

# A Century of Cotton Improvement Research in India- Looking Back to Move Ahead

Dr. M. V. Venugopalan earned his Ph D in Agronomy and is currently serving as a Principal

Scientist (Agronomy) and Head, Priority Setting, Monitoring and Evaluation Cell at the ICAR-Central Institute for Cotton Research, Nagpur, India. He specializes in cotton crop simulation modeling, participatory and perspective land use planning, carbon sequestration and highdensity sustainable cotton planting systems. Не Executive Committee member of the International Cotton Researchers Association.

EXPERT'S



**Dr. M.V. Venugopalan**ICAR-Central Institute
for Cotton Research, Nagpur

The British made several efforts to introduce and acclimatise long linted *G. hirsutum* and *G. barbadense* cotton in India. Yet during the dawn of the 20<sup>th</sup> century, the cotton grown in the country was almost exclusively the diploid cottons belonging to *G. arboreum* and *G. herbaceum* species. Negligible area was under *G. hirsutum* varieties – Cambodia in Madras, 4F in Punjab, New Orleans and Georgian in Dharwar and Cawnpore American in Kanpur. Hitherto, no systematic efforts were made to improve the diploid cottons grown in several provinces. A survey undertaken by Agricultural Departments

soon after their establishment in India in 1907 revealed that the so-called varieties grown in

India were a mixture of types with high variability for most traits. Repeated selections and plant to row planting of progenies, led to the purification of some of these mixtures and by the year by 1920, each province had one or two improved cotton strains. But bulk of the cotton grown in India, still remained a mixture of more than one type.

In pursuance of the recommendations of the Indian Cotton Committee, the Indian Central Cotton Committee (ICCC) was established in 1921 as a technical advisory body to the

Government on all aspects of cotton including research. This article attempts to capture the salient achievements of cotton during the last century since the establishment of ICCC.

## Cotton Improvement in the Pre Independence Era

The ICCC levied a cess on the Indian cotton that was either consumed in the mills in British India or the one which was exported from British Indian ports. The fund thus collected was used to fund research on cotton. ICCC sponsored fundamental research on various aspects of

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cotton including cotton breeding at the Institute of Plant Industry established at Indore in 1924 and fibre quality testing at the Cotton Technology Research Laboratory (now CIRCOT) established in Bombay in 1924. ICCC also provided grants to the Department of Agriculture in various provinces / states to undertake scientific cotton breeding work to improve yield, quality and other traits on a network basis. Department of Agriculture in Bombay, Central Provinces and Berar, Punjab, United Provinces and Madras were pioneers in initiating systematic cotton improvement work using the principles and practices of plant breeding. Soon improved varieties of G. arboreum (Jarila, C 520, V 262, V 434, Gaorani 6, N 14, Cocanada, K5), G. herbaceum (Wagad 8, Sruti-suyog, Jayawant, 1027 ALF, Vijay, Western, BD 8) and G. hirsutum (LSS, Cawnpore American 9, Co 1, Co 2, Co 4, Indore 1, Selection 69) were released.

Inter-specific hybridisation using wild species *G. thurberi* and *G. Raimondi* with hirsutum and barbadense cotton to impart drought and disease resistance was initiated at the Institute of Plant Industry at Indore.

As a result of the release of new varieties and their adoption, the area under these varieties of cotton progressively grew and by 1947-48, 47.2 % of the 10813,000 acres of cotton in the Indian Union was under improved varieties. The

improved varieties in cultivation were mainly of medium and long staple category. Table 1 depicts the spread of improved varieties of different staple categories in different provinces/states of India in 1947-48.

### **Cotton Improvement During the First Three Plan Periods**

The immediate objective of the First Five-Year Plan was to reverse the disequilibrium created by the Second World War and the Partition. Immediately after the Partition, although India was left with the bulk of the Indian cotton textile industry, it lost major long staple cotton producing irrigated areas in West Punjab and Sind to Pakistan. This resulted in a huge (15 lakh bale) shortage of long and medium staple cotton and a surplus of short staple cotton. To meet this deficit, the ICCC in March 1948 recommended to the Government of India, for an over-all increase of 4.0 million acres in the area under medium and long staple cotton (mainly Cambodia Co.2, Co.3 and Co.4 varieties)

With the commencement of the First Five-Year Plan, a large number of schemes for evolving new varieties and better agro-techniques were initiated and financed by the ICCC and these efforts continued till the abolition of ICCC in 1966. In 1954, the Indian Central Cotton Committee decided to regionalise research on

Table 1. Improved varieties of cotton in different provinces/states of India in 1947-48.

Sr. No.	Province on State	Names of improved varieties
1	Bombay	Surti-Suyog (L), 1027 A.L.F. (L), Jayawant (L), Broach-Vijaya (M), Wagotar (M), Jarila (M), Gadag1 (M)
2	Central Provinces & Berar	Buri (Cambodia) (L), H.420 (L), Jarila (M), Verum (M)
3	Madras	Combolia CO2, CO3, CO4 (L), Karunganni strains (M), Western Farm (H1) (M)
4	East Punjab	Punjab American L.S.S. (M), Punjab American 4F (M), Mollisoni (S)
5	United Provinces	C.520 (S)
6	Hyderabad state	Gaorani 6 and Gaorani 12 (L), Jayawant (L), Jarilla (M)
7	Central India, Rajputana and Gwalior	Buri (Cambodia) (L), Jarila (M)
8	Baroda	Surti-Suyog (L), Broach-Vijaya (M), Wagotar (M)
9	Mysore	M.A.V. (L), CO. 4 (L), Sel. 69 (M)

L = Long Staple (7/8 inch and above), M = Medium Staple (above 11/16 but below 7/8 inch), S = Short Staple (11/16 inch and below)

cotton and sanctioned Rs. one million during the Second Five-Year Plan for the establishment of regional stations for carrying out research on cotton on variety cum climate basis.

Some important varieties developed during the first three Five-Year Plans include - 320F (Punjab), H14 (Haryana), Deviraj, Digvijay (Gujarat), Gujarat 67, V 797 and J34, Badnawar-1 (Madhya Pradesh), Buri 147, AK 235, AK 277 and Buri 1007 (Maharashtra), MCU2, MCU-3, MCU-

4 (Tamilnadu). The spread of these improved varieties helped the Indian textile industry reduce imports and rely on domestic cotton of the desired quality.

(To be continued)

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

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# Production is Poised for Full Recovery with a 6% Increase Expected for 2021/22

To say the 202/21 season was disappointing for the cotton industry is a major understatement, given the mayhem and confusion that occurred when the Covid-19 virus ground the global supply chain to a halt.

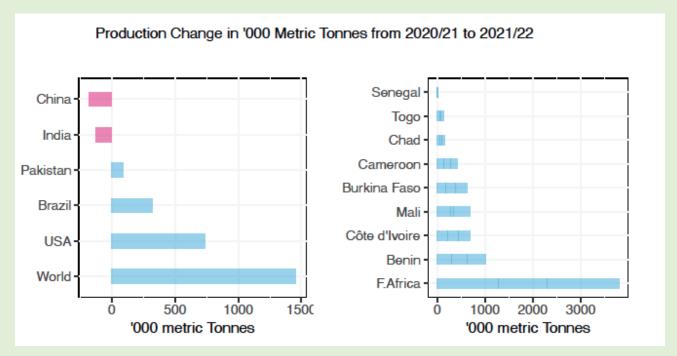
While it would be naïve to say things are back to normal — only about 3% of people in less-developed countries have been vaccinated, far behind those in richer countries — there are some signs that the recovery is in full swing.

Three of the world's top five producers (Brazil, Pakistan and the USA) are showing increases in production vs 2020/21 and while that won't quite

bring things back to 'normal', it is a sign that the industry's recovery is still in full swing. Current projections show an increase of 6% in global production in 2021/22 vs the prior season.

Nowhere is that more evident than in West Africa, where all countries are reporting production increases, with the region being up nearly 48% vs the 2020/21 season.

The Secretariat's current price forecast of the season-average A index for 2021/22 ranges from 87 cents to 126 cents, with a midpoint at 104.26 cents per pound.



Source: ICAC Cotton This Month, November 01, 2021.

Sup	oply and	Distrik		of Cotto	n	
Seasons begin on August 1		011(0101			Million M	etric Tons
Ç Ç	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
BEGINNING STOCKS	20.40	40.70	40.25	10.10	22.14	20.20
WORLD TOTAL	20.40	18.73	19.25	19.10	22.14	20.20
China USA	12.65 0.83	10.35 0.60	9.03 0.82	8.88 0.83	8.96 1.23	9.27 0.23
PRODUCTION	0.63	0.60	0.62	0.65	1.23	0.25
WORLD TOTAL	23.35	26.96	25.95	26.12	24.26	25.72
India	5.86	6.35	5.66	6.20	6.03	5.90
China	4.90	5.89	6.04	5.80	5.91	5.73
USA	3.74	4.56	4.00	4.34	3.18	3.92
Brazil	1.53	2.01	2.78	3.00	2.36	2.68
Pakistan	1.66	1.80	1.67	1.32	0.89	0.98
Uzbekistan	0.96	0.96	0.64	0.53	1.03	0.94
Others	4.70	5.40	5.16	4.93	4.87	5.57
CONSUMPTION						
WORLD TOTAL	24.90	26.35	26.01	22.69	25.60	26.02
China	8.28	8.50	8.25	7.23	8.40	8.40
India	5.15	5.42	5.40	4.45	5.61	5.89
Pakistan	2.22	2.35	2.36	1.98	2.15	2.15
Europe & Turkey Bangladesh	1.66 1.41	1.73 1.66	1.82 1.58	1.60 1.50	1.70 1.64	1.74 1.66
Vietnam	1.17	1.51	1.50	1.45	1.52	1.54
Brazil	0.69	0.68	0.73	0.57	0.69	0.70
USA	0.71	0.70	0.63	0.47	0.55	0.54
Others	3.62	3.80	3.73	3.44	3.34	3.39
EXPORTS						
WORLD TOTAL	8.29	9.14	9.30	9.07	10.68	10.45
USA	3.33	3.64	3.37	3.47	3.63	3.36
Brazil	0.61	0.91	1.31	1.95	2.40	2.06
CFA Zone	1.00	1.06	1.18	0.92	1.26	1.40
India	0.99	1.13	0.76	0.70	1.35	1.12
Australia	0.81	0.85	0.79	0.30	0.34	0.75
Uzbekistan IMPORTS	0.38	0.22	0.16	0.10	0.01	0.01
WORLD TOTAL	8.09	9.04	9.22	8.68	10.08	10.45
China	1.10	1.32	2.10	1.55	2.80	2.85
Bangladesh	1.41	1.67	1.54	1.50	1.69	1.69
Vietnam	1.20	1.52	1.51	1.46	1.58	1.58
Turkey	0.84	0.96	0.79	1.02	1.16	1.13
Indonesia	0.74	0.77	0.66	0.55	0.50	0.54
TRADE IMBALANCE †	-0.20	-0.10	-0.08	-0.39	-0.60	0.00
STOCKS ADJUSTMENT ‡	0.07	0.00	0.00	-0.01	0.00	0.00
ENDING STOCKS						
WORLD TOTAL	18.73	19.25	19.10	22.14	20.20	19.91
China	10.35	9.03	8.88	8.96	9.27	9.44
USA	0.60	0.82	0.83	1.23	0.23	0.24
ENDING STOCKS/MILL US	. ,	F7 00	F7 F3	0E 0E	60 FF	E0.20
WORLD-LESS-CHINA * CHINA **	50.43 125.03	57.23 106.27	57.52 107.69	85.27 123.91	63.55 110.33	59.39 112.43
COTLOOK A INDEX***	82.77	87.98	84.35	71.33	84.96	112,43
COLLOOK A INDEX	04.77	07.70	01.00	11.00	0-1.70	

 $The inclusion of linters \ and \ waste, \ changes \ in \ weight \ during \ transit, \ differences \ in \ reporting \ periods \ and \ measurement \ error \ account$ for differences between world imports and exports.

Source: Cotton This Month, November 01,2021

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.

<sup>\*\*\*</sup> U.S. Cents per pound. Average price for a given season, August 1 to July 31 or average-to-date.

## 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.

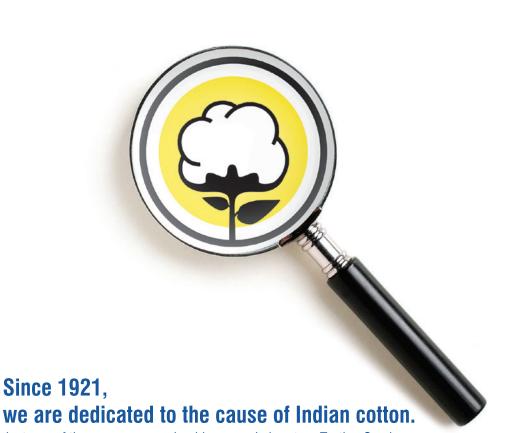
We earnestly request you to avail the facility of testing at the Association's laboratories.



### Cotton Association of India

Cotton Exchange Building, 2nd Floor, Opposite Cotton Green Railway Station, Cotton Green (East), Mumbai - 400 033.

Tel.: +91 8657442944/45/46/47/48 • E-mail: cai@caionline.in • www.caionline.in



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: Khargone • Karnataka: Hubli • Punjab: Bathinda • Telangana: Warangal, Adilabad



ISO 9001:2015

### **COTTON ASSOCIATION OF INDIA**

Cotton Exchange Building, 2nd Floor, Opposite Cotton Green Railway Station, Cotton Green (East), Mumbai - 400 033, Maharashtra, INDIA Tel.: +91 8657442944/45/46/47/48 • E-mail: cai@caionline.in • www.caionline.in

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

					UPCOUI	NTRY SP	OT RAT	ES				(R	s./Qtl)
		netres bas	sed on	with Bas	ic Grade & Half Mean	& Staple		Spot Rate (Upcountry) 2020-21 Crop November 2021					
Sr. No	. Growth	Grade Standard	Grade	Staple	Micronaire	Gravimetric Trash	Strength /GPT	8th	9th	10th	11th	12th	13th
1	P/H/R	ICS-101	Fine	Below 22mm	5.0 - 7.0	4%	15	-	-	-	-	-	-
2	P/H/R (SG)	ICS-201	Fine		5.0 - 7.0	4.5%	15	-	-	-	-	-	-
3	GUJ	ICS-102	Fine		4.0 - 6.0	13%	20	11248 (40000)	11107 (39500)	11248 (40000)	11248 (40000)	11248 (40000)	11248 (40000)
4	KAR	ICS-103	Fine	23mm	4.0 - 5.5	4.5%	21	12373 (44000)	12232 (43500)	12373 (44000)	12373 (44000)	12373 (44000)	12373 (44000)
5	M/M (P)	ICS-104	Fine	24mm	4.0 - 5.5	4%	23	13357 (47500)	13216 (47000)	13357 (47500)	13357 (47500)	13357	13357 (47500)
6	P/H/R (U) (SG)	ICS-202	Fine	27mm	3.5 - 4.9	4.5%	26	- (47500)	-	-	-	-	-
7	M/M(P)/	ICS-105	Fine	26mm	3.0 - 3.4	4%	25	-	-	-	-	-	-
8	SA/TL P/H/R(U)	ICS-105	Fine	27mm	3.5 - 4.9	4%	26	-	-	-	-	-	-
9	M/M(P)/	ICS-105	Fine	27mm	3.0 - 3.4	4%	25	-	-	-	-	-	-
10	SA/TL/G M/M(P)/	ICS-105	Fine	27mm	3.5 - 4.9	3.5%	26	-	-	-	-	-	-
11	SA/TL P/H/R(U)	ICS-105	Fine	28mm	3.5 - 4.9	4%	27	-	-	-	-	-	-
12	M/M(P)	ICS-105	Fine	28mm	3.7 - 4.5	3.5%	27	-	-	-	-	-	-
13	SA/TL/K	ICS-105	Fine	28mm	3.7 - 4.5	3.5%	27	-	-	-	-	-	-
14	GUJ	ICS-105	Fine	28mm	3.7 - 4.5	3%	27	-	-	-	-	-	-
15	R(L)	ICS-105	Fine	29mm	3.7 - 4.5	3.5%	28	-	-	-	-	-	-
16	M/M(P)	ICS-105	Fine	29mm	3.7 - 4.5	3.5%	28	-	-	-	-	-	-
17	SA/TL/K	ICS-105	Fine	29mm	3.7 - 4.5	3%	28	-	-	-	-	-	-
18	GUJ	ICS-105	Fine	29mm	3.7 - 4.5	3%	28	-	-	-	-	-	-
19	M/M(P)	ICS-105	Fine	30mm	3.7 - 4.5	3.5%	29	-	-	-	-	-	-
20	SA/TL/K/O	ICS-105	Fine	30mm	3.7 - 4.5	3%	29	-	-	-	-	-	-
21	M/M(P)	ICS-105	Fine	31mm	3.7 - 4.5	3%	30	-	-	-	-	-	-
22	SA/TL/	ICS-105	Fine	31mm	3.7 - 4.5	3%	30	-	-	-	-	-	-
23	K / TN/O SA/TL/K/	ICS-106	Fine	32mm	3.5 - 4.2	3%	31	-	-	-	-	-	-
24	TN/O M/M(P)	ICS-107	Fine	34mm	2.8 - 3.7	4%	33	-	-	-	-	-	-
25	K/TN	ICS-107	Fine	34mm	2.8 - 3.7	3.5%	34	-	-	-	-	-	-
26	M/M(P)	ICS-107	Fine	35mm	2.8 - 3.7	4%	35	-	-	-	-	-	-
27	K/TN	ICS-107	Fine	35mm	2.8 - 3.7	3.5%	35	-	-	-	-	-	-
								-	-	-	-	-	-

COTTON STATISTICS & NEWS

					UPCOU	NTRY SP	OT RAT	TES .				(R	s./Qtl
Standard Descriptions with Basic Grade & Staple in Millimetres based on Upper Half Mean Length [ By law 66 (A) (a) (4) ]								Spot Rate (Upcountry) 2021-22 Crop November 2021					
Sr. No	. Growth	Grade Standard	Grade	Staple	Micronaire	Gravimetric Trash	Strength /GPT	8th	9th	10th	11th	12th	13th
1	P/H/R	ICS-101	Fine	Below 22mm	5.0 - 7.0	4%	15	14735 (52400)	14594 (51900)	14735 (52400)	14735 (52400)	14735 (52400)	14622 (52000)
2	P/H/R (SG)	ICS-201	Fine	Below 22mm	5.0 - 7.0	4.5%	15	14904 (53000)	14763 (52500)	14904 (53000)	14904 (53000)	14904 (53000)	14791 (52600)
3	GUJ	ICS-102	Fine		4.0 - 6.0	13%	20	-	-	-	-	-	
	KAR	ICS-103	Fine		4.0 - 5.5	4.5%	21	-	-	-	-	-	
5	M/M (P)	ICS-104	Fine		4.0 - 5.5	4%	23	-	-	-	-	-	
6	P/H/R (U) (SG)				3.5 – 4.9	4.5%	26	17997 (64000)	17856 (63500)	17997 (64000)	17997 (64000)	17997 (64000)	17884 (63600)
7	M/M(P)/ SA/TL	ICS-105	Fine		3.0 - 3.4	4%	25	-	-	- 10105	-	-	4002
8	P/H/R(U)	ICS-105	Fine		3.5 - 4.9	4%	26	18137 (64500)	17997 64000	18137 64500	18137 64500	18137 64500	18025 64100
9	M/M(P)/ SA/TL/G	ICS-105	Fine		3.0 - 3.4	4%	25		-	-	-	-	
	M/M(P)/ SA/TL	ICS-105	Fine		3.5 - 4.9	3.5%	26	10006	1017	10006	10006	10006	1010
	P/H/R(U)	ICS-105	Fine		3.5 - 4.9	4%	27	18306 (65100)	18165 (64600)	18306 (65100)	18306 (65100)	18306 (65100)	18194 (64700)
	M/M(P)	ICS 105	Fine		3.7 - 4.5	3.5%	27		-	-	-	-	
	SA/TL/K	ICS-105	Fine		3.7 - 4.5	3.5%	27		-	-	-		
	GUJ	ICS-105	Fine		3.7 - 4.5	3%	27	10104	18053	10104	10104	10104	10001
	R(L)	ICS-105	Fine		3.7 - 4.5	3.5%	28	18194 (64700) 18756	(64200) 18615	18194 (64700) 18756	18194 (64700) 18756	18194 (64700) 18756	18081 (64300) 18643
	M/M(P) SA/TL/K	ICS-105 ICS-105	Fine			3.5%	28	(66700) 18812	(66200) 18672		(66700) 18812	(66700) 18812	(66300) 18700
	GUI	ICS-105				3%	28	(66900) 18756	(66400) 18615	(66900) 18756	(66900) 18756	(66900) 18756	(66500) 18643
	M/M(P)	ICS-105				3.5%	29	(66700) 18981	(66200) 18840		(66700) 18981	(66700) 18981	(66300)
	. , ,	ICS-105				3%	29	(67500) 19065	(67000) 18925	(67500) 19065	(67500) 19065	(67500) 19065	(67100) 18953
	M/M(P)	ICS-105				3%	30	(67800) 19262	(67300) 19122	(67800) 19262	(67800) 19262	(67800) 19262	(67400) 19150
	SA/TL/	ICS-105				3%	30	(68500) 19403	(68000) 19262	(68500) 19403	(68500) 19403	(68500) 19403	(68100) 19290
	K / TN/O SA/TL/K/	ICS-106				3%	31	(69000) N.A.	(68500) N.A.			(69000) N.A.	(68600) N.A
	TN/O M/M(P)	ICS-107				4%	33	(N.A.) 33181	(N.A.) 33181	(N.A.) 33181	(N.A.) 33181	(N.A.) 33181	(N.A.) 33181
	K/TN	ICS-107				3.5%	34	(118000)					
		ICS-107				4%	35	(118000)		(118000)			
	K/TN	ICS-107				3.5%	35	(125000) 35712		(125000)	(125000)		
	, ,	100 107	11110	Commit	0.1	3.5 70		(127000)					

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