Weekly Publication of

Cotton Association of India

COTTON STATISTICS & NEWS

Edited & Published by Amar Singh

2023-24 • No. 21 • 22nd August, 2023 Published every Tuesday

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Organic Cotton: Protection, Production, Demand, Issues and Challenges

EXPERT's Column

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Organic cotton refers to the cultivation of cotton without the use of synthetic chemicals and fertilizers. This approach aligns with natural farming systems, aiming to establish ecological equilibrium and sustainability throughout the entire production cycle. It encompasses the integration of appropriate non-chemical techniques for both crop production and protection, while still yielding a considerable cotton output.

The cultivation of organic cotton employs methods and materials that exert minimal impact on the environment. This involves production practices that replenish and uphold soil fertility, minimising the reliance on synthetic pesticides and fertilizers. The ultimate goal is to establish an agriculturally diverse system that supports a rich array of biological life. Overall, organic cotton production centers on ecologically friendly practices that sustain soil fertility and manage pest and weed challenges. Indiscriminate use of synthetic pesticides led to the development of insecticide resistance in target pests, resurgence of minor pests, presence of pesticide residues in produce, health risks to the applicators and contamination of the agricultural ecosystem. To address these negative impacts of pesticides,

adoption of organic cotton production system is found to be an effective approach, which is instrumental in conserving the cotton ecosystem.

In organic cotton farming, the emphasis is primarily on employing methods that eliminate the need for pesticides and herbicides, ensuring that residues free cultivation. This comprehensive process begins with meticulous field preparation and extends to the effective implementation of cultural, mechanical, biological, and behavioural strategies for controlling pests and weeds.

Organic Cotton Protection

Organic pest management methods in cotton encompass the application of eco-friendly and naturally occurring techniques to regulate pest populations, all without relying on synthetic chemicals. Within the realm of organic farming, practitioners employ an array of tactics as components of integrated pest management (IPM) to uphold the vitality of cotton crops and minimise the yield loss with sustainable manner. Some of the key organic pest management strategies such as deep summer ploughing serves the purpose of exposing immature stages of insect in subsoil and enhance adequate aeration. Monocropping of cotton should be avoided to prevent the carryover population from the proceeding crop as well as to prevent the spread mealybug, stem weevil, pink boll worm and soil-borne diseases. Instead, adopt effective crop rotation practices, planting insect-resistant desi cotton varieties (Gossypium arboretum and G. herbaceum) will help in reducing the impact of pest infestation.

During initial stages of the crop, cotton stem weevil is an important pest in southern India, particularly in Tamil Nadu, which could be managed by proper earthing up and application of Neem cake (@250kg/ha). Field sanitation is an important practice to break the lifecycle of insect pest surviving in the alternate hosts. The maximum yield of organic cotton could be achieved by intercropping, because it would conserve and encourage the establishment of beneficial organisms such as ladybird beetles, Chrysoperla and syrphids. Removal of terminal bud during 80-90 days of cotton crop, encourages the development of sympodial branching and aids in the elimination of bollworm eggs, particularly Helicoverpa armigera.

To control the bollworm complex in cotton, the application of microbial pesticides such as nuclear polyhedrosis virus (NPV) should be encouraged as an alternative to synthetic insecticides.

The undisturbed ecosystem will encourage the establishment of coccinellids and chrysopids and other natural enemies. If required, the release of Chrysoperla spp. @ 500-1000/ha will help in minimising the intensity sucking pests and immature stages of the bollworms. Depending upon the level of incidence of pink bollworm, 2-3 release of egg parasitiod, Trichogramma bactrae @ 60,000 / acre is recommended. Availability of quality formulations of Bacillus thuringiensis, Beauveria bassiana, Verticillium lecanii and Azadirachtin need to be ascertained to control the bollworms and whiteflies.

Proper monitoring of pest population will help in formulating the management strategy in time. Installation of pheromone traps at a distance of 50 meters, with 5 traps per acre per insect will help in monitoring boll worm complex such as American bollworm, pink bollworm, spotted bollworm, and tobacco cutworm. Installation of light traps @ 1-2 traps per acre will help in monitoring the insect activity of American bollworm and tobacco cutworm. The activities of the adult white flies could be monitored by setting up yellow pan traps and sticky traps at 30 cm height above the plant canopy.

Similarly, installation of yellow stick trap @ 10 /acre could help in minimising the sucking pest damage. Integration of all the management strategies in sustainable manner will help maintain a balanced ecosystem, fostering beneficial organisms and reduce the reliance on synthetic pesticides, promoting long-term sustainability in cotton farming.

Organic Cotton Production

Soil and water management: Organic cotton farmers mainly focus on maintaining soil health by employing different practices such as crop rotation, cover cropping. Addition of organic manures would enhance soil texture, nutrient and water-holding capacity and in due course of time would enhance the biodiversity of soil organisms, reduces soil erosion and promotes beneficial microbes.

Organic cotton farming often emphasises water conservation techniques which include efficient irrigation systems, water recycling and rainwater harvesting to reduce the strain on local water resources. Natural sources of nutrients, such as green manures, compost, animal manures are the main soil inputs to provide necessary nutrients for proper plant growth. These organic fertilizers release nutrients slowly and ensure long-term nutrient supply to the plants.

Seed Source (Non-GM Seeds)

Organic cotton production prohibits the use of genetically modified (GM) cotton seeds. The use of traditional cultivars (non-GM seeds) that are suitable for the specific region and climate must be considered for selection of seed materials. These seeds have not been genetically engineered for traits such as insect resistance or herbicide tolerance. Organic farmers rely on non-GM cotton varieties that are bred through traditional methods.

Certification and Standards

To be labelled as organic, cotton farms must comply with the standards set by organic certifying bodies. These standards may vary between countries and organizations but generally include guidelines for soil management, pest control, seed selection and record-keeping. Organic certification ensures transparency and helps consumers to identify organic products. To ensure the integrity of organic cotton, various certification programs exist. The most widely recognised is the Global Organic Textile Standard (GOTS). GOTS certification verifies that the cotton has been produced according to organic standards from cultivation, processing and labelling.

Benefits of Organic Cotton Production

Environmental Sustainability: Organic farming practices help in preservation of protects biodiversity, prevent water pollution, and conserve water resources. Use of natural materials, and methods without fossil-fuel based fertilisers might be helpful to store carbon and thereby reduces the negative impact on climate. The availability of organic carbon is more in the organic cotton production system; hence the water-holding capacity of the soil is greater than the conventional systems. Consequently, the crop can withstand drought to a certain extent. Eventually, pesticide and fertiliser-free cultivation prevents rivers, lakes, and water bodies from toxic pollutants.

Healthier Work Condition: Organic cotton production emphasises natural way of cultivation practices and provides a safer environment for farmers, workers thereby minimising their exposure to chemicals. In addition, it minimises the exposure of nearby communities to hazardous and harmful chemical materials.

Improved Farmer's Livelihood: Avoiding expensive synthetic inputs might provide economic benefits to farmers in organic cotton production. Additionally, some organic cotton programs support fair trade practices, ensuring that each farmer gets a reasonable profit.

Improved Soil Health: Organic farming methods help maintain soil fertility, improve soil structure and promote long-term sustainability by avoiding the depletion of natural resources.

Social Impact: Organic cotton production often promotes social welfare by supporting initiatives such as fair trade, gender equality and community development programs.

Health And Safety: Organic cotton products are generally considered safer for consumers, as they are free from pesticide residues and other potentially harmful chemicals.

Market Demand

With increasing awareness and demand for sustainable and ethically produced textiles, organic cotton has gained popularity in the market, providing opportunities for farmers and contributing to the growth of the organic textile industry. Organic cotton production has several advantages as well as challenges, such as lower yields compared to conventional cotton farming and potential difficulties in pest control. However, with proper knowledge, research and support, these challenges can be addressed for a more sustainable and environment friendly cotton industry.

Organic cotton accounts for a relatively small percentage of global cotton production, however, consumer demand for sustainable and organic products has been increasing. This scenario drives interest in organic cotton and encourages more farmers to adopt organic practices.

National And International Demand for Organic Cotton

The demand for organic cotton, both at the national and international level has been steadily increasing in the past decades. Consumers mainly seek sustainable and eco-friendly organic cotton products align with their preferences for socially and environmentally responsible choices.

National Demand: India has occupied a significant place in both the production and demand for organic cotton. It has a strong agricultural sector, and organic cotton cultivation has gained momentum due to the intensification of awareness about sustainable and eco-friendly practices.

Department of Agriculture and Farmers Welfare is implementing cotton development programme under National Food Security Mission (NFSM) in 15 major cotton growing states, with an aim to enhance production and productivity. The ICAR-Central Institute for Cotton Research, (CICR) is concentrating its research on the development and refinement of technology for production of organic cotton in the country.

The Government of India is promoting organic farming through a dedicated scheme, Paramparagat Krishi Vikas Yojana (PKVY). The production of organic cotton during 2020-21 has been 8,10,934 tonnes against 3,35,712 tonnes during 2019-20 and 3,12,876 tonnes during 2018-19.

International Demand: Increased exports of products from Indian apparel and fashion industry are major drivers for the international demand for organic cotton. Leading brands and retailers are gradually incorporating organic cotton into their supply chains to meet consumer demand for ethical clothing option. Many brands have also set sustainability goals towards the use of considerable percentage of organic cotton in their products.

Issues And Challenges

Production of cotton using organic farming practices seeks to maintain soil fertility, use of materials and techniques to enhance the balance in natural ecosystem and to integrate the parts of the farming system into an ecological whole. Though organic cotton production offers numerous benefits, it also faces several challenges and issues. Some key challenges associated with organic cotton production are:

Yield Drop: Organic cotton farming frequently results in reduced output in contrast to conventional cotton cultivation. The lack of high-yield cotton varieties (hybrids) and the absence of synthetic pesticides and fertilizers could potentially diminish crop productivity. This decline in yield might present economic difficulties for farmers who heavily depend on cotton as their primary income source.

Pest and Disease Management: The practice of organic cotton farming heavily depends on integrated pest management (IPM) strategies, which can demand more labour and necessitate vigilant surveillance and prompt action. Successfully managing pests and diseases without resorting to synthetic chemicals can present challenges, particularly in hot spot areas where pest activity is pronounced.

Certification and Compliance: Obtaining certification is a mandatory step in organic cotton production to confirm adherence to organic norms and regulations. The certification procedure could be intricate, lengthy, and financially burdensome for farmers, especially those who operate on a smaller scale and have limited resources. Meeting the stipulated certification criteria and sustaining compliance can prove to be a notable hurdle, particularly in areas where institutional backing is scarce.

Market Access and Price Premiums: With the growing demand for organic cotton products, accessing markets that pay a premium for organic cotton can be challenging for farmers. Securing fair prices for their organic cotton produce is crucial for farmers to sustain their organic farming practices. Lack of market opportunities and price premiums can discourage farmers from transitioning to or continuing organic cotton production.

Genetically Modified Cotton: Genetically modified cotton is not permitted in organic farming at present. The rapid adoption of Bt cotton cultivars into all the cotton growing agro-climatic zones has endangered organic cotton movement in their traditional niches as well as the spread of organic cotton cultivation to new areas. At this juncture, it would be possible to

promote organic cotton only into the desi cotton (G. arboretum and G. herbaceum) belt in India.

Scaling Up and Supply Chain Integration: Organic cotton production often involves additional costs and complexities in terms of sourcing, processing, and marketing. Building an integrated supply chain that connects organic cotton farmers with textile manufacturers, retailers and consumers can be a significant challenge. Ensuring a reliable and transparent supply chain is essential for the growth and viability of organic cotton production.

Conclusion

The primary aim of cotton cultivation is to achieve the utmost quality output while maintaining economic feasibility and minimising environmental impact. An optimal approach to cultivating this crop under an organic production system involves numerous elements that greatly influence yield, fibre quality, and overall crop profitability. Addressing these challenges requires collaborative endeavours from diverse stakeholders, including farmers, governmental bodies, non-governmental organizations, and private enterprises. Investments in research, skill development, infrastructure establishment, and initiatives for market entry can effectively address these challenges and promote the expansion of organic cotton production in a manner that is sustainable and economically viable.

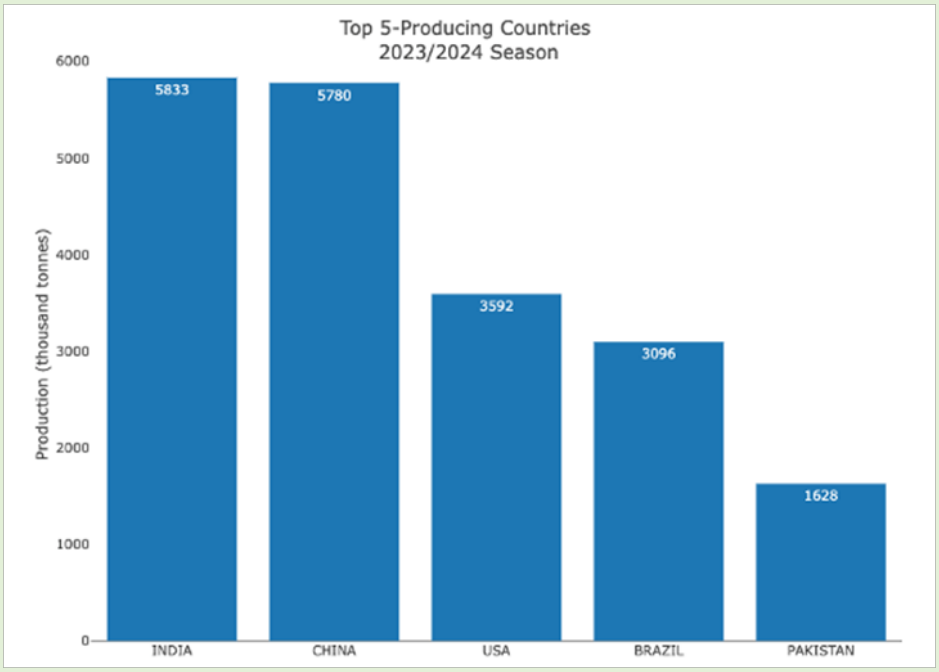
(The views expressed in this column are of the authors and not that of Cotton Association of India)

Will Early-Season Optimism Be Sustained?

As the 2023/24 season kicks off today, things are looking pretty good! The ICAC's current projections for global production, consumption and trade all reflect improvements over the prior season.

But there are some concerning dark clouds on the horizon and those numbers are unlikely to be maintained, for a host of reasons:

- Three of the world's top producers — China, India and the USA — are unlikely to hit their desired numbers, and the other two — Brazil and Pakistan — could struggle as well.
- Although global economic concerns like inflation have moderated significantly thanks to governments' efforts, consumer confidence remains low and that could drag down demand for discretionary goods.



- Lower demand means lower mill use, which means a decrease in trade.

Price Projections

The Secretariat's current price forecast of the season-average A index for 2023/24 ranges from 66 cents to 109 cents, with a midpoint of 85 cents per pound.

Source: ICAC Cotton This Month, 02 August 2023

Glimpses of Independence Day

The Cotton Association of India has a venerable tradition of celebrating Independence Day every year. This year too, the 77th Independence Day was celebrated with great fervour on Tuesday, August 15, on the premises of the CAI. The theme of this year's Independence Day celebrations was "Nation First, Always First". The flag hoisting ceremony was performed by Shri. Shyamsunder M. Makharia, Hon. Treasurer CAI and Managing Partner of Shykam Exim LLP; in the presence of Shri. Atul. S. Ganatra, President CAI, Shri. Arun Sekhsaria, Executive Additional Vice-President CAI and other members of CAI.

This was followed by felicitation of the chief guest and screening of a short documentary patriotic film..

Supply and Distribution of Cotton

02 August 2023

Seasons begin on August 1 — Million Metric Tonnes

	2018/19	2019/20	2020/21	2021/22	2022/23 proj.	2023/24 proj.
BEGINNING STOCKS						
WORLD TOTAL	**19.43**	**19.34**	**22.11**	**20.19**	**19.41**	**20.21**
China	9.03	8.88	9.02	9.37	8.60	8.41
USA	0.82	0.83	1.23	0.26	0.34	0.30
PRODUCTION						
WORLD TOTAL	**25.98**	**26.26**	**23.99**	**25.18**	**24.68**	**26.53**
China	6.04	5.80	5.91	5.73	5.98	5.78
India	5.66	6.20	6.02	5.22	5.50	5.83
USA	4.00	4.34	3.18	3.81	3.15	3.59
Brazil	2.78	3.00	2.36	2.55	3.02	3.10
Pakistan	1.67	1.46	0.96	1.27	0.84	1.63
Uzbekistan	0.64	0.53	0.70	0.59	0.59	0.59
Others	5.20	4.93	4.86	6.00	5.60	6.01
CONSUMPTION						
WORLD TOTAL	**26.01**	**23.05**	**25.70**	**25.83**	**23.88**	**24.41**
China	8.25	7.23	8.40	8.31	7.50	7.43
India	5.40	4.45	5.70	5.30	5.01	5.11
Europe & Turkey	1.82	1.60	1.79	2.01	2.05	2.04
Pakistan	2.36	2.34	2.15	2.45	1.90	1.94
Bangladesh	1.58	1.50	1.64	1.73	1.60	1.80
Vietnam	1.51	1.45	1.52	1.46	1.30	1.55
Brazil	0.73	0.57	0.69	0.70	0.70	0.66
USA	0.63	0.47	0.52	0.56	0.45	0.42
Others	3.73	3.44	3.29	3.31	3.38	3.45
EXPORTS						
WORLD TOTAL	**9.28**	**9.21**	**10.83**	**9.73**	**8.44**	**9.52**
USA	3.37	3.47	3.63	3.18	2.74	3.05
Australia	0.79	0.30	0.35	0.79	1.60	1.10
Brazil	1.31	1.95	2.42	1.74	1.38	2.05
CFA Zone	1.16	1.07	1.19	1.31	0.88	1.46
India	0.76	0.70	1.36	0.87	0.17	0.20
Uzbekistan	0.16	0.10	0.10	0.03	0.03	0.04
IMPORTS						
WORLD TOTAL	**9.22**	**8.78**	**10.65**	**9.60**	**8.44**	**9.52**
Bangladesh	1.54	1.50	1.69	1.70	1.40	1.73
Vietnam	1.51	1.41	1.55	1.36	1.35	1.55
China	2.10	1.60	2.84	1.85	1.35	2.07
Turkey	0.79	1.02	1.19	1.24	1.20	1.20
Indonesia	0.66	0.55	0.55	0.58	0.60	0.62
TRADE IMBALANCE †	-0.06	-0.43	-0.18	-0.13	0.00	0.00
STOCKS ADJUSTMENT ‡	0.00	-0.01	-0.03	0.00	0.00	0.00
ENDING STOCKS						
WORLD TOTAL	**19.34**	**22.11**	**20.19**	**19.41**	**20.21**	**22.32**
China	8.88	9.02	9.37	8.60	8.41	8.79
USA	0.83	1.23	0.26	0.34	0.30	0.42
ENDING STOCKS/MILL USE (%)						
WORLD-LESS-CHINA *	**58.86**	**82.70**	**62.56**	**61.69**	**72.05**	**79.68**
CHINA **	**107.69**	**124.82**	**111.51**	**103.46**	**112.07**	**0.00**
COTLOOK A INDEX***	**84.35**	**71.33**	**84.96**			

Note :
Seasons begin on August 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.*
‡ *Difference between calculated stocks and actual; amounts for forward seasons are anticipated.*
* *World-less-China's ending stocks divided by World-less-China's mill use, multiplied by 100.*
** *China's ending stocks divided by China's mill use, multiplied by 100.*
*** *U.S. Cents per pound. Average price for a given season, August 1 to July 31 or average-to-date.*
Source: ICAC Cotton This Month, 02 August 2023

UPCOUNTRY SPOT RATES

(Rs./Qtl)

Sr. No.	Growth	Grade Standard	Grade	Staple	Micronaire	Gravimetric Trash	Strength /GPT	Spot Rate (Upcountry) 2022-23 Crop August 2023					
								14th	15th	16th	17th	18th	19th
1	P/H/R	ICS-101	Fine	Below 22mm	5.0 – 7.0	4%	15	17209 (61200)		17097 (60800)	17097 (60800)	17097 (60800)	17097 (60800)
2	P/H/R (SG)	ICS-201	Fine	Below 22mm	5.0 – 7.0	4.5%	15	17350 (61700)		17238 (61300)	17238 (61300)	17238 (61300)	17238 (61300)
3	GUJ	ICS-102	Fine	22mm	4.0 – 6.0	13%	20	13441 (47800)	H	13441 (47800)	13441 (47800)	13441 (47800)	13441 (47800)
4	KAR	ICS-103	Fine	22mm	4.5 – 6.0	6%	21	14201 (50500)		14201 (50500)	14201 (50500)	14201 (50500)	14172 (50400)
5	M/M (P)	ICS-104	Fine	23mm	4.5 – 7.0	4%	22	15691 (55800)		15747 (56000)	15747 (56000)	15747 (56000)	15719 (55900)
6	P/H/R (U) (SG)	ICS-202	Fine	27mm	3.5 – 4.9	4.5%	26	15972 (56800)	O	15916 (56600)	15916 (56600)	15916 (56600)	15916 (56600)
7	M/M(P)/ SA/TL	ICS-105	Fine	26mm	3.0 – 3.4	4%	25	- -		- -	- -	- -	- -
8	P/H/R(U)	ICS-105	Fine	27mm	3.5 – 4.9	4%	26	16169 (57500)		16113 (57300)	16113 (57300)	16113 (57300)	16113 (57300)
9	M/M(P)/ SA/TL/G	ICS-105	Fine	27mm	3.0 – 3.4	4%	25	15607 (55500)		15607 (55500)	15607 (55500)	15550 (55300)	15522 (55200)
10	M/M(P)/ SA/TL	ICS-105	Fine	27mm	3.5 – 4.9	3.5%	26	16310 (58000)	L	16310 (58000)	16310 (58000)	16310 (58000)	16281 (57900)
11	P/H/R(U)	ICS-105	Fine	28mm	3.5 – 4.9	4%	27	16816 (59800)		16759 (59600)	16759 (59600)	16759 (59600)	16759 (59600)
12	M/M(P)	ICS-105	Fine	28mm	3.7 – 4.5	3.5%	27	16759 (59600)		16759 (59600)	16759 (59600)	16759 (59600)	16731 (59500)
13	SA/TL/K	ICS-105	Fine	28mm	3.7 – 4.5	3.5%	27	16816 (59800)	I	16816 (59800)	16816 (59800)	16816 (59800)	16788 (59700)
14	GUJ	ICS-105	Fine	28mm	3.7 – 4.5	3%	27	16900 (60100)		16900 (60100)	16900 (60100)	16844 (59900)	16816 (59800)
15	R(L)	ICS-105	Fine	29mm	3.7 – 4.5	3.5%	28	16759 (59600)		16703 (59400)	16703 (59400)	16703 (59400)	16675 (59300)
16	M/M(P)	ICS-105	Fine	29mm	3.7 – 4.5	3.5%	28	17097 (60800)	D	17097 (60800)	17097 (60800)	17097 (60800)	17069 (60700)
17	SA/TL/K	ICS-105	Fine	29mm	3.7 – 4.5	3%	28	17125 (60900)		17125 (60900)	17125 (60900)	17125 (60900)	17097 (60800)
18	GUJ	ICS-105	Fine	29mm	3.7 – 4.5	3%	28	17209 (61200)		17209 (61200)	17209 (61200)	17153 (61000)	17125 (60900)
19	M/M(P)	ICS-105	Fine	30mm	3.7 – 4.5	3.5%	29	17322 (61600)		17322 (61600)	17322 (61600)	17322 (61600)	17294 (61500)
20	SA/TL/K/O	ICS-105	Fine	30mm	3.7 – 4.5	3%	29	17350 (61700)	A	17350 (61700)	17350 (61700)	17350 (61700)	17322 (61600)
21	M/M(P)	ICS-105	Fine	31mm	3.7 – 4.5	3%	30	17462 (62100)		17462 (62100)	17462 (62100)	17462 (62100)	17434 (62000)
22	SA/TL/ K / TN/O	ICS-105	Fine	31mm	3.7 – 4.5	3%	30	17519 (62300)		17519 (62300)	17519 (62300)	17519 (62300)	17491 (62200)
23	SA/TL/K/ TN/O	ICS-106	Fine	32mm	3.5 – 4.2	3%	31	N.A. (N.A.)	Y	N.A. (N.A.)	N.A. (N.A.)	N.A. (N.A.)	N.A. (N.A.)
24	M/M(P)	ICS-107	Fine	34mm	2.8 - 3.7	4%	33	20106 (71500)		20274 (72100)	20415 (72600)	20415 (72600)	20415 (72600)
25	K/TN	ICS-107	Fine	34mm	2.8 - 3.7	3.5%	34	20387 (72500)		20556 (73100)	20696 (73600)	20696 (73600)	20696 (73600)
26	M/M(P)	ICS-107	Fine	35mm	2.8 - 3.7	4%	35	20668 (73500)		20837 (74100)	20921 (74400)	20921 (74400)	20921 (74400)
27	K/TN	ICS-107	Fine	35mm	2.8 - 3.7	3.5%	35	20949 (74500)		21118 (75100)	21202 (75400)	21202 (75400)	21202 (75400)

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