

EFFECT OF VARIETY, SOWING DATES AND FERTILITY LEVELS ON CAPSULARIS JUTE

M.V.SINGH, NEERAJ KUMAR AND VINAY KUMAR

Crop Research Station, Bahraich -271 801 (U.P.)
Received: December, 2012, Revised accepted: August, 2013

Jute is one of the most important commercial crop of the country particularly for eastern and north eastern India. Introduction of high yielding short duration varieties have facilitated Jute to grow with other crops in rotation. The variety of Jute plays a important role in growth as well as seed production. Genetically variability of variety reflected the growth and yield attributing character. Sowing period of crop has important role in plant growth as well as seed production. Sowing time of Jute crop also affects the growth of plant and crop yield. Late sowing of the crop produced poor vegetative growth as well as low yield and also affected by different diseases and insects. Imbalanced use of fertilizer also affects the crop growth that leads to the decline of seed yield. Proper dose of nutrient has also played an important role in vegetative growth and seed yield. Keeping this view, an experiment was laidout at Bahraich to find out suitable capsularis Jute variety alongwith sowing time under different fertility levels.

A field experiment was undertaken during kharif seasons of 2009-10 and 2010-11 in sandy loam soil at experimental farm of Crop Research Station,

Bahraich having pH 7.2, organic carbon 4.3 g kg⁻¹ and available N, P and K 140, 13 and 240 kg ha⁻¹, respectively. Twelve treatment combinations comprised of 2 varieties (NDC-2008 and UPC-94), 2 sowing dates (10 May and 25 May) and 3 fertility levels (60:30:30, 80:40:40, 100:50:50 kg N, P₂O₅, and K₂O ha⁻¹). The experiment was conducted in split plot design with 3 replications. The crop was sown at 10 and 25 May in first and second year, respectively at 30 cm row to row distance and plant to plant distance was maintained 10 cm after two thinning of crop. The 4 kg ha⁻¹ seed rate was used. Entire amount of P and K and half dose of N were applied as per treatments at the time of sowing and rest half dose of N was applied as topdressing after 45 days of sowing. The urea, single super phosphate and muriate of potash were used as sources of N, P and K, respectively. The crop was harvested at 160 days after the sowing. The growth, yield attributing characters and yield were recorded at harvest. The nutrient concentration in plant was estimated as per standard procedures (Jackson 1973). The economics of the treatments was calculated on the basis of the nearest market price.

Table 1: Effect of varieties, sowing time and fertility level on growth, yield and uptake of nutrients in capsularis jute (Pooled data two year)

Treatments	Plant height (cm)	Branch/plant	Pods/branch	Grains/pod	Test weight (g)	Seed yield (q ha ⁻¹)	Stick yield (q ha ⁻¹)	Net return (Rs ha ⁻¹)	C:B ratio	Nutrient uptake (kg ha ⁻¹)		
										N	P	K
Varieties												
NDC-2008	324.27	21.6	84.6	45.5	3.85	6.45	61.50	4259.0	3.34	63.9	34.9	72.3
UPC-94	319.72	18.1	80.5	42.4	3.45	5.75	58.50	40505.0	6.21	61.3	33.4	69.6
CD (P=0.05)	3.25	3.75	2.25	1.25	0.017	0.28	2.15	270.72	0.012	1.8	0.14	1.65
Sowing Time												
10 May	327.4	21.2	82.6	46.2	3.75	5.95	57.50	42420.0	3.33	63.8	34.8	72.5
25 May	316.5	19.7	75.2	42.4	3.45	5.15	52.50	40745.0	3.22	61.5	33.55	69.0
CD (P=0.05)	3.15	4.65	2.45	1.3	0.018	0.32	2.45	265.68	0.011	1.45	0.13	2.2
Fertility levels (kg ha ⁻¹)												
60:30:30	312.16	18.6	68.3	44.5	3.25	5.90	58.50	39115.0	3.20	58.5	31.9	65.9
80:40:40	323.16	20.4	75.7	46.2	3.65	6.20	60.20	41610.0	3.27	62.7	34.1	71.2
100:50:50	330.66	22.1	85.7	47.5	3.95	6.75	64.50	44280.0	3.35	66.7	36.3	75.8
CD (P=0.05)	4.5	0.67	3.75	0.85	0.015	0.84	3.25	270.0	0.010	2.4	2.7	2.4

The data (Table 1) revealed that the higher value of plant height (324.2 cm) productive branches plant (21.6), pods/branch (84.6), grains/pod (45.5) test weight (3.85 g) and seed yield (6.45 q ha⁻¹) were

recorded in variety NDC-2008 over variety UPC-94. The higher net income of Rs. 42595, C:B ratio 3.34 and uptake of N (63.9 kg ha⁻¹), P (34.9 kg ha⁻¹) and K (72.3 kg ha⁻¹) was also recorded under the variety

NDC-2008. The differences in growth, yield contributing character and yield recorded between 2 varieties may be due to genetic characters of varieties. Similar results were reported by Kumar *et al.* (2010), Singh *et al.* (2010) and Singh *et al.* (2011). The pooled data indicated that the sowing of crop at 10 May resulted maximum plant height (327.4 cm) productive branch/plant (21.2), pods/branch (82.6), grains/pods (46.2) test weight (3.75 g) and seed yield (5.95 q ha⁻¹) which were 3.3, 7.0, 8.9, 8.2 and 8.0 % higher over the sowing at 25 May respectively. The increase in value of all yield attributing characters under 10 May sowing may be due to optimum condition of plant growth. The sowing period delayed from 10 May up to 25 May reduces all growth and yield attributing character due to higher temperature and suffered the growth of plant ultimately yield was reduced. The higher net income of Rs. 42420 and C:B ratio 3.33 ha⁻¹ was also noticed under 10 May sowing over the 25 May sowing which was due to recorded higher yield under 10 May sowing. The higher uptake of N (63.8), P (34.8) and K (72.5 kg ha⁻¹) was recorded under the sowing of 10 May over the 25 May sowing. Similar result was also reported by Kumar (1999). The pooled data (Table 1) indicated

that the higher plant height (330.6 cm), productive branch/plant (22.14, pods/branch (85.7), grains/pod (47.5), test weight (3.95 g) and seed yield (6.75 q ha⁻¹) were recorded under fertility level of 100:50:50 kg NPK ha⁻¹ which were higher by 5.5 and 2.2% in plant height, 15.7 and 7.6% in productive branch / plant, 20.2, 11.6 % in pods/branch, 6.3 and 2.7 % in grain/pod, 17.7 and 7.5 % in test weight over the application of 60:30:30 and 80:40:40 NPK kg ha⁻¹, respectively. The higher seed (6.75 q ha⁻¹) and sticks yield (64.5 q ha⁻¹) was recorded under the application of NPK 100:50:50 kg ha⁻¹ which was due of higher growth and yield contributing characters. The higher net income of Rs. 44280 and C:B ratio 3.35 ha was noticed under 100:50:50 kg NPK ha⁻¹, which produced 11.6 and 6.0 % higher net income and 4.4 and 2.3 % higher in C:B ratio over the 60:30:30 and 80:40:40 NPK ha⁻¹. Data indicated that the higher uptake of N (66.7), P (36.3) and K (75.8 kg ha⁻¹) was noticed under the application of 100:50:50 kg NPK ha⁻¹ which was due to higher yield and nutrient content in crop.

It is concluded that the variety NDC-2008 sown on 10 May with 100:50:50 kg NPK ha⁻¹ perform better in respect of seed yield and net returns.

REFERENCES

- Jackson, M.L. (1973) *Soil Chemical Analysis. Practice Hall of India, Pvt. Ltd. New Delhi.*
- Kumar, D. (1999) Problems and prospect of Jute seed production in Jute growing states. *Proceeding of National Seminar on Jute Allied pp. 105-110.*
- Kumar, D. Shaha, A. Begum, T. and Choudhury, H. (2010) Possibility of jute seed production in jute growing states if India. *Proceeding of International Seminar on Jute and Allied Fiber. pp 230-234.*
- Singh, M.V. Kumar, N. Singh, R.K. and Mishra, B.N. (2010) Comparative performance of wheat varieties under fertility levels, . *Annals of Plant and Soil Research. 12: 160-161.*
- Singh, M.V. Kumar, Neeraj and Singh, R.K. (2011) Effect of varieties, spacing and topping dates on growth and seed yield of capsularis jute. *Annals of Plant and Soil Research. 13: 131-133.*