRI (National Botanical Research Institute) Lucknow was supposedly found to be effective in killing the pink bollworm. The Indian company JK Agri Genetics Ltd., stacked their own Cry1Ac *Bt*-event with Cry1EC. NBRI also proposed stacking of *Bt*-cotton with another exciting GM cotton event for whitefly control using a *tma12* gene patented by NBRI.

Another prospect is Monsanto's new Bollgard-III® (BG-III) which contains a new gene vip3A (Vegetative insecticidal protein of *Bt*) stacked with the existing Bollgard-II® (BG-II), which contains two *Bt*-toxins called Cry1Ac+Cry2Ab2 for sustainable control of bollworms. The stacked JK *Bt*-cotton and BG-III are under regulatory trials and may take at least another 3-4 years for commercialisation. However, at this point of time it is not clear whether any of these two *Bt*-technologies can effectively control the 'BG-II resistant-pink bollworm'.

Thus far, there are no published scientific evidences, not even preliminary, to indicate that any of these two *Bt*-proteins i.e Cry1EC or VIP3A is highly toxic to the pink bollworm. So, for sure, at least until 2020, farmers will be unsure of the field efficacy of *Bt*-cotton in controlling bollworms. Unfortunately, the possible effective GM options for bollworm control after 2020 are also 'not in the visible range' as of today.

'Pheromone based control of pink bollworm' was one of the options discussed in the meeting. Female moths of the pink bollworm release a chemical into the air to attract male moths. This chemical commonly called 'gossyplure' is a sex pheromone. Gossyplure can be used to set up 5-6 pheromone traps per hectare to monitor the onset and intensity of the worms, so that control measures can be taken up when 8 moths are trapped per trap per night for three consecutive nights.

Alternatively, 20-30 traps per hectare can be used for mass trapping. But this technique was not found to reduce pest infestation significantly. Another method is to use the pheromone all over the field at about 1000 spots per hectare to confuse the male moths from finding females. But again this technique apart from being expensive, works only when the pink bollworm population is low in the fields. Sterile Insect Technique has also been

COTTON ASSOCIATION OF INDIA
Established 1921

COTTON STATISTICS & NEWS

ADVERTISEMENT RATES

effective from April 2015

RATES PER INSERTION

	For CAI Members	For Non-Members
Full Page	5,000	5,500
Half Page	3,000	3,300

RATES FOR FOREIGN ADVERTISERS

Full Page	US $ 100
Half Page	US $ 60

Special Offer

Pay for	For CAI Members	For Non-Members
8 Insertions, get 12 (Full Page)	40,000	45,000
8 Insertions, get 12 (Half Page)	24,000	26,000
3 Insertions, get 4 (Full Page)	15,000	18,000
3 Insertions, get 4 (Half Page)	9,000	10,000

Mechanical Data:

Full page print area: 172x250 mm (Non Bleed Ad)
210x297 mm (+ Bleed)

Half page print area : 172x125 mm (Non Bleed Ad)
148x210 mm (+ Bleed)

To advertise, please contact:

Shri Divyesh Thanawala, Assistant Manager
Cotton Association of India,
Cotton Exchange Building, 2nd Floor,
Cotton Green (East), Mumbai – 400 033
Telephone No.: 3006 3404 Fax No.: 2370 0337
Email: publications@caionline.in

used in the USA to control pink bollworms. Lab reared male moths are sterilised with radiation and released in fields in large numbers to compete with wild female moths for mating. Mating of the sterile male moths with wild female moths does not result in viable offspring. This technique has never been explored in India.

Mystery Of The Pink Bollworm

Pink bollworm wasn't a major concern for 35 years before 2015 in India. How then did it appear now? Though it occurs as a small peak during flowering, pink bollworm is mainly a late season pest that affects most after the 5th month on long duration cotton of more than 6 months duration. Short to medium duration (5-6 months) cotton invariably escapes pink bollworm. Irrigated cotton in India extends for 6-9 months. It is here that pink bollworm survives on the long duration cotton. The longer the duration, the better it is for the worm to survive in multiple cycles.

For 20 years from 1981 to 2001, insecticides called pyrethroids were used by farmers to effectively control the pink bollworm. *Bt*-cotton came in 2002 and was effective until 2015 in keeping the bollworms under control. Pink bollworm is surviving happily on *Bt*-cotton now and farmers were not resorting to pyrethroid sprays. Irrigated regions of Gujarat, MP, AP and Maharashtra will be under the grip of pink bollworm as of now. North India is just a year or two away from the pink bollworm attack.

What do we do now to manage the pink bollworm? Grow short-medium duration cotton to escape the pest or resort to insecticide sprays on long duration cotton? I prefer short duration cotton as a long term solution. Yields can be increased with short duration cotton under high crop density of 40,000 to 80,000 plants per acre as is done in Australia, China, USA, Brazil, Mexico and several other countries which harvest 2-4-fold more than India.

In several meetings that I attended over the past few months, I found that there is a lot of discomfort with the idea of short duration cotton in India. Many seed companies feel that their hybrids perform best when grown for a longer duration. Many contend that farmers would invariably extend the crop with irrigation, especially when there are cyclones or drought.

Beyond doubt, hybrid cotton performs best under long duration where it needs to produce larger number of bolls over a longer time period. This is necessary, because of the low density of 4000 to 6000 thousand plants per acre recommended for hybrid cotton.

More than 95% of India's area is currently under *Bt*-cotton hybrids. With this background, if the current system continues, pink bollworm will survive and feast on the long duration hybrid cotton. Therefore, options of pheromone traps and biological control using a small wasp called *Trichogramma bactrae*, become very important. Also as mentioned in my previous articles, it is important that farmers must not use excess urea at vegetative stage of the crop and choose jassid tolerant varieties/hybrids to avoid insecticides such as monocrotophos, acephate, imidacloprid, thiomethoxam etc., which are known to extend the crop duration. But the best option would be to shift over to short duration cotton.

GM-Cotton T20 Toss

While the third week of May witnessed high level meetings on GM cotton, an important gazette notification on *Bt*-cotton licensing agreements, dated 18th May 2016 was released by the Ministry of Agriculture. However the gazette was suspended just four days after it was released. The gazette is now placed on the Ministry's website for 90 days inviting comments and discussion before its future is decided. The reactions to the gazette and the actions thereafter remind you of a typical T20 cricket match, all in short quick spells. But in this case the result went for a toss.

Prof. Ashok Gulati, Infosys Chair Professor for Agriculture at the Indian Council for Research on International Economic Relations, said that "the Centre should fully roll-back recent moves at controlling prices and royalties for *Bt*-cotton seeds" Prof Gulati was scathing in his comments on the gazette in his recent article 'Genetically modified technology: Fiasco in the name of the farmer' published on 1st June 2016 in the *Indian Express*.

But in my view, the relevance of the gazette is not actually about the price of *Bt*-cotton seeds. It is about new rules that could ensure a level playing field. It is also about paying constant royalties, irrespective of the progressively depreciating trait value, such as the one for insect resistance. Should

the farmer continue to pay the same royalty for trait value year after year, even if the efficacy of the trait depreciates or fails after a few years? The gazette is about restrictive agreements that keep licensees captive without the option of marketing fresh technologies from new licensors. It is about strengthening the public sector varieties by providing them access to all GM-technologies.

All of the 14 *Bt*- cotton growing countries in the world except India have *Bt* in their public sector varieties and not in private hybrids as in India. If *Bt*-varieties were also available along with *Bt*-hybrids, India would have benefitted immensely. The seed cost could have been highly competitive, given the low cost of varietal seed production as compared to the 10-fold higher hybrid seed production cost. Short duration varieties under high density would have given high yields at low cost of production. But *Bt*-hybrids had a free run for full 14 years in India without any competition from *Bt*-varieties. This is not a level playing field. Neither is this current set-up of restrictive licensing or restrictive conditions in the licenses, in the interest of the farmer or the country. The gazette is open for comments now on the Ministry of Agriculture website.

The GM-Cotton Gazette

As per the notification S.0.1813 (E) dated 18th May 2016, titled, 'Licensing and Formats for GM Technology Agreement Guidelines, 2016', all GM technologies would be essentially available to all companies and institutions in India on common terms of licensing agreements. The gazette prescribes that new GM technologies shall be licensed at a maximum ceiling of Rs. 25 lakhs or less as upfront fees and a royalty of not more than 10% of seed sale price, for the initial period of five years from commercialisation. From the sixth year onwards, it shall depreciate every year by 10% of initial trait value.

The new gazette defines that the "commercial life of the GM Traits is considered as 10 years subject to review in case of efficacy of trait is lost earlier". As per clause 4(3) of the gazette "any GM Trait which loses its efficacy as reported by States and verified by the Indian Council of Agricultural Research (ICAR) shall not be eligible for any trait value whatsoever" even if it is under patent.

One clause that appealed to me the most was that all GM technologies would be essentially available to all companies and institutions in India on common terms of licensing agreements. This would make available all GM technologies in the best of varieties and hybrids of the country. The best elite cotton varieties and hybrids of public sector institutions such as the ICAR and Agricultural Universities would also be available to farmers as *Bt*-cotton varieties at highly affordable prices to create a tough competition for the private seed companies. Farmers can reuse farm saved seeds of these varieties in the ensuing seasons.

Thus far, all the *Bt*-technology developers and seed companies preferred only 'hybrids' over 'varieties' for *Bt* conversion, to ensure that farmers had to buy fresh *Bt*-hybrid seeds every year from the market. Therefore until now, Indian farmers had access only to *Bt*-cotton hybrids, whereas all across the world, farmers cultivate open pollinated *Bt*-varieties through agreements signed with multinational companies restricting them from any subsequent use of farm-saved seeds. While farm saved seeds of 'varieties' can be used by farmers for sowing in the subsequent years, sowing of farm saved seeds from a hybrid field, does not result in a homogenous crop. Within 1-2 years from now, under the influence of the new gazette, for the first time Indian farmers could gain access to open pollinated *Bt*-cotton varieties in addition to the existing *Bt*-hybrids.

Maharashtra and Telangana are the only two states which have more than 90% cotton area under rainfed conditions. Varieties, especially the short duration compact types under high density cultivation are better suited for rainfed conditions as compared to the existing *Bt*-hybrids which give relatively low yields in these two states. In the absence of any restrictions on pyramiding of various approved GM technologies as authorised by the new gazette, excellent multi-gene *Bt*-cotton varieties can now be developed by public sector institutions to enhance sustainable efficacy of *Bt*-cotton by intelligent pyramiding of toxins with different modes of action.

India Has Half Of The Global *BT*-Cotton Area

Having 38% of the global area under cotton cultivation, India is the worlds largest market for cotton seed. The global business of *Bt*-cotton is spread in 226 lakh hectares. Out of this area, China and Pakistan have their own *Bt*-cotton. Thus only 160 lakh hectares of global area is open for all *Bt*-cotton technologies provided by several multinational companies. Indian *Bt*-cotton area

with 115 lakh hectares accounts for 72% of the global *Bt*-cotton business.

Interestingly this 72% global share of *Bt*-cotton is entirely under the Bollgard technologies of Monsanto. So far six *Bt*-cotton technologies have been approved by the Ministry of Environment for commercial cultivation in India. However, only Bollgard-II® *Bt*-cotton is being cultivated extensively in almost 90% of the cotton area in the country, marketed by 49 Indian seed companies, under licence agreements from Monsanto. The trait value or royalty thus far has been about 20% of the sale price of *Bt*-cotton hybrid seeds.

Over the past few years until 2015, a packet of 450g Bollgard-II seeds was being sold for Rs. 930. The Central Government issued orders on 8th March 2016, under the Cotton Seeds Price (Control) Order, 2015, to fix the maximum sale price for a packet of 450g seeds of Bollgard-II at Rs. 800, including royalty of Rs 49. Reducing seed price is good, but availability of *Bt*-technology in varieties holds the key to lowering production costs to obtain high yields.

With such a large share of 72% in the global open market *Bt*-cotton area, India is a great destination for cotton seed business. No company can afford to ignore such a huge business or stop investments on new technologies for such a large market. The new guidelines have very strong provisions for new innovators, technology providers and licensors in a fair manner, only to ensure that monopoly and over-expoitation are minimised under a level playing field.

The gazette guidelines on compulsory licensing agreements and dynamic royalty on trait value over time may not be comfortable for the technology developers, who would like to dictate their business dealings and operations to ensure complete control on the commercial market of their GM technology to maximise profits and returns on their investment.

Therefore, there is an opinion that the gazette may discourage private investment on development GM technologies for agriculture. But this seems unlikely. After all, India has the largest cotton seed market worth about Rs. 4800 crores covering an area of 120 lakh hectares with only China, USA and Pakistan placed second at about 30-34 lakh hectares each. It is unlikely that any private company would want to vacate such a huge market, irrespective of the guidelines imposed such as those in the new gazette.

Moreover, there are new *Bt*-cotton and herbicide-resistant-cotton technologies from Monsanto, Bayer, Dow and JK seeds that are in the final stages of regulatory trials in India and may take 1-2 years from now to be approved by the environment ministry. These private companies may still be able to commercialise their new technologies after getting approval from the environment ministry and licence them, to earn good returns on their investment. It is not clear as to how and why a competitive level playing field would discourage private investment on new technology development.

Conclusion

Nevertheless, the context of the current predicament points out to the ephemeral nature of the so-called high valued agri-technologies such as chemical pesticides and insect resistant GM crops. These technologies look highly attractive in the short term, but at some point of time push farming into uncertainty and risk. Insecticides and *Bt*-cotton belong to this league. Insect resistance to chemicals and *Bt*-toxins can render cotton farming vulnerable and defenceless. Frequent inevitable instances of insect defiance to chemicals and *Bt*-toxins also prove the transience of short term approaches.

Short term solutions are like googlies and sixers in a T20 cricket match. Rookies and bookies find them most attractive, seasoned thinkers will not. But needless to say, in the absence of robust long term solutions, all stakeholders including scientists are forced into the 'short term quagmire', knowing well that these are transient.

In this context, it is important that the investment on research in the public sector institutions must be properly prioritised, channelised and strengthened to develop competitive technologies that can be made available to farmers at an affordable price thereby combating the profit oriented market of the private technology developers.

Good technologies should ensure long term sustainability. Therefore, it is important for cotton scientists to set up robust 'chemical-free pest management systems' as urgently as possible, to restore natural control in cotton fields for robust, durable and sustainable crop health management.

(The views expressed in this column are of the author and not that of Cotton Association of India)

Production of Fibres

(In Mn. Kg)

As on	Raw Cotton (Oct.-Sept.)	Synthetic			Cellulosic	Sub Total
		PSF	ASF	PPSF	VSF	
2005-06	4097	628.15	107.81	3.08	228.98	968.02
2006-07	4760	791.99	97.13	3.52	246.83	1139.47
2007-08	5219	879.61	81.23	3.43	279.90	1244.17
2008-09	4930	750.12	79.50	3.44	232.75	1065.81
2009-10	5185	872.13	90.45	3.38	302.09	1268.05
2010-11	5763	896.33	79.48	3.74	305.10	1284.65
2011-12	5899	829.74	77.71	4.08	322.64	1234.17
2012-13	--	848.05	73.59	4.26	337.49	1263.39
2013-14	--	845.95	96.12	3.71	361.02	1306.80
2014-15 (P)	--	881.56	92.54	4.62	365.17	1343.89
2015-16 (P)	--	893.95	106.81	4.70	341.91	1347.37
2013-14 (P)						
April	--	65.66	8.26	0.27	26.39	100.58
May	--	70.67	8.54	0.31	30.80	110.32
Jun	--	71.56	8.08	0.30	30.51	110.45
Jul	--	72.26	7.78	0.34	30.97	111.35
August	--	74.67	8.26	0.32	31.44	114.69
September	--	72.29	8.58	0.22	29.58	110.67
October	--	72.67	8.63	0.28	30.98	112.56
November	--	68.28	8.28	0.31	29.96	106.83
December	--	70.68	8.62	0.31	30.88	110.49
January	--	70.40	6.76	0.32	30.86	108.34
February	--	64.87	7.01	0.33	27.61	99.82
March	--	71.94	7.32	0.40	31.04	110.70
2014-15 (P)						
April	--	70.24	8.52	0.38	29.91	109.05
May	--	70.79	7.48	0.36	31.30	109.93
June	--	70.62	8.32	0.36	28.62	107.92
July	--	81.56	6.26	0.33	30.72	118.87
August	--	74.63	8.67	0.36	30.68	114.34
September	--	68.45	7.82	0.40	30.14	106.81
October	--	72.14	8.35	0.36	31.16	112.01
November	--	70.08	7.57	0.40	30.21	108.26
December	--	75.14	8.46	0.44	31.58	115.62
January	--	79.00	6.04	0.40	31.47	116.91
February	--	73.32	7.29	0.40	28.07	109.08
March	--	75.59	7.76	0.43	31.31	115.09
2015-16 (P)						
April	--	73.62	9.45	0.35	28.62	112.03
May	--	75.55	9.50	0.30	18.42	103.77
June	--	67.17	7.88	0.31	19.50	94.86
July	--	70.75	9.15	0.40	29.70	110.00
August	--	74.07	9.35	0.47	30.63	114.52
September	--	74.24	7.95	0.46	30.42	113.07
October	--	76.66	9.23	0.38	31.34	117.61
November	--	74.98	8.15	0.30	30.72	114.15
December	--	76.65	9.36	0.45	31.49	117.95
January	--	79.10	9.40	0.46	31.33	120.29
February	--	73.52	8.58	0.42	28.07	110.59
March	--	77.64	8.81	0.41	31.67	118.53

(P)= Provisional

Source : Office of the Textile Commissioner

UPCOUNTRY SPOT RATES

(₹\Quintal)

May 2016

2015-16 Crop

Growth	P/H/R	P/H/R	GUJ	KAR	M/M	P/H/R	M/M/A	M/M/A	P/H/R	M/M/A	M/M/A	P/H/R	M/M/A	GUJ	M/M/A/K	GUJ	M/M/A/K	M/M/A/K/T/O	A/K/T/O	M(P)/K/T
G. Standard	ICS-101	ICS-201	ICS-102	ICS-103	ICS-104	ICS-202	ICS-105	ICS-105	ICS-105	ICS-105	ICS-105	ICS-105	ICS-105	ICS-105	ICS-105	ICS-105	ICS-105	ICS-105	ICS-106	ICS-107
Grade	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine
Staple	22 mm	22 mm	22 mm	23 mm	24 mm	26 mm	26 mm	26 mm	27 mm	27 mm	27 mm	28 mm	28 mm	28 mm	29 mm	29 mm	30 mm	31 mm	32 mm	34 mm
Micronaire	5.0-7.0	5.0-7.0	4.0-6.0	4.0-5.5	4.0-5.5	3.5-4.9	3.0-3.4	3.5-4.9	3.5-4.9	3.0-3.4	3.5-4.9	3.5-4.9	3.5-4.9	3.5-4.9	3.5-4.9	3.5-4.9	3.5-4.9	3.5-4.9	3.5-4.9	3.0-3.8
Strength/GPT	15	15	20	21	23	26	25	25	26	26	26	27	27	27	28	28	29	30	31	33
2	8998	9139	5568	7311	8548	9645	8127	8998	9926	8436	9251	10067	9561	9561	9786	9758	10095	10404	10657	13919
3	8998	9139	5624	7367	8605	9645	8183	9055	9926	8492	9308	10067	9617	9617	9842	9814	10151	10461	10714	13919
4	8998	9139	5624	7367	8605	9645	8155	9026	9926	8464	9280	10067	9589	9589	9814	9786	10123	10432	10686	13919
5	9055	9195	5624	7367	8605	9701	8155	9026	9983	8464	9280	10123	9589	9589	9814	9786	10123	10432	10686	13919
6	9055	9195	5624	7367	8605	9701	8155	9026	9983	8464	9280	10123	9589	9589	9814	9786	10123	10432	10686	13919
7	9055	9195	5624	7367	8605	9701	8155	9026	9983	8464	9280	10123	9589	9589	9814	9786	10123	10432	10686	13919
9	9055	9195	5624	7367	8605	9701	8127	9026	9954	8464	9280	10095	9589	9589	9814	9786	10123	10432	10686	13919
10	9055	9195	5624	7367	8605	9673	8127	9026	9926	8464	9280	10067	9589	9589	9814	9786	10123	10432	10686	13919
11	9055	9195	5568	7367	8605	9673	8127	9026	9926	8464	9280	10067	9589	9561	9814	9758	10123	10432	10686	13919
12	9055	9195	5568	7367	8605	9673	8127	9026	9926	8464	9280	10067	9589	9589	9814	9786	10123	10432	10686	13919
13	9055	9195	5568	7367	8605	9673	8127	9026	9926	8464	9280	10067	9589	9589	9814	9786	10123	10432	10686	13919
14	9055	9195	5568	7367	8605	9673	8127	9026	9926	8464	9280	10067	9589	9589	9814	9786	10123	10432	10686	13919
16	9055	9195	5652	7424	8633	9673	8183	9083	9926	8520	9336	10067	9645	9645	9870	9814	10179	10489	10686	13919
17	8970	9111	5708	7480	8689	9701	8211	9139	9954	8577	9420	10095	9701	9673	9926	9842	10208	10489	10686	13919
18	8970	9111	5736	7536	8745	9729	8239	9167	9983	8605	9448	10095	9729	9701	9983	9898	10236	10489	10686	13919
19	8970	9111	5736	7536	8745	9758	8239	9195	10011	8605	9505	10123	9786	9729	10039	9926	10264	10517	10686	14060
20	8970	9111	5793	7592	8773	9758	8239	9251	10011	8605	9533	10123	9786	9729	10039	9926	10264	10517	10686	14060
21	8970	9111	5793	7592	8773	9786	8239	9280	10039	8605	9561	10151	9814	9758	10067	9954	10292	10545	10686	14060
23	9083	9223	5793	7592	8858	9842	8352	9336	10095	8717	9617	10208	9898	9814	10095	10011	10320	10573	10686	14060
24	9167	9308	5793	7592	8858	9926	8408	9392	10179	8773	9673	10292	9954	9870	10151	10067	10348	10601	10714	14060
25	9195	9336	5877	7677	8942	10011	8492	9420	10264	8858	9701	10376	9983	9898	10208	10095	10376	10629	10742	14341
26	9195	9336	5933	7733	8998	10067	8577	9476	10320	8942	9729	10432	10011	9954	10236	10151	10461	10714	10826	14622
27	9223	9364	5961	7761	9026	10123	8633	9533	10376	8998	9786	10489	10067	10011	10292	10208	10517	10742	10882	14679
28	9223	9364	5961	7761	9026	10179	8633	9533	10432	8998	9786	10545	10067	10011	10292	10208	10517	10742	10882	14679
30	9223	9364	6102	7902	9167	10320	8773	9617	10573	9139	9870	10686	10208	10151	10432	10348	10657	10882	11023	14679
31	9223	9364	6186	7986	9167	10320	8773	9617	10573	9139	9870	10686	10208	10151	10432	10348	10657	10882	11023	14679
H	**9223**	**9364**	**6186**	**7986**	**9167**	**10320**	**8773**	**9617**	**10573**	**9139**	**9870**	**10686**	**10208**	**10151**	**10432**	**10348**	**10657**	**10882**	**11023**	**14679**
L	**8970**	**9111**	**5568**	**7311**	**8548**	**9645**	**8127**	**8998**	**9926**	**8436**	**9251**	**10067**	**9561**	**9561**	**9786**	**9758**	**10095**	**10404**	**10657**	**13919**
A	**9074**	**9215**	**5740**	**7520**	**8754**	**9819**	**8296**	**9206**	**10079**	**8640**	**9469**	**10206**	**9766**	**9736**	**9993**	**9931**	**10260**	**10538**	**10736**	**14106**

H = Highest L = Lowest A = Average

COTTON ASSOCIATION OF INDIA
Established 1921

COTTON STATISTICS & NEWS

SUBSCRIPTION RATES

Effective from 1st April 2014

FOR NON-MEMBERS

ANNUAL SUBSCRIPTION **Rs.4,000/-**
(for 52 issues) (inclusive of Rs.1,000/- courier cost)

FOR MEMBERS

ANNUAL SUBSCRIPTION **FREE**
Rs.1,000/- for courier cost

Special Offer

Subscription for three years **Rs.7,500/-***
* Courier Charges Rs.1000/- per year extra

To subscribe, please contact:

Ms. Sudha B. Padia
Cotton Association of India,
Cotton Exchange Building, 2nd Floor, Cotton Green (East), Mumbai – 400 033
Telephone No.: 3006 3405 Fax No.: 2370 0337 Email: publications@caionline.in

UPCOUNTRY SPOT RATES

(Rs./Qtl)

Sr. No.	Growth	Grade Standard	Grade	Staple	Micronaire	Strength /GPT	Spot Rate (Upcountry) 2015-16 Crop MAY-JUNE 2016 30th	31st	1st	2nd	3rd	4th
	Standard Descriptions with Basic Grade & Staple in Millimetres based on Upper Half Mean Length [By law 66 (A) (a) (4)]											
1	P/H/R	ICS-101	Fine	Below 22mm	5.0-7.0	15	9223 (32800)	9223 (32800)	9195 (32700)	9195 (32700)	9195 (32700)	9195 (32700)
2	P/H/R	ICS-201	Fine	Below 22mm	5.0-7.0	15	9364 (33300)	9364 (33300)	9336 (33200)	9336 (33200)	9336 (33200)	9336 (33200)
3	GUJ	ICS-102	Fine	22mm	4.0-6.0	20	6102 (21700)	6186 (22000)	6243 (22200)	6243 (22200)	6243 (22200)	6299 (22400)
4	KAR	ICS-103	Fine	23mm	4.0-5.5	21	7902 (28100)	7986 (28400)	8014 (28500)	8014 (28500)	8014 (28500)	8070 (28700)
5	M/M	ICS-104	Fine	24mm	4.0-5.0	23	9167 (32600)	9167 (32600)	9195 (32700)	9195 (32700)	9195 (32700)	9251 (32900)
6	P/H/R	ICS-202	Fine	26mm	3.5-4.9	26	10320 (36700)	10320 (36700)	10292 (36600)	10264 (36500)	10264 (36500)	10320 (36700)
7	M/M/A	ICS-105	Fine	26mm	3.0-3.4	25	8773 (31200)	8773 (31200)	8802 (31300)	8802 (31300)	8802 (31300)	8914 (31700)
8	M/M/A	ICS-105	Fine	26mm	3.5-4.9	25	9617 (34200)	9617 (34200)	9617 (34200)	9617 (34200)	9617 (34200)	9729 (34600)
9	P/H/R	ICS-105	Fine	27mm	3.5.4.9	26	10573 (37600)	10573 (37600)	10545 (37500)	10517 (37400)	10517 (37400)	10573 (37600)
10	M/M/A	ICS-105	Fine	27mm	3.0-3.4	26	9139 (32500)	9139 (32500)	9167 (32600)	9167 (32600)	9167 (32600)	9280 (33000)
11	M/M/A	ICS-105	Fine	27mm	3.5-4.9	26	9870 (35100)	9870 (35100)	9870 (35100)	9870 (35100)	9870 (35100)	9983 (35500)
12	P/H/R	ICS-105	Fine	28mm	3.5-4.9	27	10686 (38000)	10686 (38000)	10657 (37900)	10629 (37800)	10629 (37800)	10686 (38000)
13	M/M/A	ICS-105	Fine	28mm	3.5-4.9	27	10208 (36300)	10208 (36300)	10208 (36300)	10208 (36300)	10208 (36300)	10292 (36600)
14	GUJ	ICS-105	Fine	28mm	3.5-4.9	27	10151 (36100)	10151 (36100)	10123 (36000)	10123 (36000)	10123 (36000)	10208 (36300)
15	M/M/A/K	ICS-105	Fine	29mm	3.5-4.9	28	10432 (37100)	10432 (37100)	10432 (37100)	10432 (37100)	10432 (37100)	10517 (37400)
16	GUJ	ICS-105	Fine	29mm	3.5-4.9	28	10348 (36800)	10348 (36800)	10320 (36700)	10320 (36700)	10320 (36700)	10404 (37000)
17	M/M/A/K	ICS-105	Fine	30mm	3.5-4.9	29	10657 (37900)	10657 (37900)	10657 (37900)	10657 (37900)	10657 (37900)	10742 (38200)
18	M/M/A/K/T/O	ICS-105	Fine	31mm	3.5-4.9	30	10882 (38700)	10882 (38700)	10882 (38700)	10882 (38700)	10882 (38700)	10995 (39100)
19	A/K/T/O	ICS-106	Fine	32mm	3.5-4.9	31	11023 (39200)	11023 (39200)	11023 (39200)	11023 (39200)	11023 (39200)	11135 (39600)
20	M(P)/K/T	ICS-107	Fine	34mm	3.0-3.8	33	14679 (52200)	14679 (52200)	14679 (52200)	14679 (52200)	14679 (52200)	14763 (52500)

(Note: Figures in bracket indicate prices in Rs./Candy)