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EFFECT OF DATES OF SOWING AND GROWTH REGULATORS ON SEED COTTON YIELD OF IRRIGATED COTTON

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ABSTRACT

A field experiment was conducted at the Tamil Nadu Agricultural University, Coimbatore during winter 1989, summer 1990 and summer 1991 seasons to study effect of different dates of sowing and growth regulators on seed cotton yield of the cotton variety MCU.11. The results revealed that sowing on 15th August during winter and on 15th February during summer were found to be optimum dates for higher seed cotton yield. Application CCC at 40 ppm alternated with DAP one per cent would promote seed cotton yield with normal dates of sowing and compensate the yield losses due to delayed sowings during winter and summer seasons under irrigated conditions.

KEY WORDS : Cotton, Sowing, Dates, Growth, Regulators, Yield.

Cotton is very specific to its climatic requirements and reacts unfavourably for any shift in dates of sowing from normal period. Delay in time of sowing resulted in reduced yield and this was mainly due to premature shedding of buds and bolls. Excessive shedding could be effectively controlled by spraying growth regulators at appropriate time. Hence, the present study was conducted to study the efficiency of growth regulators on seed cotton yield with varied dates of sowing.

MATERIALS AND METHODS

Field experiments were conducted during winter 1989, summer 1990 and summer 1991 seasons at the Department of Agronomy, Agricultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore to find out the effect growth regulators under varied dates of sowing. The soil type in different soils was clay loam, with 150-270 kg ha^{-1} of available N, 13.5 - 17.2 kg ha^{-1} of available P_2O_5 and 500 - 656 kg available K_2O. The treatments, comprise four dates of sowing (Ist August, 15th August, 1st September and 15th September during winter and 1st February, 15th February, 1st March and 15th March during summer) in the main plots and spraying 5 ppm triacontanol at 40, 60 and 80 days after sowing DAS (G_1), spraying 40 ppm of triacontanol CCC (2 chloro ethyl trimethyl ammonium chloride) at 70 and 80 DAS (G_2, spraying 1 per cent Di-ammonium phosphate (DAP) at 70, 80 and 90 DAS (G_3), spraying 40 ppm of CCC alternated with 1 per cent DAP at 60, 70, 80 and 90 DAS (G_4) and water spray at 60, 70 and 90 DAS (G_5 on the sub-plots. The experiment was laid out in split plot design with three replications. A basal dressing of 40 kg. N, 40 Kg P_2O_5 and 40 kg of K_2 per hectare each were applied to all the treatments and 40 kg N was top dressed at the time of earthing up. Irrigations were given based on the necessity and required plant protection measures were taken based on the recommendations. The growth regulators were

Table 1. Effect of dates of sowing and growth regulators on seed cotton yield (q ha^{-1})

Treatment	Winter (W) 1989					Summer (S_1) 1990					Summer (S_2) 1991				
	D_1	D_2	D_3	D_4	Mean	D_1	D_2	D_3	D_4	Mean	D_1	D_2	D_3	D_4	Mean
G_1	25.25	28.24	25.56	22.64	25.42	20.25	24.59	21.64	20.14	21.66	20.19	23.84	21.63	19.44	12.28
G_2	25.84	28.64	26.36	23.31	26.04	22.96	25.15	22.32	20.33	22.64	22.79	24.22	23.27	19.99	22.57
G_3	27.32	29.92	26.65	23.42	26.82	26.61	28.03	24.33	20.63	24.90	24.55	26.68	23.75	20.22	23.80
G_4	28.65	30.21	29.75	28.40	29.25	27.82	30.79	29.16	27.20	28.75	27.89	29.18	27.65	26.58	27.83
G_5	22.39	25.95	22.70	20.49	22.12	20.09	22.04	21.74	19.27	20.78	20.33	24.53	20.72	18.39	20.99
Mean	25.89	28.59	26.20	23.64		23.56	26.12	23.84	21.50		23.15	25.69	23.40	20.92	

G_1 : Triacontanol, G_2 : CCC, G_3 : DAP, G_4 : CCC + DAP, G_5 : Water spray
(W) D_1 : Aug. 1st, D_2 : Aug. 15th, D_3 : Sept. 1st, D_4 : Sept. 15th
(S_1 and S_2) D_1 : Feb. 1st, D_2 : Feb. 15th, D_3 : Mar. 1st, D_4 : Mar. 15th

	SE_d	CD (P=0.05)	SE_d	CD (P=0.05)	SE_d	CD (P=0.05)
D	0.91	2.23	0.83	2.04	0.80	1.96
G	1.04	2.12	1.32	2.72	1.24	2.53
G at D	2.57	5.26	2.76	5.63	2.78	5.69
D at G	2.26	4.63	2.06	4.21	2.49	5.08

applied as per the treatments schedule. The kapas was harvested at weekly intervals, dried in the sun, cleaned and weights were recorded.

RESULTS AND DISCUSSION

The results indicated that during winter 1989, the seed cotton yield was the highest with the crop sown on 15th August and was significantly superior to other dates of sowing (WD_1, WD_3 and WD_4) (Table). There was a progressive reduction in seed cotton yield for every successive fortnightly shift in sowing dates from 15th August to 15th September (WD_4) and also with the earliest sowing of 1st August (WD_1). Similar findings were reported by CBS 1930 and Gopalswamy (1982).

Table 2. Effect of dates of sawing and growth regulaters on return per super investe (benefit - cost ratio).

Treatment	Return per rupee invested (Rs.)		
	Winter 1989	Summer 1990	Summer 1991
Dates of sowing			
D1	2.74	2.49	2.45
D2	3.03	2.76	2.72
D3	2.78	2.52	2.48
D4	2.50	2.27	2.21
Growth regulators			
Triacontanol	2.48	2.11	2.07
CCC	2.61	2.27	2.26
DAP	2.66	2.47	2.36
CCC + DAP	2.81	2.76	2.47
Water spray	2.15	2.01	2.04

(W) D_1 : Aug. 1st, D_2 : Aug. 15th, D_3 : Sept. 1st, D_4 : Sept. 15th
(S_1 and S_2) D_1 : Feb. 1st, D_2 : Feb. 15th, D_3 : Mar. 1st, D_4 : Mar. 15th.

During summer seasons, the 15th February (S_1D_2, S_2D_2) sowings produced the highest seed cotton yields and were significantly higher than with other dates of sowing in (S_1D_1, S_1D_3, S_1D_4, S_2D_1, S_2D_1, S_2D_3 and S_2D_4. Sivakumar (1977) also reported the similar findings. Application of CCC at 40 ppm alternated with DAP at one per cent (G_4 promoted the seed cotton yield as compared to application of other growth regulators (G_1, G_2 and G_3) during all the three seasons. The other growth regulator sprayings (G_1, G_2, G_3) were found significantly superior to water spray (G_5) during summer seasons. Increase of seed cotton yield due to CCC application was reported by Rao and Reddy (1983) and Venkitaswamy and Iruthayaraj (1983).

The interaction effect between dates of sowing and growth regulators spraying was found to be significant in influencing the seed cotton yield.

The seed cotton yield produced with spraying of CCC at 40 ppm alternated with DAP spray one per cent (G_4 was the highest under 15th August sowing and the same did not significantly differ with early as well as late sowings (D_1, D_3 and D_4). Conversely, the performance of other growth regulators was inferior with a decrease in yield in the later sowings beyond August. Similar trend was observed in the summer sowings also beyond

February 15th, the effect of growth regulators except CCC alternated with DAP one per cent did not have any considerable effect on seed cotton yield.

Analysis of economic data revealed that application of ccc at 40 ppm alternated with DAP and per cent fetched Rs.2.81, Rs.2.76 and Rs.2.47 during winter 1989, summer, 1990 and summer 1991 respectively for every rupee invested on cost of cultivation, whereas the corresponding values in water spray (control) are Rs.2.15, 2.01 and 2.04 respectively (Table 2).

It can be concluded that optimum dates of sowing for increased seed cotton yield were 15th August during winter and 15th February during summer seasons and application of ccc alternated with DAP one per cent spray for normal and delayed sowings.

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ESTIMATION OF VARIABILITY PARAMETERS AND PATH COEFFICIENTS FOR SOME QUANTITATIVE CHARACTERS IN HILL WHEATS

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ABSTRACT

Fifty hill wheats along with three checks (Kalyansona, Sonalika and VL 421) were evaluated to work out phenotypic and genotypic coefficient of variations (PCV, GCV) heritability, genetic advance (GA) and path coefficients for 12 matric traits. High estimates of PCV, GCV, heritability and GA indicated substantial genetic variability and scope for selection for grain weight/spike, 1000 grain weight, grains/spike, grain yield/plant, harvest index, biological yield/plant, spikes/plant and tillers/plant in the experimental material. There was little variability and scope for improvement through selection for days to 50 per cent flowering, days to maturity, spikelets/spike and plant height. Path coefficient analysis revealed importance of harvest index, biological yield/plant, 1000 grain weight and spikes/plant for improving grain yield/plant.

KEY WORDS : Hill Wheat, Variability Parameters, Path Coefficients, Estimation

Indigenous wheats are still under cultivation in eight hill districts of Uttar Pradesh and the adjoining area of Nepal. There is an urgent need to collect and maintain these materials before these are replaced by the improved wheat varieties and lost for ever. Beside their collection and maintenance, it is also equally important to evaluate them properly for utilisation in wheat improvement programme. With this objective, the present study was undertaken to assess the magnitude of variation and relative importance of different characters with the help of certain genetic parameters like coefficients of variability, heritability and genetic advance. Path analysis as suggested by Wright (1921) was performed to quantify the direct and indirect contributions of yield components and developmental attributes to grain yield.

MATERIAL AND METHODS

Fifty hill wheat collections from Kumaon and Garhwal hills of Uttar Pradesh and the adjoining area of Nepal were evaluated along with three checks *viz.*, Kalyansona, Sonalika and VL 421 in randomised complete block design with three