

Effect of Dates of Sowing and Topping on Seed Production of Jute (*Corchorus* spp.)

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ABSTRACT The study of sowing dates and topping in two varieties of Jute at Rahuri during the year 2000, 2001 and 2002 revealed that there was significantly higher seed yield at 15 June sowing and delay in sowing decreased the seed yield. Variety JRO-524 gave significantly higher seed yield than variety JRC-212. Topping at 45 DAS gave significantly higher seed yield than either topping at 60 DAS, or without topping at normal and dense plant population.

Keywords : Jute, *Corchorus* spp, sowing dates, topping, seed production

Jute (*Corchorus* spp) is the most important natural fibre crop next to the cotton. India at present is the biggest manufacturer of jute goods. North-East region is favourable for jute cultivation, however not very favourable for the production of high quality jute seeds. This is because of heavy rainfall at the flowering and seed setting stages causes deterioration in the quality and per hectare seed yields also remains low. Jute seed production is therefore, limited to comparatively drier region of Maharashtra, Andhra Pradesh, U.P., Bihar, Rajasthan and Orissa. Jute seed production can be taken in drier regions of Maharashtra with good seed yield. Appropriate sowing time and topping treatment help in increasing seed production and seed quality in jute. In view of above the present experiment was undertaken

MATERIAL AND METHODS

Field experiment was conducted during *kharif* seasons of 2000, 2001 and 2002 in clayey soil on the Central Campus Farm, Mahatma Phule Krishi Vidyapeeth, Rahuri. The experimental design was split plot with three replications. The three sowing dates June 15, July 15 and August 15 were assigned to main plots. The varieties JRC-212 and JRO-524 were assigned to sub plot treatments. The topping treatments *viz.*, i) and ii) topping at 45 and 60 DAS; iii) No topping under normal plant population @ 3.5 & 5.0 kg/ha, seed for *olitorious* and *capsularis* respectively and iv) No topping under dense

population @ 4.0 and 6.0 kg/ha, seed for *olitorious* and *capsularis* respectively. The seeds were sown at 25 cm x 7.0 cm for dense population and 40 cm x 7 cm for the normal population. The two varieties are of two different species. The recommended fertilizer doses are different i.e. 40 kg N, 20 kg P₂O₅ and 20 kg K₂O /ha for *olitorious* (JRO-524) and dose of 60 kg N, 30 kg P₂O₅ and 30 kg K₂O/ha for *capsularis* (JRC-212) was applied to all the treatments. At sowing, half dose of N and full dose of P₂O₅ and K₂O as basal and remaining half dose of N was top dressed at 30 DAS. The harvested plot size was 4.0 m x 3.0 m. All the agronomical practices and plant protection measures were adopted as per recommended practices.

RESULTS AND DISCUSSION

The analysis of variance (Table 1) revealed the significant differences between varieties, sowing dates, topping treatments for seed yield, branches and pods /plant, plant height (cm) and basal stem diameter (cm).

Effect of date of sowing

The three years pooled data indicated that plant height in early sown crop was more. Plant height (190.19 cm) in 15th June sown crop was maximum followed by 15th July (142.30 cm) and 15th August (99.90 cm) sown crop. Long duration available to the June sown crop had positive effects on yield attributes - pods/plant and yield/plant (g) during

Table 1. Effect of different treatments on ancillary characters and seed yield of jute varieties

Treatment	Plant height (cm)			Number of branches/plant					Pods/plant			
	2000	2001	2002	Pooled mean	2000	2001	2002	Pooled mean	2000	2001	2002	Pooled mean
Date of sowing												
15 th June (S1)	204.4	181.6	184.48	190.19	10.34	8.37	8.61	9.10	21.85	27.15	28.28	25.76
15 th July (S2)	179.10	118.5	129.34	142.3	10.60	8.84	4.62	8.02	14.82	15.96	25.62	18.80
15 th August (S3)	105.4	89.5	104.84	99.9	5.04	3.35	3.98	4.12	13.69	10.89	20.78	15.12
S.E. $\pm$	0.67	2.18	2.75	8.27	0.21	0.15	1.64	0.89	0.254	0.157	0.270	1.62
CD at 5 %	2.62	8.55	9.80	32.5	0.82	0.59	4.64	3.52	0.999	0.615	1.062	6.35
Genotypes												
JRC-212(V1)	149.60	116.4	118.70	128.2	10.69	8.51	7.28	8.83	19.99	20.29	30.79	23.66
JRO-524 (V2)	176.31	143.4	160.40	160.0	6.63	5.19	4.19	5.33	13.59	15.70	18.99	16.10
S.E. $\pm$	0.65	1.12	1.35	3.50	0.13	0.11	0.15	0.21	0.256	0.169	0.40	1.54
CD at 5 %	1.85	3.25	4.84	12.34	0.38	0.32	0.42	0.87	0.729	0.481	1.15	4.36
Topping												
At 45 DAS (T1)	156.31	119.64	123.74	133.2	9.34	7.80	6.66	7.90	22.01	19.73	26.53	22.36
At 60 DAS (T2)	159.27	124.36	133.53	139.1	8.88	7.36	6.63	7.62	19.45	17.35	26.53	21.11
No topping at normal plant population (T3)	164.70	137.31	150.02	150.7	7.92	6.33	5.48	6.58	16.22	15.56	24.80	18.86
No topping at dense plant population (T4)	171.54	138.14	150.93	153.5	8.50	5.92	4.57	6.33	9.46	19.36	21.70	16.84
S.E. $\pm$	0.917	1.61	1.90	2.24	0.19	0.16	0.21	0.24	0.362	0.238	0.57	1.75
CD at 5 %	2.62	4.59	5.43	7.77	0.53	0.46	0.59	0.82	1.032	0.680	1.63	6.05

Table 1. contd...

Treatment	Basal diameter (cm)				Seed weight (g/plant)				Seed yield (q/ha)			
	2000	2001	2002	Pooled mean	2000	2001	2002	Pooled mean	2000	2001	2002	Pooled mean
Date of sowing												
15 th June (S1)	1.415	1.275	1.202	1.297	3.76	4.25	4.31	4.11	8.99	6.66	7.98	8.39
15 th July (S2)	0.943	0.780	0.920	0.881	2.56	2.55	4.42	3.18	6.24	4.10	5.90	5.71
15 th August (S3)	0.711	0.572	0.741	0.674	1.77	1.28	4.00	2.35	4.26	3.30	5.60	4.06
S.E.±	0.008	0.020	0.030	0.043	0.08	0.09	0.11	0.40	0.80	0.11	0.34	0.55
CD at 5 %	0.031	0.080	0.116	0.170	0.32	0.37	N.S.	1.57	3.10	4.40	1.30	2.20
Genotypes												
JRC-212(V1)	0.942	0.926	0.826	0.912	2.23	1.54	2.45	2.07	5.05	3.03	3.44	3.84
JRO-524 (V2)	1.104	0.825	0.925	0.990	3.17	3.85	6.04	4.35	7.94	6.34	9.55	7.94
S.E. ±	0.009	0.011	0.018	0.063	0.04	0.04	0.07	0.54	0.80	0.70	0.20	0.71
CD at 5 %	0.026	0.032	0.051	0.186	0.12	0.12	0.21	2.29	2.20	1.90	0.56	2.34
Topping												
At 45 DAS (T1)	1.040	0.913	1.007	0.994	3.15	3.19	4.89	3.41	6.96	5.82	6.69	6.49
At 60 DAS (T2)	1.071	0.888	0.964	0.992	3.04	2.44	4.76	3.27	6.68	4.27	6.14	5.70
No topping at normal plant population (T3)	1.003	0.894	0.928	0.957	2.79	2.40	4.62	2.75	6.11	4.05	6.18	5.44
No topping at dense plant population (T4)	0.978	0.807	0.919	0.915	2.82	2.74	3.70	2.36	6.23	4.61	6.98	5.94
S.E. ±	0.013	0.016	0.025	0.009	0.06	0.06	0.103	0.093	0.11	0.09	0.28	0.22
CD at 5 %	0.037	0.046	N.S.	0.028	0.17	0.17	0.29	0.32	0.310	0.27	N.S.	0.63

the years 2000, 2001 and 2002, except in respect of branches/plant during the year 2000 and 2001. Similarly, significantly higher seed yield was registered in 15th June sown crop (8.39 q/ha) than 15th July (5.71 q/ha) and 15th August (4.06 q/ha) sown crop. Similar findings were reported earlier by Ray and Majumdar [1], Thakuria and Sharma [2]. The yield improvement due to early sowing i.e. 15th June was about double compared to August sowing during the year 2000 and 2001. This could be due to the maximum favourable conditions and longer duration available to the crop. These results are in agreement with Mishra and Nayak [3].

Effect of genotype

Maximum plant height and basal diameter during all the three years in variety JRO-524 might be because of genetic potential. However, the variety JRC-212 recorded significantly more branches/plant (8.83) and pods/plant (23.66). Variety JRO-524 produced significantly highest seed yield (7.94 q/ha). The variety JRO-524 recorded less number of pods and branches/plant. Even though it produced highest seed yield/plant (4.35 gm) might be due to the big pod size and higher number of seeds/pod. These results were confirmatory with earlier results [4, 5].

Effect of topping

Plants in the treatment "no topping" (T3 and T4) were significantly taller than other treatments (T2 and T1). Topping at 45 DAS during all the three years of the study resulted in reduction of plant height (133.2 cm). Number of branches/plant (7.90), pods/plant (22.36) basal diameter/plant (0.994 cm) and seed yield/ plant (3.41 g) were significantly

higher due to topping at 45 DAS followed by topping at 60 DAS. Topping at 45 DAS and 60 DAS were not significantly different for above characters. Significantly higher seed yield per hectare was recorded in topping at 45 DAS which might be due to higher values of maximum yield contributing characters viz., pods (22.36), branches/plant (7.90) and basal diameter (0.994cm). The topping at early growth stage (45 DAS) gave longer period for growth and development of plant organs and get benefit to divert photosynthate to increase number of branches and number of pods which increased the seed yield. These results were confirmatory with earlier research, [4, 5].

On the basis of three years pooled data, it is concluded that for the successful seed production of jute variety 'JRO-524' in western Maharashtra, seed crop should be sown around 15th June using seed rate 3.5 kg/ha and "Topping" should be undertaken at 45 days after sowing.

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