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Development of the Environment and Textile Industry Friendly Hirsute Cotton Variety, Indica

Dr. V. T. Sundaramurthy, Former Project Coordinator of All India Coordinated Cotton Improvement Project (ICAR), Entomologist & Head, Central Institute for Cotton Research, Coimbatore.

Dr. V.T. Sundaramurthy served as Associate Professor at Tamil Nadu Agricultural University, Principal Scientist at Central Institute for Cotton Research and Project Coordinator of All India Coordinated Research Project for Cotton Improvement [ICAR] in the country. He has many research papers to his credit. He was included in the Who's Who in Science and Engineering ® 2016-2017, and has won several awards including, Man of the Year 2013" "one of 2000 Intellectuals of the world in 21st Century" (IBC UK), The National Award for an Extension film on IPM (Cotton), Indian Society for Cotton Improvement Award, The Plant Protection Association of India Award, ICAR Commendation award, East India Cotton Association Award, International Professional of the Year 2007(IBC UK), Leading Educators of the World 2007 (IBC UK) and also ICAR Fellowships.



Dr. Sujata Saxena, Principal Scientist (Organic Chemistry) & Head I/c, Chemical & Biochemical Processing Division, ICAR- CIRCOT, Mumbai

Dr. Saxena has been associated with numerous research projects. She has published many scientific papers, articles and book chapters and presented more than 20 papers at national and international conferences. She was part of the joint CICR- CIRCOT team which developed three naturally brown coloured desi cotton germplasms registered by Plant Germplasm Registration Committee of ICAR. She is the recipient of JRF and SRF of CSIR for Doctoral degree.

She is Member, TC 38 (Textiles) committee of the International Organization for Standardization (ISO) and is associated with Bureau of Indian Standards (BIS) as member of TX 05 and TX 07 sub-committees on textiles. She is Senior member, American Association of Textile Chemists and Colorists, USA and was a consultant in projects funded by UNDP and ICEF on development of application techniques for natural dyes on cotton.



GUEST COLUMN

Dr. V. T. Sundaramurthy and Dr. Sujata Saxena

Cotton is one of the most important crops associated closely with culture, civilization and economy of mankind and is being cultivated in 122.35 lakh ha in different ecosystems in India and produces 35.1 million bales annually in India. The current cultivated varieties and hybrids may not help to maintain the production due to the global warming process because of their bushy structure and the tall growing habit.



Figure 1. The Indica plant

Hence a hirsute variety, Indica (Fig1) which is non-bushy with sparsely open type of canopy growing to the height of 120 to 130 cm height with 16-18 bolls bearing sympodial branches and matures in 130 days with a higher yield of 2246 kg/ha has been developed for meeting the challenges posed by the phenomenon of the global warming.

The variety Indica has the unique trait of having boll bearing branches that are capable of growing further in the event of shedding buds, flowers and bolls, either due to insect bites or other causes, to compensate the losses if any. This unique trait does not exist in other varieties and hybrids in which the main stem will grow and increase not only the duration of the crop but also the height and size of the canopy.

As a result of these changes, several environmental problems have cropped up in the agro-system. Since the variety Indica has an open type of canopy and boll bearing branches are well exposed, the pesticides applied reach the desired site and cause less pollution. It requires 4 to 5 applications of insecticides for a yield of 2246 kg /ha in the farmers' fields. The open type of canopy also enables easy harvest of seed cotton (kappas) both by manual or mechanical means.

The quality attributes of fibres of Indica such as ginning outturn, seed and lint indices including the strength and micronaire, were almost the same as that of other popular varieties that are being grown in Tamil Nadu. But Indica differs in the length of fibres which happens to be 34.27mm, whereas other varieties and hybrid have a length of 23.5to33.55mm. (Fig 1 a).

The most important trait that was ignored for several decades was the degree of polymerization (DP), which is associated with the strength of fibre/yarn.

During chemical processing of fibres and dyeing, the DP gets reduced and the fabric gets weakened. A higher initial DP results in better strength of processed fabrics.

Interestingly, the DP of Indica fibres was 3926 which is 18 to 39 % higher than other popular varieties. The higher initial DP of Indica, besides contributing much to lustre, dyeing and strength

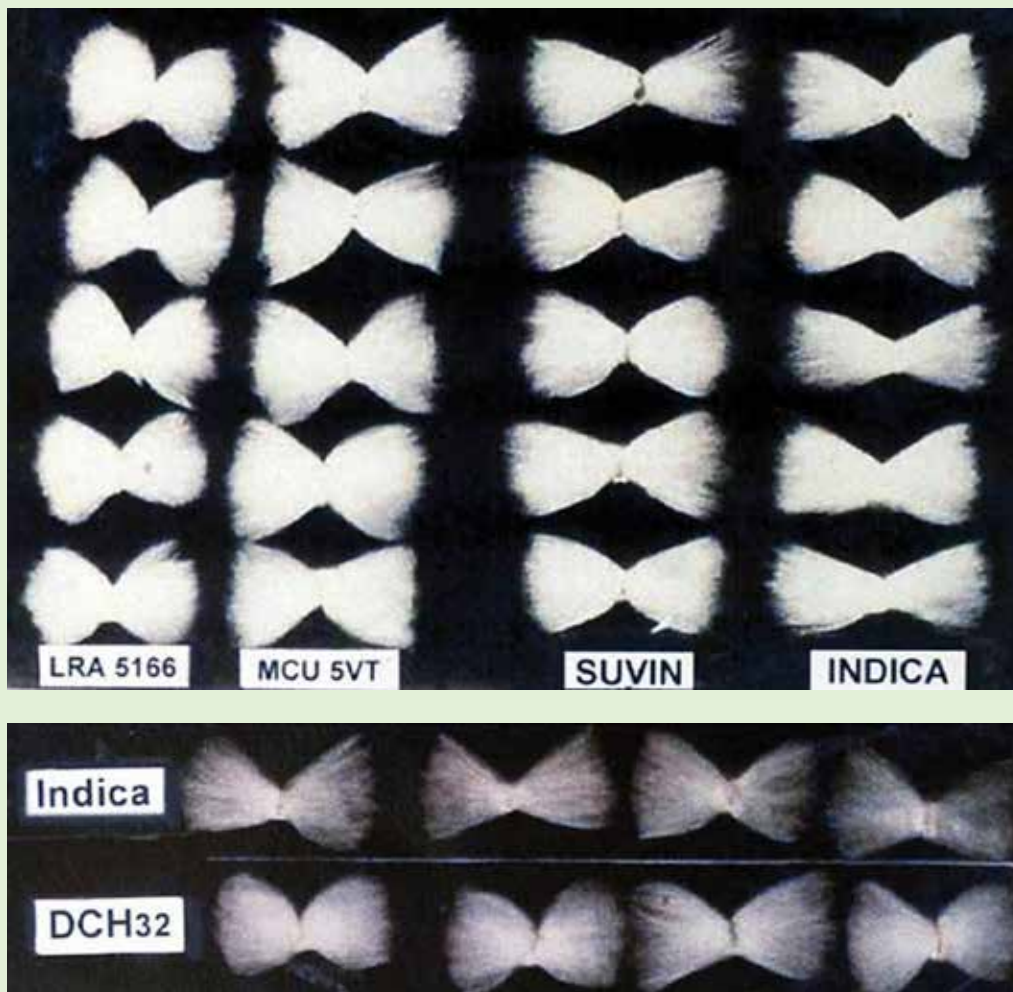


Figure 1a Comparison of Indica's length of fibre with other popular cotton varieties and a hybrid DCH 32

of fibres gives better strength of the yarn and processed fabric.

These qualities of Indicia will benefit the textile industries, farmers and consumers better than the other popular varieties and hybrids grown in the country.

The dyeing ability of the fibres of Indica is unique as compared to other varieties. The bleached fibres of variety Indica are brighter white in colour with lower tinge of yellowness than the other varieties.

Upon dyeing with a blue and a red reactive dye to 0.5% shade, the uptake of dyes by the fibres of Indica was seen to be more than the other varieties and left lesser dye in the dyebath irrespective of the dye and caused less damage to the soils.

Among the varieties studied, variety MCU 5VT recorded the lowest dye uptake and left more dye residue in the dyebath as compared to

the other varieties and caused more damage to the soils.

The dyed fibres of Indica were darkest in colour with better colour strength than the other varieties which will save the cost of dye for the textile industry, since a darker colour can be produced with a lesser amount of dye. Since Indica left the least residual dye in the dye bath, it will cause lesser damage to the soil and environment.

It will help the textile industry to spend less on treatment of dye effluent as lesser

quantity of residual dye is likely to be present in it.

Using of this cotton variety may thus reduce the overall dyeing costs and make the garments made out of the fibres of this variety, cost less than the other popular cotton varieties.

References

1. Sundaramurthy, V.T., 2019. Development of eco- and textile industry friendly short statured hirsute cotton variety, Indica. *Current Science* 117, 245-247
2. Sundaramurthy V. T and Sujata Saxena (2020) *The Environment and Textile Industry-Friendly Hirsute Cotton Variety Indica. Internatl J. Bio-resource & Stress Mgmt.* 11 (5):451-455

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

Monthly Weather Review for the month of March 2021

Temperature outlook for March 2021

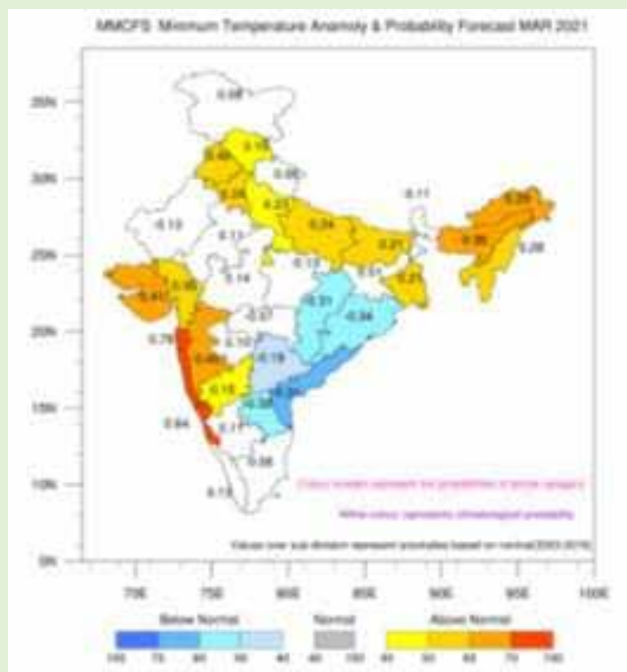


Fig 3a. Probability forecast & Subdivision averaged Maximum Temperature Anomaly for March 2021

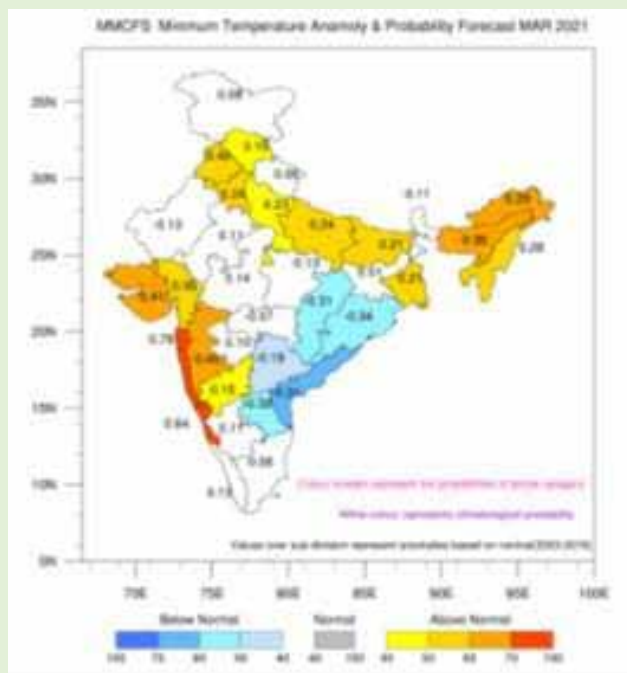


Fig 3b. Probability forecast & Subdivision averaged Minimum Temperature Anomaly for March 2021

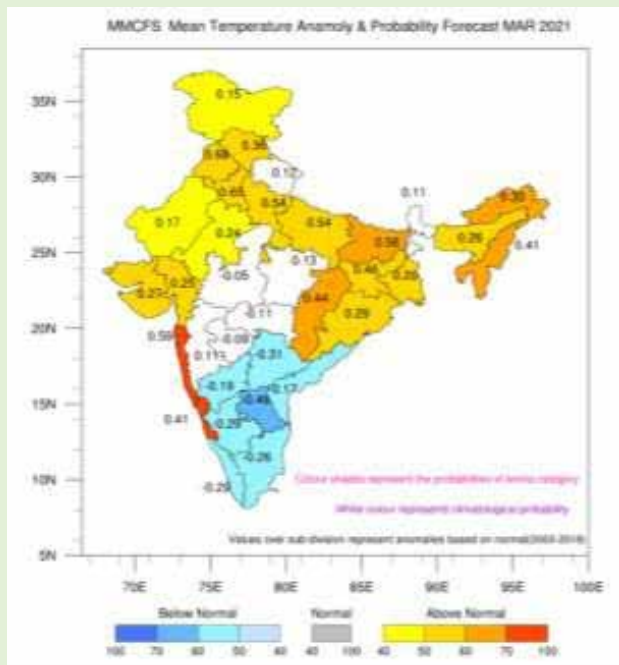


Fig 3c. Probability forecast & Subdivision averaged Mean Temperature Anomaly for March 2021

temperatures respectively for the month of March 2021.

The probability forecast for maximum temperature (Fig.3a) indicates that above normal maximum temperature are likely over most subdivisions of north Indian plains adjacent to Himalayas, west, east and northeast India and a few subdivisions of central India.

The probability forecast for minimum temperature (Fig.3b) indicates that above normal minimum temperatures are likely to be over most subdivisions of north India along the foot hills of Himalayas, north east India and few subdivisions of west and western coastal India. Subdivisions of Odisha, Chhattisgarh, Telangana, Rayalaseema and Coastal Andhra Pradesh are likely to experience below normal minimum temperatures.

The probability forecast for mean temperature (Fig.3c) indicates above normal mean temperature over most subdivisions of north India along the foothills of Himalayas, northwest, west, northeast and east India and a few subdivisions of western coast.

Source: National Forecasting Centre of the India Meteorological Department (IMD).

Fig.3a, Fig.3b and Fig.3c show the probability forecast and anomaly (departures from the long term normal) forecasts for the subdivision averaged maximum, minimum and mean

Revision in Testing Charges at CAI Laboratories

The following are the charges for cotton testing in the laboratories of the Cotton Association of India with effect from 1st October 2020.

Particulars	Per Sample Testing Fees in Rs.		
	Testing Fees	GST	Total
HVI Test	145	26	171
Micronaire Test	85	15	100
Colour Grade on HVI	85	15	100
Gravimetric Trash Test on HVI	85	15	100
Moisture	85	15	100
Grading (Manual Classing)	235	42	277

VOLUME BASED DISCOUNTS

Particulars	Per Sample Testing Fees in Rs.		
	Testing Fees	GST	Total
For 250 samples and above but less than 500 samples	140	25	165
For 500 samples and above but less than 750 samples	135	24	159
For 750 samples and above but less than 1000 samples	130	23	153
For 1000 samples and above but less than 2000 samples	125	23	148
For 2000 samples and above but less than 5000 samples	120	22	142
For 5000 samples and above but less than 10,000 samples	115	21	136
For 10,000 samples and above	100	18	118

The fees under the above volume based discount scheme is payable within 15 days from the receipt of the invoices to be raised on monthly basis.

We would also like to inform that the parties can avail the benefit of testing of cotton at multiple laboratories of the Associations against the CAI Credits made by them.

We earnestly request you to avail the facility of testing at the Association's laboratories.



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ISO 9001:2015

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Supply and Distribution of Cotton

March 1, 2021

Seasons begin on August 1

	2015/16	2016/17	2017/18	2018/19	2019/20 Est.	2020/21 Proj.
BEGINNING STOCKS						
WORLD TOTAL	22.95	20.47	18.68	18.78	18.56	21.37
China	14.12	12.65	10.35	9.03	8.88	8.94
USA	0.79	0.83	0.60	0.82	0.83	1.31
PRODUCTION						
WORLD TOTAL	21.64	23.20	26.80	25.97	26.35	24.20
India	5.75	5.87	6.36	5.66	6.21	6.31
China	5.20	4.90	5.89	6.04	5.80	5.91
USA	2.81	3.74	4.56	4.00	4.34	3.26
Pakistan	1.54	1.66	1.80	1.67	1.32	0.89
Brazil	1.29	1.53	2.01	2.78	3.00	2.65
Uzbekistan	0.83	0.79	0.80	0.64	0.72	0.55
Others	4.23	4.71	5.40	5.18	4.97	4.64
CONSUMPTION						
WORLD TOTAL	24.33	24.85	26.44	25.98	22.77	24.46
China	7.60	8.28	8.50	8.25	7.25	8.00
India	5.30	5.15	5.42	5.40	4.45	5.45
Pakistan	2.15	2.22	2.35	2.36	2.20	1.98
Europe & Turkey	1.68	1.61	1.80	1.70	1.60	1.65
Bangladesh	1.32	1.41	1.66	1.58	1.37	1.40
Vietnam	1.01	1.17	1.51	1.51	1.45	1.48
USA	0.75	0.71	0.70	0.63	0.47	0.52
Brazil	0.66	0.69	0.68	0.73	0.61	0.61
Others	3.87	3.62	3.82	3.83	3.36	3.36
EXPORTS						
WORLD TOTAL	7.59	8.31	9.26	9.26	9.02	9.39
USA	1.99	3.33	3.64	3.37	3.38	3.38
India	1.26	0.99	1.13	0.76	0.70	1.14
CFA Zone	0.98	1.00	1.06	1.18	0.96	1.23
Brazil	0.94	0.61	0.91	1.31	1.95	1.66
Uzbekistan	0.50	0.40	0.34	0.13	0.10	0.06
Australia	0.62	0.81	0.85	0.79	0.30	0.24
IMPORTS						
WORLD TOTAL	7.84	8.10	9.00	9.05	8.26	9.39
Bangladesh	1.38	1.41	1.67	1.54	1.37	1.38
Vietnam	1.00	1.20	1.52	1.51	1.46	1.48
China	0.96	1.10	1.32	2.10	1.55	2.12
Turkey	0.98	0.84	0.96	0.79	1.02	0.96
Indonesia	0.64	0.74	0.76	0.69	0.55	0.60
TRADE IMBALANCE 1/ STOCKS ADJUSTMENT 2/	0.25 -0.04	-0.21 0.07	-0.26 0.00	-0.20 0.00	-0.76 -0.01	0.00 0.00
ENDING STOCKS						
WORLD TOTAL	20.47	18.68	18.78	18.56	21.37	21.11
China	12.65	10.35	9.03	8.88	8.94	8.94
USA	0.83	0.60	0.82	0.83	1.31	0.67
ENDING STOCKS/MILL USE (%)						
WORLD-LESS-CHINA 3/	47	50	54	55	80	74
CHINA 4/	166	125	106	108	123	112
COTLOOK INDEX A 5/	70.39	82.77	87.98	84.35	71.33	

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/ U.S. Cents per pound

Source : ICAC Cotton This Month, March 1, 2021



Since 1921, we are dedicated to the cause of Indian cotton.

Just one of the reasons, you should use our Laboratory Testing Services.

The Cotton Association of India (CAI) is respected as the chief trade body in the hierarchy of the Indian cotton economy. Since its origin in 1921, CAI's contribution has been unparalleled in the development of cotton across India.

The CAI is setting benchmarks across a wide spectrum of services targeting the entire cotton value chain. These range from research and development at the grass root level to education, providing an arbitration mechanism, maintaining Indian cotton grade standards, issuing Certificates of Origin to collecting and disseminating statistics and information. Moreover, CAI is an autonomous organization portraying professionalism and reliability in cotton testing.

The CAI's network of independent cotton testing & research laboratories are strategically spread across major cotton centres in India and are equipped with:

- 🔧 State-of-the-art technology & world-class Premier and MAG cotton testing machines
- 🔬 HVI test mode with trash% tested gravimetrically

LABORATORY LOCATIONS

Current locations : • **Maharashtra :** Mumbai; Yavatmal; Aurangabad; Jalgaon • **Gujarat :** Rajkot; Ahmedabad • **Andhra Pradesh :** Adoni
• **Madhya Pradesh :** Kargone • **Karnataka :** Hubli • **Punjab :** Bathinda • **Telangana:** Warangal, Adilabad



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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) 2020-21 Crop March 2021					
Sr. No.	Growth	Grade Standard	Grade	Staple	Micronaire	Gravimetric Trash	Strength /GPT	1st	2nd	3rd	4th	5th	6th
1	P/H/R	ICS-101	Fine	Below 22mm	5.0 - 7.0	4%	15	10826 (38500)	10742 (38200)	10742 (38200)	10686 (38000)	10629 (37800)	10629 (37800)
2	P/H/R (SG)	ICS-201	Fine	Below 22mm	5.0 - 7.0	4.5%	15	10967 (39000)	10882 (38700)	10882 (38700)	10826 (38500)	10770 (38300)	10770 (38300)
3	GUJ	ICS-102	Fine	22mm	4.0 - 6.0	13%	20	9448 (33600)	9505 (33800)	9505 (33800)	9476 (33700)	9420 (33500)	9392 (33400)
4	KAR	ICS-103	Fine	23mm	4.0 - 5.5	4.5%	21	9448 (33600)	9308 (33100)	9223 (32800)	9167 (32600)	9083 (32300)	9055 (32200)
5	M/M (P)	ICS-104	Fine	24mm	4.0 - 5.5	4%	23	11304 (40200)	11248 (40000)	11248 (40000)	11220 (39900)	11192 (39800)	11135 (39600)
6	P/H/R(U) (SG)	ICS-202	Fine	27mm	3.5 - 4.9	4.5%	26	12260 (43600)	12317 (43800)	12317 (43800)	12345 (43900)	12260 (43600)	12260 (43600)
7	M/M(P)/SA/TL	ICS-105	Fine	26mm	3.0 - 3.4	4%	25	10123 (36000)	10264 (36500)	10404 (37000)	10545 (37500)	10629 (37800)	10686 (38000)
8	P/H/R(U)	ICS-105	Fine	27mm	3.5 - 4.9	4%	26	12457 (44300)	12485 (44400)	12485 (44400)	12485 (44400)	12401 (44100)	12401 (44100)
9	M/M(P)/SA/TL/G	ICS-105	Fine	27mm	3.0 - 3.4	4%	25	10629 (37800)	10770 (38300)	10911 (38800)	11051 (39300)	11107 (39500)	11107 (39500)
10	M/M(P)/SA/TL	ICS-105	Fine	27mm	3.5 - 4.9	3.5%	26	11248 (40000)	11332 (40300)	11332 (40300)	11332 (40300)	11332 (40300)	11332 (40300)
11	P/H/R(U)	ICS-105	Fine	28mm	3.5 - 4.9	4%	27	12598 (44800)	12598 (44800)	12598 (44800)	12598 (44800)	12513 (44500)	12513 (44500)
12	M/M(P)	ICS-105	Fine	28mm	3.7 - 4.5	3.5%	27	12373 (44000)	12457 (44300)	12429 (44200)	12429 (44200)	12373 (44000)	12429 (44200)
13	SA/TL/K	ICS-105	Fine	28mm	3.7 - 4.5	3.5%	27	12401 (44100)	12485 (44400)	12457 (44300)	12457 (44300)	12401 (44100)	12457 (44300)
14	GUJ	ICS-105	Fine	28mm	3.7 - 4.5	3%	27	12457 (44300)	12541 (44600)	12513 (44500)	12513 (44500)	12457 (44300)	12513 (44500)
15	R(L)	ICS-105	Fine	29mm	3.7 - 4.5	3.5%	28	12541 (44600)	12598 (44800)	12598 (44800)	12598 (44800)	12513 (44500)	12513 (44500)
16	M/M(P)	ICS-105	Fine	29mm	3.7 - 4.5	3.5%	28	12738 (45300)	12823 (45600)	12795 (45500)	12738 (45300)	12682 (45100)	12710 (45200)
17	SA/TL/K	ICS-105	Fine	29mm	3.7 - 4.5	3%	28	12766 (45400)	12851 (45700)	12823 (45600)	12795 (45500)	12738 (45300)	12766 (45400)
18	GUJ	ICS-105	Fine	29mm	3.7 - 4.5	3%	28	12795 (45500)	12879 (45800)	12851 (45700)	12823 (45600)	12766 (45400)	12795 (45500)
19	M/M(P)	ICS-105	Fine	30mm	3.7 - 4.5	3.5%	29	13160 (46800)	13244 (47100)	13216 (47000)	13216 (47000)	13188 (46900)	13216 (47000)
20	SA/TL/K/O	ICS-105	Fine	30mm	3.7 - 4.5	3%	29	13188 (46900)	13273 (47200)	13244 (47100)	13244 (47100)	13216 (47000)	13244 (47100)
21	M/M(P)	ICS-105	Fine	31mm	3.7 - 4.5	3%	30	13498 (48000)	13582 (48300)	13554 (48200)	13554 (48200)	13526 (48100)	13526 (48100)
22	SA/TL/K/TN/O	ICS-105	Fine	31mm	3.7 - 4.5	3%	30	13526 (48100)	13610 (48400)	13582 (48300)	13582 (48300)	13554 (48200)	13554 (48200)
23	SA/TL/K/TN/O	ICS-106	Fine	32mm	3.5 - 4.2	3%	31	13638 (48500)	13723 (48800)	13723 (48800)	13723 (48800)	13723 (48800)	13723 (48800)
24	M/M(P)	ICS-107	Fine	34mm	3.0 - 3.8	4%	33	19656 (69900)	19796 (70400)	19796 (70400)	19796 (70400)	19796 (70400)	19796 (70400)
25	K/TN	ICS-107	Fine	34mm	3.0 - 3.8	3.5%	34	20359 (72400)	20499 (72900)	20499 (72900)	20499 (72900)	20499 (72900)	20499 (72900)

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