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Bt Cotton in India – The changing paradigms

GUEST COLUMN

Dr. Raju Barwale
Managing Director,Mahyco

Dr. Raju Barwale is the Managing Director of Mahyco and has been associated with the company for over three decades. Under his leadership, the company has taken several new challenges in stride and scaled its existing capabilities. He graduated in agriculture from GB Pant University of Agriculture and Technology, Pantnagar, Uttarakhand. Since 1994, he has been a member of the Oil and Fiber Seed Section Committee of I.S.F. Switzerland. He is also the member of Joint Apex Committee of the Indo-Swiss collaborations on Biotechnology, a collaborative effort of Govt. of India and the Swiss Govt. He is also a member of Protection of Plant Varieties and Farmers' Rights Authority (PPV & FRA), Govt. of India, Ministry of Agriculture, New Delhi and serves on the management boards of several companies, trusts and trade associations.

Year 2014 marks the 19th year of commercialisation of biotech crops in the world. From 1.7 million hectares in 1996 to over 175 million hectares in 2013, the global hectarage of biotech crops has registered more than 100-fold increase.1 Millions of farmers in more than 30 countries world over have chosen to plant and replant biotech crops in more than 1.6 billion hectares cumulatively from 1996-2013.[1] Such is the most compelling and credible testimony to biotech crops. Realising the benefits of biotech crops, Bangladesh recently approved and commercialised Asia's first food crop Bt Brinjal. This is an encouraging and positive development for agriculture sector not just for Bangladesh but for all Asian countries which will help reduce the cost of pesticides and increased marketable yield and income for the farmers. This benefit to the farmers was the goal of the public private partnership the Maharashtra Hybrid Seeds Company Limited (Mahyco) had undertaken with the Bangladesh Agricultural Research Institute (BARI) and others under ABSP II.

India has already seen the benefits of Bt cotton, the first biotech crop approved for commercial cultivation in the country. According to the report on 'Study on socio-economic impact assessment of Bt Cotton in India', by the Council of Social Development (CSD), commissioned by the Bharat Krishak Samaj, India has become a net exporter from being a net importer of cotton in the world. The growth rate of cotton area, production and yield between 2002 and 2011 increased by 4.91, 9.25, and 4.95 per cent, respectively ever since the cultivation of Bt cotton in India in 2002-03. The average net returns from Bt cotton at the all India level were Rs.65307.82/hectare. At the all India level, 76 per cent farmers reported that the quantity of pesticide usage on Bt cotton had reduced over the years, and 71 per cent said that the expenditure on pesticide use for Bt cotton had

also reduced. 90 per cent farmers claimed that Bt cotton had reduced the attack of bollworms. On an average, 85 per cent farmers and landless labourers invested in better quality education for their children, 77 per cent reported intake of high value and nutritious food, 75 per cent on health of their family members and 64 per cent on health of livestock, thus making the socio-economic impact quite impressive. [2]

Today, more than 90 per cent cotton cultivation is under Bt cotton which has enabled us to become the second largest producer of cotton in the world and it is an apt example of fastest adoption of any technology in agriculture.

The global outlook of cotton released by OECD-FAO has stated that world cotton production is expected to grow by 1.6% p.a. marginally more slowly than consumption at 1.7% p.a. to reach 27.2 mt in 2022, as the unusually high global stocks that accumulated during 2011-13 are gradually reduced. China's cotton production is expected to decline by nearly 17%, due to policy actions, while India's production is projected to rise by 25% due mainly to increasing yields, albeit with slower yield growth than in the previous decade.[3] The report has also estimated that India's textile industry is poised to overtake that of China in the coming decade thus implying that the consumption of cotton in India is expected to grow far more than in any other country.

It is heartening to see how advanced technology is shaping these emerging positive trends thereby bringing in huge opportunities for cotton farmers in India. Fifty years ago, my father, Dr. B.R. Barwale started the company with a simply explained but very clear mission – to empower the Indian farmer with better resources and technology. That mission became our guiding light and today, despite challenges and roadblocks, I am happy to say that we have not lost sight of this core mission. At Mahyco, our core belief is that technological intervention is the key to unlocking the productive potential of the farming community and making Indian agriculture globally competitive. With strong emphasis on R&D infrastructure, the organization has now become synonymous with innovation. Mahyco has several firsts to its credit viz. the first company in the world to successfully commercialize F1 hybrid cotton based on GMS/CMS system; the first company in India to produce and market hybrid sorghum, pearl millet and sunflower and the first company to receive the Government of India's approval in 2002 for commercialisation of insect-tolerant Bt cotton (Bollgard) followed by a superior Bt cotton (Bollgard II) in 2006; etc. Some of the popular cotton hybrids produced and marketed by Mahyco are MRC-7351 BG II, Dr. Brent MRC-7347 BG II, Nikki MRC-7017 BG II, Neeraja MRC-7201 BG II, Neena MRC-7301 BG II and Bahubali MRC-7918 BG II.

The upcoming kharif season is largely dependent on the monsoon which also impacts the rabi crops. Over 50 per cent agricultural lands in the country rely on the monsoon because of lack of irrigation facilities and hence, the monsoon is extremely critical for kharif crops. Recently, the central government has directed state government to be prepared for erratic rains due to reports that El Nino weather pattern could have an impact on this year's monsoon. We hope to receive normal rainfall this year which would improve kharif output and help in maintaining food prices.

It has been the constant endeavour of Mahyco's R&D unit to deliver products which will meet farmer's expectations. Tolerance to sucking pest ,big boll size which will provide ease in picking and tolerance to water stress conditions are some of the challenges which cotton farmers in the country are facing and our new product pipeline is aiming to address these issues. We have also successfully completed regulatory trials for insect and herbicide tolerant technology in cotton and are awaiting clearances from concerned authorities for release.

Anytime an innovation or a radical new technology stands poised to transform the way we live or work, there is sure to be resistance to the same. And we have faced that from time to time. We have found that the way to make progress on this front is to work patiently with different groups and to educate them on the role of biotechnology in getting India closer to the goal of empowering the Indian farmers and see them competing on the global arena. It is the need of the hour that all stakeholders join hands to better explain the technology and dispel the concerns and issues that surround the use of such innovative, radical technologies including transgenic crops.

References:
1. *ISAAA Brief 46 - Global status of commercialized biotech/GM crops: 2013 – by Clive James, Founder & Emeritus Chair*
2. *http://farmersforum.in/policy/study-on-socio-economic-impact-assessment-of-bt-cotton-in-india/*
3. *OECD-FAO Agricultural Outlook 2013-2022*

Technical Analysis

Price outlook for Gujarat-ICS-105, 29mm and ICE cotton futures

(The author is Director of Commtrendz Research and the views expressed in this column are his own and the author is not liable for any loss or damage, including without limitations, any profit or loss which may arise directly or indirectly from the use of above information.)

EXPERT's Column

Shri Gnanasekar Thiagarajan

We will look into the Guajrat-ICS-105, 29mm prices along with other benchmarks and try to forecast price moves going forward.

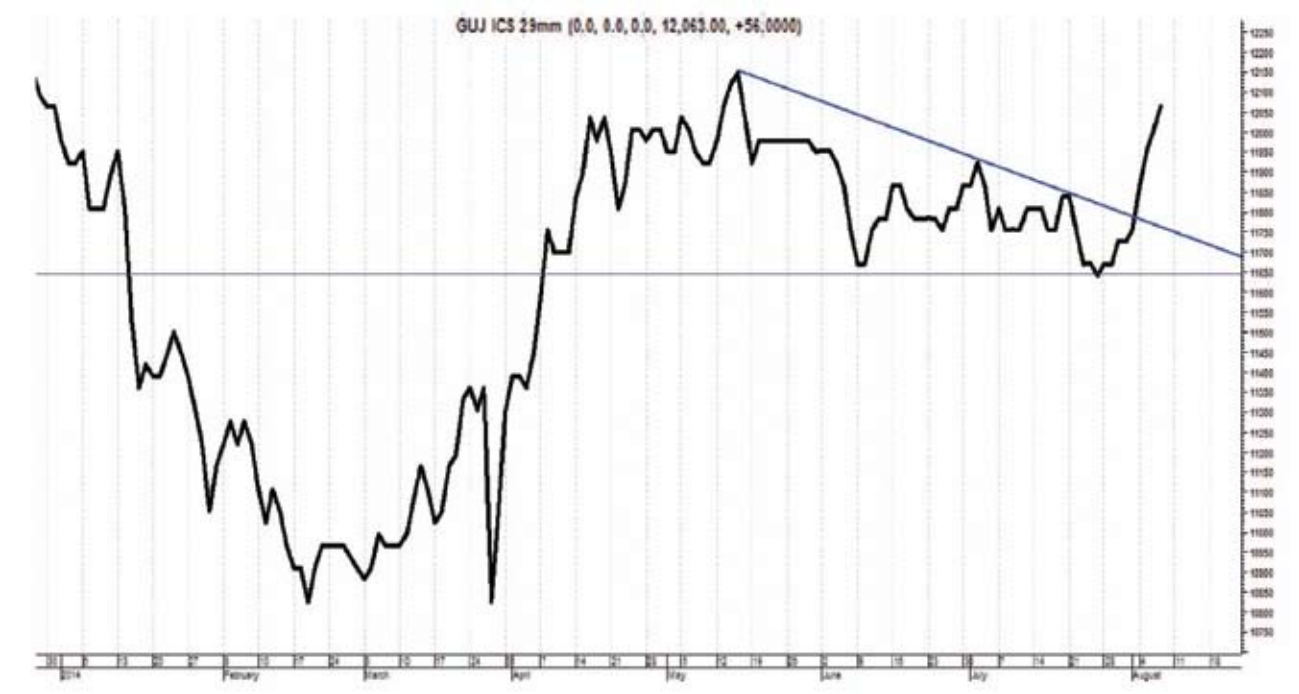
As mentioned in the previous update, fundamental analysis involves studying and analysing various reports, data and based on that arriving at some possible direction for prices in the coming months or quarters.

Some of the recent fundamental drivers for the domestic cotton prices are:

- Cotton prices are higher helped by strong export growth. India's cotton exports may have surged 15% by month end from the previous month beating estimates for 2013-14 due to robust demand.

- Cotton consumption is seen higher by 5-6% in the crop year compared to the previous six months helped by higher yarn export and demand for local consumption.

- India's cotton production for the year 2013-2014 is estimated to be at 37.5 million bales similar to that of estimates released by the Cotton Advisory Board.



• Cotton demand from the textile industry is strong due to better sale prospects of clothing in the midst of the marriage season and as schools re-open by June which is underpinning prices.

Some of the fundamental drivers for international cotton prices are:

• Cotton futures rose to their highest level in nearly four weeks on Thursday, after the U.S. Department of Agriculture reported robust export sales of the fibres. During the week ended April 17, net U.S. cotton export sales totalled 124,100 bales, up 46% from the previous week, the USDA said.

• The strong pace of Chinese buying surprised many and reinforced worries of tight U.S. supplies as the crop year nears its close on July 31 after the country's farmers produced less than forecast.

• Also concerns of weather in key growing regions of the United States, including Texas,

where back-to-back years of dry weather has hurt production and in 2011 helped shoot prices to historic highs above $2 a lb.

The domestic prices have moved up in line with international prices. We will now dwell into the various tools in technical analysis and forecast a possible direction.

As mentioned in the previous update, while 11,600/qtl holds in the short-term, there is a possibility of a pullback towards 11,800/qtl,The subsequent rise to 12,000/qtl has been quite a surprise. Charts are turning friendly again with potential to test 12,500 /qt or even higher to 12,800 /qtl. Dips to 11,800/qtl should hold now for a push higher to above mentioned levels. Unexpected fall below 11,500 /qtl could hurt the technical picture and such a move could once again re-inforce bearish expectations.

As we have been maintaining for the last few months, chart indicates a further upside to 12,365 or even higher to 12,725 levels in the coming sessions. Though, we expected prices to go below 11,300 /qtl, prices have impressively bounced higher indicating a turnaround. Indicators are displaying bullish signals, which make us believe the current move could continue higher. Mild overbought conditions hint at a possible technical downward correction to 11,700/800/qtl levels before moving higher again.

We will also look at the ICE cotton futures charts for possible direction in international prices.

As mentioned in the previous update, prices could correct lower towards 87-88c where minor support can be seen. This also happens to be the Fibonacci retracement level. Prices are expected to gradually inch higher towards 95-96c in the coming sessions as per price structures. Further upside to even 98c looks likely here. Supports are at 89-90c presently.

CONCLUSION:

Both the domestic and international prices have smartly pulled back. Potential exists for prices to continue higher in the coming weeks for Gujarat-ICS either from present levels or after a minor correction lower. Supports are seen both for ICE March cotton futures at 89-90c followed by 86-87c and for Gujarat-ICS-105 29mm at 11,850 followed by 11,700/qtl levels. Only a unexpected fall below 11,300/qtl could change the picture to bearish again. Our favoured view expects a push higher in the coming weeks.

How the Cotton Gin Started the Civil War in America

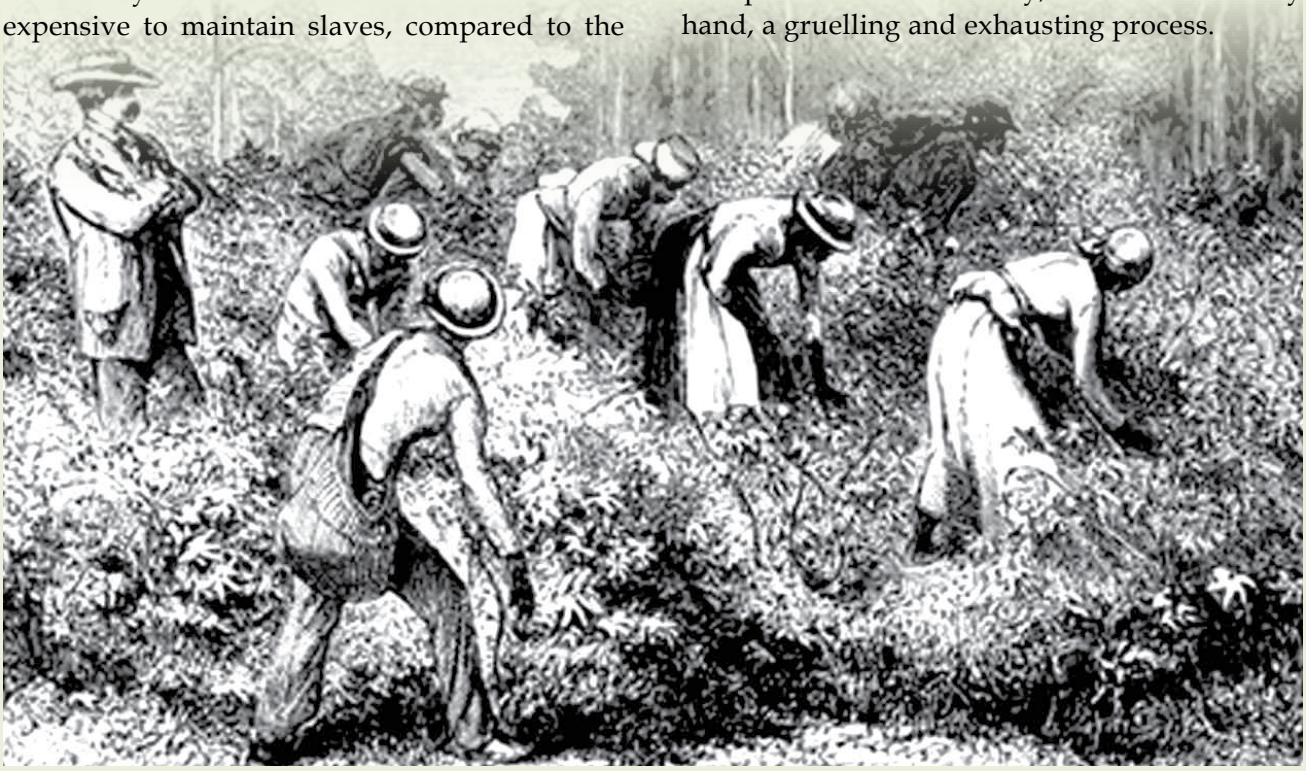
Designing a new machine or improving a process can take a fair amount of thought and consideration; once prototyped, it can still take years or even decades to be commercialized and have an impact on society. Sometimes, however, the entire process can be marvellously quick, easy, and world-changing.

Take, for example, the cotton gin.

Eli Whitney conceived this device almost on the spur of the moment. Yet, for all its fame and historic significance, one rarely sees an illustration of this legendary machine. Knowing as much as we do about its reputation and being conditioned to expect a revelation, when present-day engineers see the primitive hardware of the machine, it's usually a bit of a letdown. Although simple in design, the cotton gin solved a pressing economic problem and transformed both agricultural and industrial America. Only after comparing the economy of the American South before and after the introduction of the gin can we appreciate its historic impact.

Keeping Cotton Lucrative

Before the cotton gin, slavery had been on its way out—farmers realized it was more expensive to maintain slaves, compared to the value of what they could produce. Cotton was a troublesome crop anyway; its fiber could only be separated from the sticky, embedded seeds by hand, a gruelling and exhausting process.



This changed dramatically, of course, with the advent of the cotton gin. Suddenly cotton became a lucrative crop and a major export for the South. However, because of this increased demand, many more slaves were needed to grow cotton and harvest the fields. Slave ownership became a fiery national issue and eventually led to the Civil War.

It was only a matter of chance that Whitney became involved with cotton growing. After graduating from Yale University in 1792 with hopes of becoming a lawyer, he travelled to South Carolina to accept a job as a tutor. His landlady owned a plantation and raised some cotton. After getting into a discussion with several plantation owners about the fact there was no economical method of separating seeds from cotton fiber, Whitney recognized it could be done mechanically.

He spent the next few months building a prototype. The gin itself comprised a rotating drum with wire hooks or ratchet-like teeth that pulled cotton fibers between the teeth of a comb. The comb had teeth spaced too closely for seeds to pass through. Only one aspect of the machine can be regarded as serious mechanisms design. A second drum, rotating faster than the first and carrying brushes, served to dislodge the cotton fibers from the first. This was driven, along with the larger drum, by a belt-and-pulley arrangement typically having a four-to-one ratio. Cotton bolls were loaded into a hopper, which guided them to the face of the comb. After being pulled through by the toothed cylinder, the separated cotton fibers emerged at the left and the seeds collected to the right.

Whitney's design was almost immediately stolen and counterfeited a vast number of times. After years of patent litigation he received only a tiny fraction of the wealth to which he was entitled. He continued to invent. Ten years later, because of his reputation as an innovator, he won a government contract to produce 10,000 muskets—a previously unheard-of number. To manufacture the gun locks, Whitney invented the milling machine that is the staple of machine shop production today.

Although Whitney's invention only involved a few hundred kilograms of matter, it shaped the future of a nation and its people; it is rare that a single contrivance has such a profound social effect.

[Adapted from "A Turn of the Crank Started the Civil War" by Robert O. Woods, ASME Fellow, for Mechanical Engineering.]

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Production & Stock of Spun Yarn (SSI & Non-SSI)

(In Mn. Kgs.)

MONTH / YEAR	PRODUCTION				STOCK			
	COTTON	BLENDED	100% N.C.	G. TOTAL	COTTON	BLENDED	100% N.C.	G. TOTAL
2012-13 (P)								
April 12	268.20	61.39	34.75	364.34	108.37	38.76	20.21	167.35
May 12	286.19	63.88	36.17	386.23	113.31	50.73	18.35	182.39
June12	288.40	66.89	35.31	390.59	105.42	35.70	17.12	158.24
July 12	301.34	68.45	38.76	408.4	95.25	33.27	13.64	142.17
Aug.12	302.85	71.78	40.70	415.34	103.26	34.02	14.24	151.51
Sept.12	296.74	71.57	39.91	408.22	121.86	37.21	16.43	175.49
Oct.12	302.65	71.82	39.44	413.91	122.84	41.86	17.94	182.64
Nov. 12	282.88	65.70	36.58	385.17	126.13	40.94	14.83	181.90
Dec. 12	314.21	73.57	38.96	426.74	116.75	38.88	14.47	170.10
Jan. 13	315.07	72.05	39.56	426.67	118.54	38.00	19.09	175.63
Feb. 13	302.59	66.73	37.12	406.44	108.55	38.69	18.71	165.96
Mar.13	321.57	74.36	39.50	435.42	107.92	40.37	21.38	169.67
2013-14 (P)								
April-13	316.61	65.91	39.68	422.20	121.99	41.07	21.94	185.00
May-13	314.97	71.46	38.94	425.37	123.79	39.59	19.08	182.46
June-13	317.69	71.18	38.95	427.82	117.62	36.75	17.84	172.21
July-13	332.12	74.84	41.31	448.27	116.52	38.01	20.68	175.22
Aug.13	336.29	78.66	42.21	457.17	120.07	37.18	18.27	175.52
Sept.13	326.09	79.42	43.47	448.98	132.87	43.34	22.51	198.72
Oct.13	328.33	78.07	43.06	449.46	131.73	49.39	25.43	206.55
Nov.13	314.28	72.03	39.06	425.37	136.31	51.53	26.53	214.38
Dec.13	343.00	80.35	39.98	463.34	132.19	52.95	24.66	209.80
Jan.-14	338.85	76.67	39.04	454.55	118.39	52.00	22.52	192.91
Feb.-14	331.76	74.40	36.22	442.38	123.20	50.44	23.87	197.51

P - Provisional

Source : Office of the Textile Commissioner

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UPCOUNTRY SPOT RATES (Rs./Qtl)

Standard Descriptions with Basic Grade & Staple in Millimetres based on Upper Half Mean Length [By law 66 (A) (a) (4)]							Spot Rate (Upcountry) 2013-14 Crop APRIL 2014					
Sr. No.	Growth	Grade Standard	Grade	Staple	Micronaire	Strength /GPT	21st	22nd	23rd	24th	25th	26th
1	P/H/R	ICS-101	Fine	Below 22mm	5.0-7.0	15	10629 (37800)	10629 (37800)	10629 (37800)		10629 (37800)	10629 (37800)
2	P/H/R	ICS-201	Fine	Below 22mm	5.0-7.0	15	10770 (38300)	10770 (38300)	10770 (38300)	H	10770 (38300)	10770 (38300)
3	GUJ	ICS-102	Fine	22mm	4.0-6.0	20	7030 (25000)	7114 (25300)	7114 (25300)		7199 (25600)	7199 (25600)
4	KAR	ICS-103	Fine	23mm	4.0-5.5	21	8323 (29600)	8408 (29900)	8408 (29900)	O	8464 (30100)	8464 (30100)
5	M/M	ICS-104	Fine	24mm	4.0-5.0	23	10123 (36000)	10208 (36300)	10208 (36300)		10292 (36600)	10292 (36600)
6	P/H/R	ICS-202	Fine	26mm	3.5-4.9	26	11979 (42600)	12063 (42900)	12176 (43300)		12317 (43800)	12317 (43800)
7	M/M/A	ICS-105	Fine	26mm	3.0-3.4	25	10067 (35800)	10151 (36100)	10208 (36300)	L	10264 (36500)	10264 (36500)
8	M/M/A	ICS-105	Fine	26mm	3.5-4.9	25	10629 (37800)	10714 (38100)	10770 (38300)		10826 (38500)	10826 (38500)
9	P/H/R	ICS-105	Fine	27mm	3.5.4.9	26	12148 (43200)	12232 (43500)	12345 (43900)	I	12485 (44400)	12485 (44400)
10	M/M/A	ICS-105	Fine	27mm	3.0-3.4	26	10348 (36800)	10432 (37100)	10489 (37300)		10545 (37500)	10545 (37500)
11	M/M/A	ICS-105	Fine	27mm	3.5-4.9	26	10882 (38700)	10967 (39000)	11023 (39200)		11079 (39400)	11079 (39400)
12	P/H/R	ICS-105	Fine	28mm	3.5-4.9	27	12429 (44200)	12513 (44500)	12626 (44900)	D	12766 (45400)	12766 (45400)
13	M/M/A	ICS-105	Fine	28mm	3.5-4.9	27	11417 (40600)	11501 (40900)	11557 (41100)		11614 (41300)	11614 (41300)
14	GUJ	ICS-105	Fine	28mm	3.5-4.9	27	11726 (41700)	11810 (42000)	11867 (42200)	A	11923 (42400)	11923 (42400)
15	M/M/A/K	ICS-105	Fine	29mm	3.5-4.9	28	11698 (41600)	11782 (41900)	11838 (42100)		11895 (42300)	11895 (42300)
16	GUJ	ICS-105	Fine	29mm	3.5-4.9	28	11867 (42200)	11951 (42500)	12007 (42700)		12063 (42900)	12063 (42900)
17	M/M/A/K	ICS-105	Fine	30mm	3.5-4.9	29	11838 (42100)	11923 (42400)	11979 (42600)	Y	12035 (42800)	12035 (42800)
18	M/M/A/K/T/O	ICS-105	Fine	31mm	3.5-4.9	30	12063 (42900)	12148 (43200)	12204 (43400)		12260 (43600)	12260 (43600)
19	A/K/T/O	ICS-106	Fine	32mm	3.5-4.9	31	12345 (43900)	12429 (44200)	12485 (44400)		12541 (44600)	12541 (44600)
20	M(P)/K/T	ICS-107	Fine	34mm	3.0-3.8	33	16563 (58900)	16647 (59200)	16647 (59200)		16788 (59700)	16872 (60000)

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