Weekly Publication of

Cotton Association of India

COTTON STATISTICS & NEWS

Edited & Published by Amar Singh

2019-20 • No. 17 • 23rd July, 2019 Published every Tuesday

Cotton Exchange Building, 2nd Floor, Cotton Green, Mumbai - 400 033
Phone: 3006 3400 Fax: 2370 0337 Email: cai@caionline.in
www.caionline.in

Role of Disruptive Innovations in Transformation of World Agriculture and Cotton Scenario: - Digital Technologies (Part 1)

GUEST COLUMN

Dr. Brijender Mohan Vithal
Cotton Expert

Dr. Brijender Mohan Vithal has a Ph.D. Agric (Plant Breeding-Cotton) from Punjab Agriculture University (PAU) Ludhiana. He has been associated with cotton R&D activities for more than three decades. He has worked as a Senior Cotton Breeder with PAU, GM Production / Executive Director with National Seeds Corporation and Director, DOCD, Ministry of Agriculture (MOA). He was Officer on Special Duties (OSD) to look after activities related with Tech Mission on Cotton (TMC) in CCI Ltd during its pre-launch period. He joined CCI Ltd - TMC Cell (MMIII & IV) during 1999 and continued working there till the end of the TMC Project in December 2010. He is still associated with cotton through agencies like ISCI.

Agriculture 4.0: The Future of Farming Technology:-

In the previous article, it was mentioned that more details of Industry 4.0 may be discussed and also if India should adopt Industry 4.0 or not, if yes, how India is preparing and should adopt smarter strategies for smart changes in agriculture. To better understand this, it is important first, to know and understand, the available 'disruptive innovations', their adoption at the global level, and role in the transformation of world agriculture and cotton scenario, etc. Thus, more information on such issues is being made available for the knowledge of our readers before issue of Industry 4.0 is taken up.

With a predicted global population of 9.8 billion by 2050, we need to figure out that how to feed and clothe such a large population. Studies show that we need to grow as much as double the quantities of food and fibre than we do today, simply to avoid food security issues and mass social disruption. Already, more than 3 million children die worldwide every year because they don't get enough to eat. At the same time, climate change is making it harder to feed and clothe the world population through conventional means. In fact, with our current rate of crop yields, we may have bare minimum food and fibre just for half of that projected population. It's critical to note

that growing enough food and fibre will not be a small task in the years ahead, and the agriculture industry in the present scenario isn't poised to get us there.

Issues Associated

1. The world's population is increasing, but the global supply of arable land and water is not. In order to feed and clothe the large population with whom we will be sharing this planet by 2050, crop productivity improvements are critically essential. Agricultural efficiency is still relatively poor.

2. Further, climate change is already requiring changes in crop management, and access to fresh water and good soil are becoming serious limitations for agriculture.

3. The kind of agriculture being practiced today, reliant on industrial-era concepts of land use and productivity, apart from the pressing need to keep us fed, another crucial pain point is about keeping farming viable for the next generation of people who grow food and fibre for us.

4. Also, there are competing food and fibre requirements. In wealthier areas, food and clothing are relatively small part of the household budget and consumers are becoming prosumers, with high expectations for the standard and types of food and clothing they want. At the same time, global hunger and food and fibre scarcity are serious challenges. Nearly 800 million people are undernourished. Also, it has to be ensured that there is transparency, traceability and trust between producers, processors and prosumers.

This is where digital technology has a critical role to bring in the next Revolution in Agriculture. The issue is not about developing new, synthetic chemicals to apply to fields, or building ever larger corporate farms but at its core, Ag-tech is about using advanced monitoring and data analysis to do more with less – to find ways to increase yields without burdening already overtaxed resources such as land and water.

Five years ago, almost no one knew what Ag-tech was. Within the industry, we didn't even know what to call what we were doing. But fast forward to today and agricultural technology – from vertical farming to data science to farm drones – (Disruptive Technologies) is the new hot thing in investor circles. The Investment Corporation of Dubai alone just dropped $203 million into Ag-tech investments; another $200 million came from the Japanese holding Behemoth Soft Bank; and dedicated VC funds are zeroing in on the sector's potential. In 2017, total investment was over $1.5 billion – a new record for the sector, and one that's setting the stage for explosive growth.

Disruptive Digital Technologies

Fortunately, the makings of a next agricultural revolution are here, with the potential to reduce or eliminate all of the above mentioned issues. Mainly there are eight emerging digital technologies, each having the potential to transform agriculture. They range from the specific technical tools to new ways of seeing the existing system. Some sound familiar but their use in agriculture is novel. These eight digital technologies, briefly detailed below, can be categorised into four each of hardware and software and when these are combined with the Internet of Things (IoT), can profoundly change the way food and fibre production works.

1. Robots:

Robots are already accepted on many farms because they reduce labour costs, particularly for time consuming and repetitive tasks. However, now they are going to the next level: functioning autonomously or through set instructions to offer new kinds of assistance to people. For example, there are wine bots that are used in vineyards to prune vines, remove young shoots and monitor the vine and soil for general health. Nursery bots are used in plant nurseries to relocate potted plants. These new generation robots even include "soft robots" made from material and not from metal, for more delicate handling tasks. The robot market in agriculture is expected to grow from just under $1bn/year now to $16 bn/year by 2020

2. Drones:

Yes, they are a form of robot, but they lend a specificity that should be acknowledged separately. Of primary interest to farmers is the ability to visit and observe parts of the field they cannot easily visit during the growing season,

and with new camera technologies to collect information not seen with the human eye. Drones are being used in soil and field analysis, planting, crop spraying/monitoring, irrigation and crop health assessment. Even companies that don't specialise in this technology recognise the value. For example:-

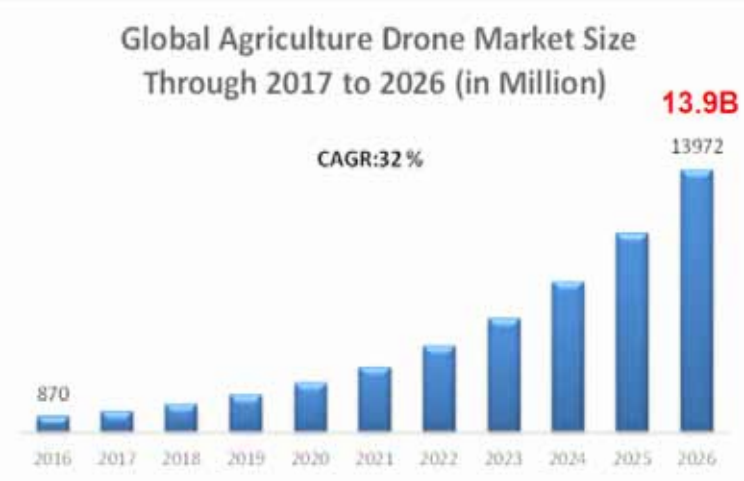
- John Deere is incorporating Sentera's scouting drones in a collaborative effort to extend its own offerings to customers.
- Syngenta and DuPont Pioneer have both made the foray into drone technology to assist farmers in making fertilizer application and irrigation decisions through aerial images.
- On the crop health side, SkySquirrel is using drones to analyze and monitor crop health focusing on improving yields and reducing costs. Smart drones take flight for precision agriculture use. Photographs taken by drones help farmers in getting a better view of the crop and in taking correct and more accurate decisions.

Drones in Cotton Cultivation:

Image (below) taken from a drone shows uneven cotton plant growth due to erratic water availability.

Global Agriculture Drone Market Size

Though as of date, this technology use is not very high, but looking towards information that can be collected with use of drones, it is expected to increase in days to come. It is estimated that by 2026 this number may touch 14 billion. A graphic view of its use in days to come is given below:-



(To be continued)

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

Excerpts from India Meteorological Department's Weather Report of 18th July 2019

Forecast for next two weeks

Weather systems & associated Precipitation during Week 1 (18 to 24 July, 2019) and Week 2 (25 to 31 July, 2019)

Rainfall for week 1: (18 to 24 July, 2019)

- Due to likely strong wind at lower levels over southern parts of West Coast and likely formation of east-west shear zone over south Peninsular India mainly between 3.1 & 4.5 km above mean sea level, active to vigorous monsoon conditions with widespread rainfall with heavy to very heavy and extremely heavy falls at isolated places are very likely over Kerala during 18th-21st and over coastal Karnataka during 20th- 22nd July and with heavy to very heavy falls at isolated places during remaining days of week 1.

- Fairly widespread to widespread rainfall with heavy falls at isolated places are also very likely over Lakshadweep, Karnataka, Telangana, Chhattisgarh and Maharashtra, Andaman & Nicobar Islands, northeastern states and Sub-Himalayan West Bengal & Sikkim during most days of the week 1.

Annexure IV

METEOROLOGICAL SUB-DIVISIONWISE WEEKLY RAINFALL FORECAST & Wx. WARNINGS-2019

Sr. No	MET.SUB-DIVISIONS	18 JUL	19 JUL	20 JUL	21 JUL	22 JUL	23 JUL	24 JUL
1	ANDAMAN & NICO.ISLANDS	WS	WS*	WS*	WS*	WS	WS	WS
2	ARUNACHAL PRADESH	SCT	SCT	FWS	FWS*	WS*	WS*	WS*
3	ASSAM & MEGHALAYA	FWS	FWS	FWS	FWS*	FWS*	FWS*	FWS*
4	NAGA.MANI.MIZO.& TRIPURA	SCT	FWS	FWS	FWS	FWS	FWS	FWS
5	SUB-HIM.W. BENG. & SIKKIM	SCT TS	SCT	FWS*	WS*	WS*	WS*	WS*
6	GANGETIC WEST BENGAL	SCT TS	SCT TS	ISOL	ISOL	SCT	SCT	SCT
7	ODISHA	WS *TS	FWS*	SCT	SCT TS	SCT TS	SCT	FWS
8	JHARKHAND	SCT TS	SCT	ISOL	ISOL	FWS	FWS	WS*
9	BIHAR	SCT	ISOL	ISOL	SCT	SCT	FWS*	FWS*
10	EAST UTTAR PRADESH	ISOL	ISOL	ISOL	ISOL	SCT	FWS*	FWS*
11	WEST UTTAR PRADESH	SCT	ISOL	ISOL	ISOL	ISOL	SCT	FWS
12	UTTARAKHAND	WS	FWS	FWS	FWS*	WS*	WS**	WS**
13	HARYANA CHD. & DELHI	FWS*	SCT	ISOL	ISOL	ISOL	ISOL	SCT
14	PUNJAB	SCT	SCT	ISOL	ISOL	ISOL	ISOL	SCT
15	HIMACHAL PRADESH	FWS	FWS	FWS	FWS*	FWS*	WS*	WS*
16	JAMMU & KASHMIR	SCT	SCT	SCT	SCT	SCT	SCT	SCT
17	WEST RAJASTHAN	ISOL	ISOL	ISOL	ISOL	ISOL	ISOL	ISOL
18	EAST RAJASTHAN	ISOL	ISOL	ISOL	ISOL	ISOL	SCT	SCT
19	WEST MADHYA PRADESH	ISOL	ISOL	ISOL	SCT	SCT	FWS	FWS*
20	EAST MADHYA PRADESH	ISOL	SCT	SCT	SCT	SCT	FWS*	FWS*
21	GUJARAT REGION D.D. & N.H.	ISOL	SCT	SCT	SCT	SCT	SCT	FWS
22	SAURASTRA KUTCH & DIU	ISOL	ISOL	ISOL	ISOL	ISOL	ISOL	SCT
23	KONKAN & GOA	WS*	WS*	WS*	WS*	WS*	WS**	WS**
24	MADHYA MAHARASHTRA	SCT	FWS*	WS*	WS*	WS*	WS*	WS*
25	MARATHAWADA	SCT	FWS*	WS*	WS*	WS*	WS*	WS*
26	VIDARBHA	SCT	FWS*	WS*	FWS	SCT	FWS	FWS
27	CHHATTISGARH	FWS	FWS*	SCT	SCT	SCT	FWS	FWS
28	COASTAL A. PR. & YANAM	FWS*	FWS	FWS	SCT	SCT	FWS	FWS
29	TELANGANA	FWS*	WS*	WS*	WS*	FWS	FWS	FWS
30	RAYALASEEMA	SCT	FWS	SCT	SCT	SCT	SCT	SCT
31	TAMIL. PUDU. & KARAIKAL	SCT*	SCT**	SCT*	SCT*	SCT*	ISOL	ISOL
32	COASTAL KARNATAKA	FWS*	WS**	WS***	WS***	WS***	WS**	WS*
33	NORTH INT.KARNATAKA	FWS	FWS*	WS*	WS*	WS*	WS**	WS**
34	SOUTH INT.KARNATAKA	WS**	WS**	WS**	WS**	WS**	WS**	WS*
35	KERALA & MAHE	WS***	WS***	WS***	WS***	WS**	WS**	WS*
36	LAKSHADWEEP	WS**	WS**	WS**	WS*	WS*	WS	WS

LEGENDS:

WS	WIDE SPREAD / MOST PLACES (76-100%)	FWS	FAIRLY WIDE SPREAD / MANY PLACES (51% to 75%)		
SCT	SCATTERED / FEW PLACES (26% to 50%)	ISOL	ISOLATED (up to 25%)	D/DRY	NIL RAINFALL
*Heavy Rainfall (64.5-115.5 mm)		**Heavy to Very Heavy Rainfall (115.6-204.4 mm)		***Extremely Heavy Rainfall (204.5 mm or more)	
~ FOG	^ SNOWFALL	# HAILSTORM	↑HEAT WAVE (+4.5 °C to +6.4 °C)	↑↑ SEVERE HEAT WAVE (> +6.4)	
$ THUNDERSTORM WITH SQUALL/GUSTY WIND		D/TS DUST/THUNDERSTORM	↓COLD WAVE (-4.5 °C to -6.4 °C)	↓↓SEVERE COLD WAVE (< -6.4)	

- Widespread rainfall with isolated heavy falls (during second half of the week) is likely over Himachal Pradesh and Uttarakhand during the week 1.

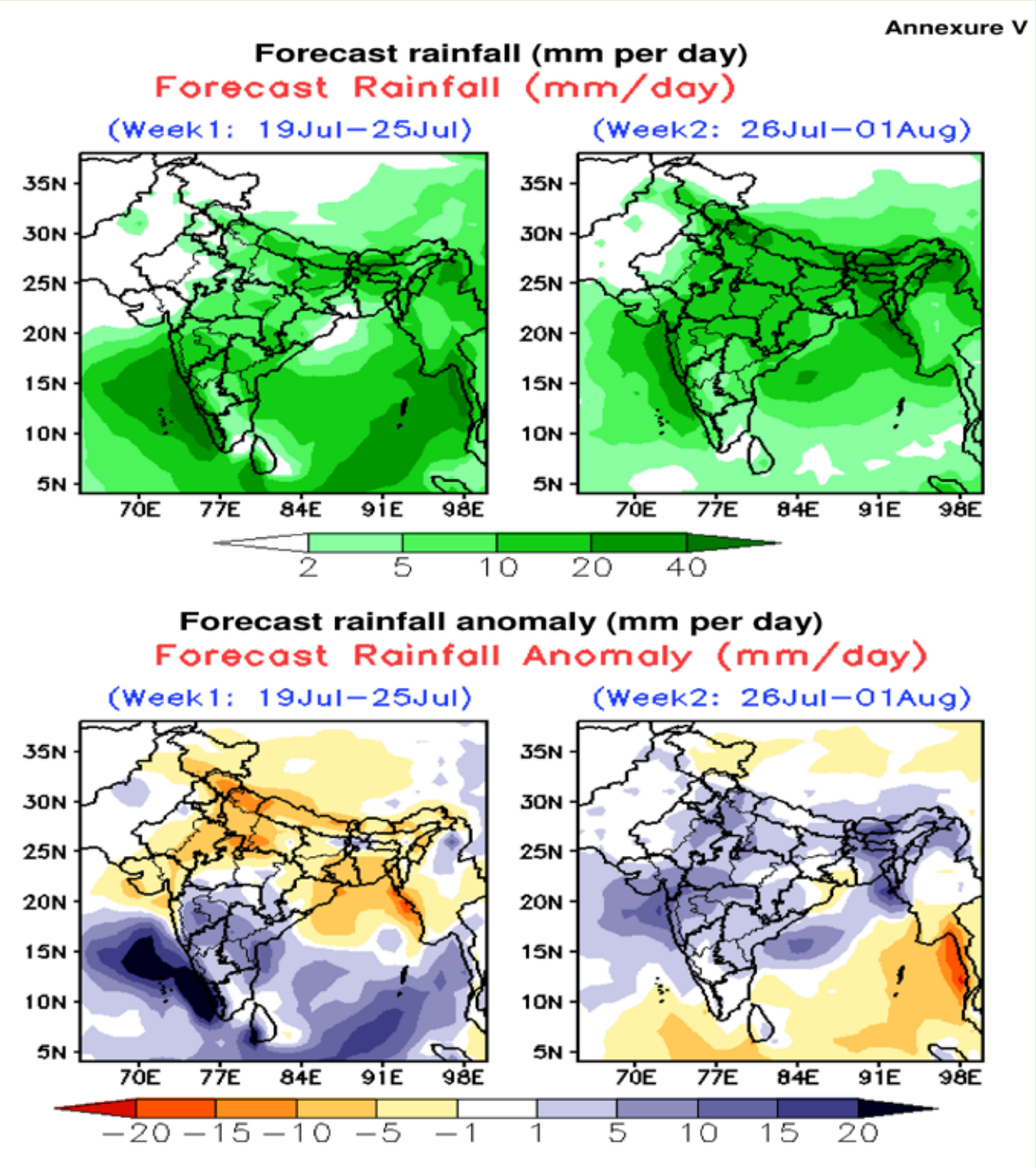
- Isolated to scattered rainfall activity likely to occur over rest parts of the country (Annexure IV).

- Cumulatively, above normal rainfall likely over Andaman & Nicobar Islands, Kerala, Tamilnadu, Andhra Pradesh, Telengana and Karnataka and over many parts of Maharashtra. It is very likely to be normal to below normal over remaining parts of the country during week 1 (Annexure V).

Rainfall for week 2: (25 to 31 July, 2019)

- During week 2, rainfall activity likely to increase over most parts of the country with normal to above normal rainfall activity outside most parts of Jammu & Kashmir, north Odisha and Gangetic West Bengal (Annexure V).

Annexure V



Update on Cotton Acreage (As on 18.07.2019)

(Area in Lakh Ha)

Sr. No.	State	Normal Area (DES)*	Normal Area as on Date (2014-2018)	Area Covered (SDA)					
				2019-20	2018-19	2017-18	2016-17	2015-16	2014-15
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Andhra Pradesh	6.56	2.557	1.550	2.290	3.097	2.270	2.040	3.090
2	Telangana	17.00	13.406	13.532	14.759	15.000	10.320	14.830	12.120
3	Gujarat	26.04	20.107	21.428	17.229	24.468	17.607	23.450	17.780
4	Haryana	6.06	6.078	6.760	6.650	6.560	4.980	5.810	6.390
5	Karnataka	6.47	3.598	2.170	2.580	3.550	3.620	3.460	4.780
6	Madhya Pradesh	5.65	4.920	5.730	5.240	5.570	5.240	5.310	3.240
7	Maharashtra	41.48	32.077	33.219	35.010	35.533	35.524	35.280	19.040
8	Odisha	1.31	1.079	1.280	1.038	1.307	0.800	1.110	1.140
9	Punjab	3.56	3.650	4.020	2.840	3.850	2.560	4.500	4.500
10	Rajasthan	4.76	4.159	6.360	4.857	5.010	3.740	3.490	3.700
11	Tamil Nadu	1.61	0.035	0.034	0.035	0.034	0.033	0.030	0.043
12	Others	0.43	0.230	0.271	0.172	0.286	0.170	0.210	0.310
All India		**120.930**	**91.896**	**96.354**	**92.700**	**104.265**	**86.864**	**99.520**	**76.133**

** Directorate of Economics & Statistics, Ministry of Agriculture and Farmers Welfare, Krishi Bhavan, New Delhi*
Source : Directorate of Cotton Development, Nagpur

SAVE THE DATES

18th - 19th October 2019

COTTON ASSOCIATION OF INDIA

Established 1921

presents

Cotton India 2019

DOMESTIC CONFERENCE 2019

IN MUMBAI

UPCOUNTRY SPOT RATES

(Rs./Qtl)

Sr. No.	Growth	Grade Standard	Grade	Staple	Micronaire	Strength /GPT	Spot Rate (Upcountry) 2018-19 Crop July 2019 15th	16th	17th	18th	19th	20th
	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	11501 (40900)	11501 (40900)	11501 (40900)	11501 (40900)	11501 (40900)	11501 (40900)
2	P/H/R	ICS-201	Fine	Below 22mm	5.0-7.0	15	11642 (41400)	11642 (41400)	11642 (41400)	11642 (41400)	11642 (41400)	11642 (41400)
3	GUJ	ICS-102	Fine	22mm	4.0-6.0	20	9448 (33600)	9448 (33600)	9448 (33600)	9448 (33600)	9476 (33700)	9476 (33700)
4	KAR	ICS-103	Fine	23mm	4.0-5.5	21	10770 (38300)	10770 (38300)	10770 (38300)	10770 (38300)	10770 (38300)	10770 (38300)
5	M/M	ICS-104	Fine	24mm	4.0-5.0	23	11304 (40200)	11304 (40200)	11304 (40200)	11304 (40200)	11304 (40200)	11304 (40200)
6	P/H/R	ICS-202	Fine	26mm	3.5-4.9	26	12457 (44300)	12485 (44400)	12485 (44400)	12513 (44500)	12485 (44400)	12485 (44400)
7	M/M/A	ICS-105	Fine	26mm	3.0-3.4	25	11276 (40100)	11304 (40200)	11304 (40200)	11332 (40300)	11332 (40300)	11332 (40300)
8	M/M/A	ICS-105	Fine	26mm	3.5-4.9	25	11614 (41300)	11642 (41400)	11642 (41400)	11670 (41500)	11670 (41500)	11670 (41500)
9	P/H/R	ICS-105	Fine	27mm	3.5.4.9	26	12626 (44900)	12654 (45000)	12654 (45000)	12682 (45100)	12654 (45000)	12654 (45000)
10	M/M/A	ICS-105	Fine	27mm	3.0-3.4	26	11529 (41000)	11557 (41100)	11557 (41100)	11585 (41200)	11585 (41200)	11585 (41200)
11	M/M/A	ICS-105	Fine	27mm	3.5-4.9	26	11782 (41900)	11810 (42000)	11810 (42000)	11838 (42100)	11838 (42100)	11838 (42100)
12	P/H/R	ICS-105	Fine	28mm	3.5-4.9	27	12654 (45000)	12710 (45200)	12710 (45200)	12738 (45300)	12710 (45200)	12710 (45200)
13	M/M/A	ICS-105	Fine	28mm	3.5-4.9	27	12035 (42800)	12063 (42900)	12063 (42900)	12092 (43000)	12092 (43000)	12092 (43000)
14	GUJ	ICS-105	Fine	28mm	3.5-4.9	27	12092 (43000)	12120 (43100)	12120 (43100)	12148 (43200)	12176 (43300)	12176 (43300)
15	M/M/A/K	ICS-105	Fine	29mm	3.5-4.9	28	12317 (43800)	12345 (43900)	12345 (43900)	12373 (44000)	12373 (44000)	12373 (44000)
16	GUJ	ICS-105	Fine	29mm	3.5-4.9	28	12288 (43700)	12317 (43800)	12317 (43800)	12345 (43900)	12373 (44000)	12373 (44000)
17	M/M/A/K	ICS-105	Fine	30mm	3.5-4.9	29	12710 (45200)	12710 (45200)	12710 (45200)	12738 (45300)	12738 (45300)	12738 (45300)
18	M/M/A/K/T/O	ICS-105	Fine	31mm	3.5-4.9	30	13020 (46300)	13020 (46300)	13020 (46300)	13048 (46400)	13048 (46400)	13048 (46400)
19	A/K/T/O	ICS-106	Fine	32mm	3.5-4.9	31	13329 (47400)	13329 (47400)	13329 (47400)	13357 (47500)	13357 (47500)	13357 (47500)
20	M(P)/K/T	ICS-107	Fine	34mm	3.0-3.8	33	15325 (54500)	15325 (54500)	15325 (54500)	15353 (54600)	15353 (54600)	15353 (54600)

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