



PERFORMANCE OF BT COTTON HYBRIDS FOR YIELD AND FIBRE QUALITY CHARACTERS UNDER RAINFED SITUATION

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ABSTRACT

Most of the Bt cotton hybrids, except inter-specific hybrids, belong to medium and long staple category. In India, Bt hybrids developed by different companies were approved by the GEAC for commercial cultivation. These hybrids are to be tested specifically for their performance in a given location for their adoption. Keeping this in view, a field experiment was conducted to evaluate sixty intra-hirsutum Bt cotton hybrids including three Bt checks at Regional Agricultural Research Station, Lam, Guntur, Andhra Pradesh in Kharif 2014-15 in Randomized block design with three replications. The analysis of data revealed significant differences between the Bt cotton hybrids for seed cotton yield. The seed cotton yield ranged from 1997 to 4054 kg/ha, whereas, the hybrids PCH 9619 BGII (4054 kg/ha), NCS 8899 BGII (3998 kg/ha) and NCS 3133 BGII (3942 kg/ha) recorded significantly superior yield to Bt checks Bunny BG II (2477 kg /ha), Mallika BG II (3108 kg/ha) and Jaadoo BG II (3430 kg/ha). Highest boll number per plant was recorded by PCH 9619 BGII (67) followed by NCS 8899 BGII (64). Boll weight ranged from 4.9 g to 6.8 g, number of bolls ranged from 30 to 67, 2.5% span length from 26.1 mm to 31.5 mm and bundle strength from 20.3 g/tex to 23.8 g/tex. KCH 3081 BGII 96.8 g & JKCH 8905 BGII (6.8 g) recorded highest boll weight followed by JKCH 8935 BGII (6.7 g). Whereas, maximum 2.5 % span length was observed in Ankur 8120 BG II (31.5 mm) followed by NCS 234 (31.4 mm). Highest bundle strength was recorded by Ankur 8120 BG II

23.8 g/tex) followed by KCH 3051 (23.5 g/tex). In conclusion, it is clearly visible that some Bt hybrids are really performing better both in terms of yield and fibre quality characters in this environment.

Key words: Bt Cotton, Yield, Fibre quality traits

INTRODUCTION:

Cotton is one of the important crops in India and it plays significant role in socio-economic status of Indian farmers. In India it occupies an area of about 11.88 million hectares and production of 35.2 million bales of cotton with an average productivity of 503 kg lint per hectare (AICRP, Annual Report, 2015-16). It plays a pivotal role in farming and industrial economy of the country. With the introduction of Bt cotton hybrids, there has been a significant change in the cotton cultivation scenario of India. Now, around 90 percent area under cotton in India is occupied by Bt cotton hybrids. However, the average production is very low compared to world's average. This is mainly because 70 percent of cotton area is under rainfed condition. There are many number of Bt cotton hybrids were released by private companies which are under cultivation in farmers fields. But still there is a need to evaluate high yielding Bt cotton hybrids along with good fibre properties for specific locations. Hence, the present study was undertaken to identify the high yielding Bt cotton hybrids for this location.

MATERIALS AND METHODS

A field experiment was conducted during *Kharif*, 2014-15 at Regional Agricultural Research Station, Lam, Guntur, Andhra Pradesh. The present study was carried out with 60 Bt cotton hybrids along with three checks (Bunny, Mallika and Jaadoo) in randomized block design with three replications. The inter and intra-row spacing adapted was 105cm x 60cm. Each plot consisted of four rows of 6 m length and observations were recorded on ten randomly selected plants from each genotype per replication for characters viz., number of bolls per plant, boll weight (g) and whereas, seed cotton yield (kg/ha), 2.5% span length (mm) and bundle strength (g/tex) were recorded on plot basis. Recommended dose of fertilizers and need based plant protection measures were carried out for management of sucking pests to ensure a near perfect expression of the genotypes. Kapas was taken from the first picking and the lint was subjected to

fibre quality testing at Central Institute for Research on Cotton Technology (CIRCOT) regional unit Lam, Guntur.

RESULTS AND DISCUSSION

In the present investigation, analysis of data indicated significant differences between the Bt cotton hybrids for seed cotton yield which ranged between (1997 to 4054 kg/ha). Highest seed cotton yield was recorded by PCH 9619 (4054 kg/ha). The hybrids viz NCS 8899 (3998 kg/ha), and NCS 3133 (3942 kg/ha) recorded significantly higher yield than the three check hybrids Bunny (2477 kg/ha), Mallika (3108 kg/ha) and Jaadoo (3430 kg/ha). Whereas, Ankur Narayan (3898 kg/ha), PRCH 777 (3790 kg/ha), Bio 7213-2 (3765 kg/ha),SCH 844 (3690 kg/ha) and Tulasi 414 (3628 kg/ha) recorded significantly higher yield than the two check hybrids Mallika (3108 kg/ha) and Bunny (2477 kg/ha). Number of bolls per plant ranged between 30 (KSCH 211, KCH 3081 & JKCH 8935) and 67 (PCH 9619). Highest number of bolls per plant was recorded by PCH 9619 (67) followed by NCS 8899 (64), Bio 7213-2 (61), PRCH 777(57) and PCHH-4 (52) against checks Bunny (39), Mallika (45) and Jadoo (50). Boll weight ranged from 4.9 g to 6.8 g. The entries viz., KCH 3081 and JKCH 8905 recorded highest boll weight (6.8 g) followed by JKCH 8935 and KCH 3051 (6.7 g), NCS 3133 (6.6 g), Ankur Narayan, RJHH 13,KSCH 212 and KSCH 208 recorded 6.5 g boll weight compared with the checks viz., Bunny (5.7 g), Mallika (6.1 g) and Jaadoo (6.0 g).

For 2.5 % span length the values ranged from 26.1 mm to 31.5 mm. The entries Ankur 8120 (31.5 mm), NCS 234 (31.4 mm), KCH 3051 & KCH 3081 (31.2 mm), recorded highest 2.5% span length over the checks Bunny (30.5 mm), Jadoo (30.0 mm) and Mallika (29.8 mm). Bundle strength ranged from 20.3 g/tex to 23.8 g/tex. The entries viz., Ankur 8120 (23.8 g/tex), NCS 234 (23.7 g/tex), KCH 3051 (23.5 g/tex), ACH 104-2 (23.3 g/tex) and KCH 3081 (23.2) having superior strength over the three checks Bunny (22.6 g/tex), Mallika (22.3 g/tex) and Jaadoo (22.2 g/tex).

The desirable hybrids in respect of seed cotton yield are PCH 9619, N 8899 and NCS 3133 whereas, with respect to fibre properties Ankur 8120, NCS 234 and KCH 3051 were identified in the present investigation for this location. However it needs further confirmation on multi location basis. Similar research studies on Bt cotton hybrids were also reported by

Deshmukh *et al.* (2015), Bhongle *et al.* (2014) , Sangwan *et al.* (2013), Patil *et al.* (2013) and Patel *et al.* (2013).

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Table.1: Mean Seed cotton yield and fibre quality traits of different Bt cotton hybrids

S.No	Name of the Bt cotton hybrid	Seed Cotton Yield (kg/ha)	No.of Bolls	Boll weight (g)	2.5 % Span Length (mm)	Bundle Strength (g/tex)
1	SP 7517	2942	44	5.8	28.9	21.7
2	SP 7585	3013	45	5.4	26.7	20.3
3	SP 7592	3176	47	5.6	28.2	21.4
4	Surpass (First days)	3122	48	5.5	28.3	21.5
5	SP 7618	2499	41	5.4	28.5	21.7
6	MRC 7355	2862	41	5.9	29.4	22.1

7	MRC 7399	2655	39	5.7	29.3	22.2
8	NAMCOT 639	2857	42	6.1	28.9	21.8
9	NAMCOT640	2792	45	6.3	28.2	22.0
10	ACHH 57	3102	46	6.1	28.5	21.5
11	ACHH 55	3486	49	6.3	29.4	22.5
12	Tulasi 315	3531	47	6.4	29.1	21.9
13	Tulasi 414	3628	51	6.4	27.7	21.1
14	JKCH 8935	2173	30	6.7	27.4	20.7
15	JKCH 12124	2818	47	5.1	27.7	21.3
16	PCHH -4	3454	52	6.0	26.5	20.6
17	KCH 3051	2476	35	6.7	31.2	23.5
18	KCH 3061	3231	46	6.3	30.2	21.9
19	CKH 3071	2922	49	4.9	28.4	21.1
20	KCH 3081	2089	30	6.8	31.2	23.2
21	KCH 3091	3102	48	5.8	29.2	21.2
22	ACH 151-2	2574	39	6.3	29.0	21.8
23	ACH 152-2	2820	42	6.4	29.5	22.0
24	ACH 104-2	2787	41	6.2	30.8	23.3
25	Ankur Shreyash	3430	48	6.0	26.1	20.8
26	Ankur Narayan	3898	49	6.5	27.9	21.7
27	Ankur Pushkar	3417	48	5.8	29.4	22.5
28	Ankur 8120	2423	39	5.8	31.5	23.8
29	DPC 7112	3276	46	6.1	29.4	22.2
30	DPC 9114	2746	39	6.3	30.2	22.6
31	DPC 7115	3492	47	6.3	27.0	21.4
32	DPC 5111	2328	35	6.0	30.3	22.6
33	DPC 9113	3083	49	5.2	29.4	22.3
34	DPC 7102	2316	40	5.5	29.5	22.4
35	Bio 7213-2	3765	61	5.1	29.2	22.1
36	RCH 812	3318	44	6.2	27.8	21.3
37	NBC-10	3590	50	6.0	27.1	20.9
38	NBC-11	3122	48	5.3	28.7	21.4
39	NCS 2122	3505	48	6.3	29.2	21.9
40	NCS 4567	3160	47	5.4	29.0	22.0
41	NCS 3133	3942	51	6.6	30.0	22.3
42	NCS 3456	3366	49	5.9	27.2	21.0
43	NCS 8899	3998	64	5.3	29.5	22.2
44	NCS 6566	3489	49	6.1	27.5	21.0
45	NCS 234	2751	40	5.9	31.4	23.7
46	PCH 222	3460	48	5.6	30.1	22.6
47	PCH 9619	4054	67	4.9	29.3	22.0
48	PCH 549	3142	44	5.8	28.5	21.3
49	PRCH 777	3790	57	6.0	29.1	21.6
50	JKCH 8906	3455	50	6.2	29.9	22.6

51	JKCH 8905	3059	42	6.8	30.4	22.9
52	RJHH 113	2799	44	6.2	28.8	21.1
53	RJHH 13	2316	36	6.5	28.8	20.7
54	RJHH 10	2632	40	6.3	29.8	22.3
55	KSCH 212	3274	49	6.0	27.9	20.6
56	KSCH 208	3142	45	6.5	29.5	22.2
57	60 SS 66	2761	41	6.5	30.1	22.9
58	KSCH 211	1997	30	6.4	30.6	22.8
59	SCH 745	3300	48	6.1	28.7	21.1
60	SCH 844	3690	51	6.4	29.8	22.5
61	Bunny	2477	39	5.7	30.5	22.6
62	Mallika	3108	45	6.1	29.8	22.3
63	Jaadoo	3430	50	6.0	30.0	22.2
	GM	3086	45	6.0	29.1	21.9
	CD (p=0.05)	495.4	8.1	0.27	1.6	1.2
	CV (%)	10.0	11.1	2.9	3.4	3.3