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Evaluation of short duration a non Bt cotton variety (Co-17) under HDPS with different sowing dates during *kharif* season

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Abstract
This study investigates the evaluation of short duration non Bt cotton variety (CO-17) of 125 to 130 days duration with different sowing dates during *Kharif* seasons of the year 2021 and 2022 at Regional Agricultural Research Station, Palem, Southern Telangana Zone. The study was carried on the sandy loam soils. This experiment was taken up in Randomised Block Design with six sowing dates as treatments *i.e.*, 20th May, 5th June, 20th June, 5th July, 20th July and 5th August and replicated four times. Observations on plant height (cm), days to 50% flowering, Number of monopodial branches, Number of sympodial branches, number of bolls per plant, boll weight, days to maturity and seed cotton yield per hectare were recorded. The pooled results of *kharif* 2021 and 2022 revealed that, significantly high seed cotton yield was recorded for 20th May sowing with 1438 kg ha^{-1} and was significantly superior over the other delayed sowings. Thus May 20th sowing could be a preferential time for sowing of cotton variety (CO17) under rainfed alfisols.

Keywords: Non Bt, sowing dates, sympodial, monopodial, cotton, Telangana

1. Introduction
Cotton (*Gossypium* spp.) popularly called “White Gold” and “King of Fibre Crops” is the most important renewable natural fibre crop of global importance enjoying a premier position among all the commercial crops. It is one of the most important crops in the world because of its economic, industrial and social significance. It is major cash crop for millions of farmers, especially in countries like India, China, USA and Pakistan to generate employment in farming, ginning, spinning, weaving, dyeing, garment manufacturing and transportation and earns foreign exchange with large export markets for raw cotton, yarn, textiles, and garments. Cotton is also back bone of the textile industry. The lint of cotton, its strength and absorbency make it best for making clothes, homewares and industrial products like tarpaulins, tents, hotel sheets, army uniforms and astronauts’ clothing. Cotton is also used in medical field as for making of bandages, swabs, cotton buds and x-rays etc. By crushing the cotton seeds cholesterol free oil can be extracted and left over cakes can be fed to animals and can be applied to soil as concentrated manure (Wegier *et al.* 2016) [11]. In the last year (2024-25) globally cotton was cultivated in the 31.04 m ha accounting to 25.86 m tonnes with productivity 833 kg ha^{-1} whereas India stood first in area of cotton cultivation with 11.4 m ha and second in cotton production after china with 5 m tonnes. (Anonymous, 2025) [1,2]. There are 3 zones were classified for cotton cultivation in India *viz.*, Northern zone comprises Punjab, Haryana and Rajasthan, Central zone comprises of Maharashtra, Madya Pradesh and Gujarat and Southern zones Comprises of Telangana, Andhra Pradesh, Karnataka and Tamil Nadu. Highest acreage was noticed in Gujarat (22.79 lakh hectares) followed by Maharashtra (42.86 lakh hectares) and Telangana (24.51 lakh hectares) (Anonymous, 2025) [3]. Nearly 10 million of small holders of rural India rely on cotton farming for their livelihoods (Najork *et al.*, 2021) [8]. To attenuate severe pest incidence in cotton Bt cotton was introduced for offering benefaction to specific pests. By 2012, above 93% of Indian cotton farmers had adopted Bt cotton cultivation and reduced pesticide use and increasing

yields (Venugopalan & Reddy, 2017) [10]. However, it remained as argument whether these yield increases are mainly due to the Bt trait itself or to increased fertilizer usage (Kranthi and Stone, 2020) [6]. In recent times, Bt cotton yields have stagnated and pests incidence was increased and this led to rising pesticide costs for farmers. With these insights, slowly farmers started cultivating non Bt cotton varieties under HDPS method of cultivation.

2. Materials and Methods

A field trial was carried out during *Kharif* 2021 and 2022 in randomized block design with four replications under rainfed condition at Regional Agricultural research Station, Palem, Nagarkurnool district, Telangana with an average altitude of 478 m above the mean sea level. The soil of experimental site was sandy clay loam with pH 6.7, electrical conductivity 0.34 dSm^{-1}, low organic carbon (0.52%), low available nitrogen (201.3 kg ha^{-1}) and medium phosphorus (16.7 kg ha^{-1}) and high in potassium (309.4 kg ha^{-1}). The average annual precipitation of 650-700 mm. The monsoon arrived during second week of June and cotton crop was sown manually by dibbling method as per the treatments (sowing dates). Non Bt cotton variety CO17 (Non Bt early duration variety) was used for conduct of the field trial and sowing was done at 80 cm x 20 cm spacing with plant population of 62,500 ha^{-1}. The recommended dose of fertilizers for cotton variety was 90, 45, 45 kg per ha^{-1} (100 kg SSP or 40 kg DAP as basal, 40 kg urea + 15 kg MOP at 25-30 DAS, 40 kg urea + 15 kg MOP at 55-60 DAS) followed. Growth regulator Mepiquat chloride was sprayed at 45 and 60 days after sowing with 1.5 ml l^{-1} and 2.0 ml l^{-1} respectively. The experiment comprised of six sowing dates as treatments *viz.*, T_1 - 20th May, T_2 - 5th June, T_3 - 20th June, T_4 - 5th July, T_5 - 20th July and T_6 - 5th August. The net plot size was 12.8 m x 5.2 m. The recommended cultural practices and plant protection measures were taken. Observations on plant height (cm), days to 50% flowering, Number of monopodial branches, Number of sympodial branches, number of bolls per plant, boll weight, days to maturity and seed cotton yield per hectare were recorded.

3. Results and Discussion

The data in Table 1 and 2 were presented to support the discussion of following parameters.

3.1 Plant height (cm)

The data pertaining to mean plant height (cm) was significantly influenced by the sowing dates during *kharif* 2021 and 2022. In 2021, significantly highest plant height was recorded by 20th May sown crop with 130.4 cm over the other sowing dates. Whereas in the year 2022 plant height recorded by 20th May sowing (136.6 cm) was found on par with 5th June sowing (126.0 cm). In the both the years plant height recorded less in the delayed sowings. These results are in conformity with Khashkheli *et al.*, (2024) [5].

3.2 Day to 50 per cent flowering

5th August sown cotton crop has taken significantly more number of days in 2021 (61.8) and 2022 (67.6) over the other sowing dates in the either of the years. Delayed sowings have taken more days to 50% flowering due to insufficient vegetative growth of delayed sowing lead to delayed flowering.

3.3 Number of monopodial branches

There is no influence of sowing dates during *Kharif* season on the number monopodial branches in 2021 and 2022 years. These results are in conformity with Buttar *et al.*, (2010) [4].

3.4 Number of sympodial branches

In *kharif* 2021, 20th June sown crop recorded significantly more sympodial branches (17.8) and was onpar with 20th May sown crop (16.6). remaining sowing dates had contributed less sympodial branches. Whereas, In *Kharif* 2022 significantly highest sympodial branches were noticed in 20th sowing cotton (19.2) and it was on par with 5th June sowing (17.8) 20th June sowing (16.8). The variation in the results might due to more vegetative growth of initial sowing dates led to have more number of sympodial branches than the delayed sowings. Similar findings are seen by the Nagabushanam *et al.*, (2021) [7].

3.5 Number of bolls plant^{-1}

In the first year of study 20th June sown crop recorded significantly more number of bolls plant^{-1} (26.4) than the other sowing dates. In the later year significantly highest sympodial branches were noticed in 20th sowing cotton (19.3) and it was on par with 5th June sowing (19.2) 20th June sowing (18.6). The reason for more number of bolls to the initial sowing treatments is might be due to more vegetative growth of initial sowing dates led to have more number of sympodial branches and influenced to have more number of bolls than the delayed sowings. These findings are in coordinate with the Buttar *et al.*, (2010) [4], Nagabushanam *et al.*, (2021) [7].

3.6 Boll weight (g)

May 20th sown crop recorded boll weight (g) 4.81 g and June 5th sown cotton crop recorded 4.73. These are significantly superior over other sowing dates in the first year study. Whereas, In *Kharif* 2022, boll weight obtained with 20th May (6.84), 5th June (6.58), 20th June (6.50) and 5th July (6.57) are significantly are found onpar.

3.7 Seed cotton yield (kg ha^{-1})

In kharif 2021 seed cotton yield was observed 1594 kg ha^{-1} for 20th May sown cotton crop and this was significantly higher over other sowing dates. Whereas in the year 2022 the seed cotton yield obtained by, 5th June (1218.5 kg ha^{-1}), 20th June (1274.0 kg ha^{-1}) were found onpar with 20th May (1283.5 kg ha^{-1}) and delayed sowings have shown inferior yield. The higher seed cotton yield was evidently due to cumulative effect of more number of bolls per plant and boll weight for the kharif initial sowings than the delayed. These results are in conformity with the Khashkheli *et al.*, (2024) [5], Tlatlaa *et al.*, (2023) [9], Nagabushanam *et al.*, (2021) [7].

Table 1: Effect of sowing dates on growth and yield parameters of Co 17 cotton variety under HDPS during *kharif* 2021

S. No.	Treatments (DOS)	Plant height (Cm)	Day to 50% flowering	No. of monopodial branches plant^{-1}	No. of Sympodial branches plant^{-1}	No. of bolls plant^{-1}	Boll weight (g)	Days to maturity	Seed cotton yield (kg ha^{-1})
1	20th May	130.4	55.4	1.4	16.6	26.4	4.81	128	1594
2	5th June	116.4	54.8	1.4	14.2	21	4.73	122	1299
3	20th June	113.0	55.6	1.0	17.8	19.8	4.61	130	1425
4	5th July	64.4	55.6	1.0	11.0	15.6	4.42	126	1017
5	20th July	58.0	58.4	0.2	9.8	14.8	4.39	127	711
6	5th August	54.2	61.8	0.4	8.6	10.2	4.31	128	428
	S. Em ±	4.1	0.2	0.3	0.9	1.2	0.03	-	22
	CD (p=0.05)	12.1	0.5	NS	2.8	3.5	0.09	-	67

Table. 2: Effect of sowing dates on growth and yield parameters of Co 17 cotton variety under HDPS during *kharif* 2022

S. No.	Treatments (DOS)	Plant height (Cm)	Day to 50% flowering	No. of monopodial branches plant^{-1}	No. of Sympodial branches plant^{-1}	No. of bolls plant^{-1}	Boll weight (g)	Days to maturity	Seed cotton yield (kg ha^{-1})
1	20th May	136.6	50.8	1.6	19.2	19.3	6.84	130	1283.5
2	5th June	126.0	63.4	1.2	17.8	19.2	6.58	135	1218.5
3	20th June	108.6	63.8	1.4	16.8	18.6	6.50	138	1274.3
4	5th July	105.4	66.0	1.0	14.8	13.6	6.57	140	1142.4
5	20th July	104.0	65.8	0.8	15.0	14.4	5.43	140	866.3
6	5th August	56.2	67.6	0.4	7.6	4.6	4.10	143	276.0
	S. Em ±	4.2	0.2	0.4	1.7	1.5	0.13	-	30.0
	CD (p=0.05)	12.6	0.5	NS	4.2	4.6	0.39	-	91.2

4. Conclusion

From the findings of two years it can be concluded that, May 20th was found best time sowing Non Bt cotton variety ensure that there must be one post sowing irrigation be provided with sprinklers if rainfall is not initiated by that time. Delayed sowings led to less vegetatiove and reproductive growth as consequence less seed cotton yield in such conditions.

References

1. Anonymousa. International Cotton Advisory Committee (ICAC) meeting held in Mumbai during 2-5 Dec 2023.
2. Anonymousb. Meeting of the Committee on Cotton Production and Consumption (COCPC) held on 24 Mar 2025.
3. Anonymousc. The Cotton Corporation of India Limited. Current cotton scenario, 30 Apr 2021. https://cotcorp.org.in/current_cotton.aspx
4. Buttar GS, Singh P, Kaur P. Influence of date of sowing on the performance of American cotton (*Gossypium hirsutum* L.) genotypes under semi-arid regions of Punjab. J Cotton Res Dev. 2010;24(1):56-58.
5. Khaskheli WA, Ansari MA, Kaleri AA, Zakria MI, Sardar H, Solangi MH, *et al*. Impact of different sowing date on advanced cotton (*Gossypium hirsutum* L.) varieties. Biol Clin Sci Res J. 2024:1302. doi: 10.54112/bcsrj.v2024i1.1302
6. Kranthi KR, Stone GD. Long-term impacts of Bt cotton in India. Nat Plants. 2020;6(3):188-196. doi: 10.1038/s41477-020-0615-5
7. Nagabhushanam U, Veeranna G, Pallavi CH, Reddy RR, Rao PJM. Influence of sowing dates on performance of cotton under rainfed and irrigated condition. 5th Int Agron Congr, Nov 23-27, 2021, India. Extended summary, Vol. 3; 1455-1456.
8. Najork K, Gadela S, Nadiminti P, Gosikonda S, Reddy R, Haribabu E, *et al*. The return of pink bollworm in India's Bt cotton fields: Livelihood vulnerabilities of farming households in Karimnagar District. Prog Dev Stud. 2021;21(1):68-85.
9. Tlatlaa JS, Tryphone GM, Nassary EK. Effects of sowing dates and phosphorus levels on cotton growth and yield: Soil analysis and implications. Front Sustain Food Syst. 2023;7:1298459. doi: 10.3389/fsufs.2023.1298459
10. Venugopalan MV, Reddy AR. A decade of Bt cotton in India: Land use changes and other socio-economic consequences. In: Sustainable Management of Land Resources. Apple Academic Press; 2017. p. 669-698.
11. Wegier A, Valeria A, Piñero D. Cotton: Traditional and modern uses. In: Springer Science. 2016. p. 439-456. doi: 10.1007/978-1-4614-6669-7_18