

EFFECT OF PLANT DENSITY ON SEED YIELD OF JUTE VARIETIES

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ABSTRACT

Experiments were conducted at Agricultural College and Research Institute Madurai, Tamil Nadu to evolve suitable agronomic practices for jute seed production. Suitable variety and optimal spacing were identified. Jute variety JRO 878 gave a high seed yield of 907 kg.ha⁻¹ at a spacing of 30 x 15 cm. Net returns from jute seed production were higher than the conventional rice crop grown during the season.

KEYWORDS: Jute, Jute Varieties, Spacing, Seed Yield.

Diversification of crop pattern is an essential agronomic practice for improving and sustaining productivity and profitability of the farming business. In the irrigated low lands of Tamil Nadu, rice is extensively grown. The uncertainty of canal water supply and increasing costs have made rice farming less profitable in recent years. Introduction of an alternate crop in to the existing rice lands to increase profits is a viable proposition. Earlier experiments have identified the potential for jute cultivation in the irrigation project command areas of Tamil Nadu (Anon. 1980). However, for this crop to be successfully introduced in Tamil Nadu, problems like suitable varieties, agronomic practices, facilities for retting and fibre extraction and seed production have to be tackled.

MATERIALS AND METHODS

Experiments were conducted from 1980 to 1982 at the Agricultural College & Res. Inst. Madurai, Tamil Nadu to evaluate four jute varieties for their seed production potential under different plant density. Jute varieties JRC 212, D 154, JRO 878 and JRC 7447 were planted with the spacings of 30 x 10 cm (3,33,333 plants ha⁻¹), 30 x 15cm (2,22,222 plants ha⁻¹), 30 x 20cm (1,66,660 plants ha⁻¹) and 30 x 25cm (1,33,333 plants ha⁻¹) in a factorial randomised block design replicated thrice. The crop was sown during

August and harvested in December. The soil of the experimental field was sandy clay loam. The fertilizer schedule adopted was 30N : 15 P₂O₅ : 15 K₂O kg.ha⁻¹ with 50 per cent N and entire P₂O₅ and K₂O applied at sowing and the remaining N at 30 days after sowing. Observation on pod number, seed number pod⁻¹ Thousand grain weight and seed yield were recorded.

RESULTS AND DISCUSSION

Yield Parameters

The yield parameters recorded are presented in the Table 2.

Among the four varieties, JRO 878 recorded higher values for pod number and seed number but the seeds were fine and had less seed weight. Plant density had significant effect on pod number and seed number but not on seed weight. At the spacing of 30 x 15 cm, more number of pods plant⁻¹ and seeds pod⁻¹ were produced.

Seed Yield

Seed Yield recorded for different varieties and spacings are given in the Table 1.

Seed yield was significantly varied between varieties as well as plant densities. Variety JRO 878 produced higher seed yield

(907 kg.ha⁻¹) over varieties JRC 212 and D 154. The variety JRC 7447 (891 kg.ha⁻¹) was on a par with JRO 878 in seed yield.

The need for adopting an optimum spacing was distinctly evident from the reduction in seed yield as the plant to plant spacing in the row was increased beyond 15 cm. A high seed yield of 963 kg.ha⁻¹ was recorded at 30 x 15 cm due to an increase in pod number and seed number pod⁻¹. Basak (1974) reported maximum seed yield of jute at spacing of 30 x 15. Ghosh (1973) had earlier observed that a spacing of 30 x 15 cm was optimum for seed production in jute. The interaction between variety and spacing was not significant.

The results of the experiment revealed that jute variety JRO 878 had high potential for seed production at an optimum spacing of 30 x 15 cm and raised during August to December. Jute for seed production could be a profitable alternate crop instead of rice during second season (August-December) in the Madurai region, since the net profit from jute seed production was Rs. 12,976 ha⁻¹ as against Rs. 9,462 ha⁻¹ from rice seed production.

REFERENCES

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Table 1. Yield parameters of jute varieties

Treatment	Pod number plant ⁻¹			Seed number pod ⁻¹			Thousand seed weight (g)		
	1980	1981	Mean	1980	1981	Mean	1980	1981	Mean
Varieties									
JRC 212	36	37	36.5	40	43	41.5	3.5	3.5	3.5
D 154	37	38	37.5	43	45	44.0	4.1	4.1	4.1
JRO 878	55	57	56.0	89	91	90.0	2.1	2.1	2.1
JRC 7447	52	53	52.5	40	43	41.5	3.9	3.9	3.9
SED	0.9	1.0		1.6	1.5		0.02	0.02	
CD (5%)	1.9	2.1		3.1	3.1		0.05	0.05	
Spacing									
30 x 10 cm	42	43	42.5	53	56	54.5	3.4	3.3	3.3
30 x 15 cm	50	51	50.5	57	59	58.0	3.4	3.4	3.4
30 x 20 cm	43	44	43.5	51	54	52.5	3.4	3.4	3.4
30 x 25 cm	45	46	45.5	51	53	52.0	3.4	3.4	3.4
SED	0.9	1.0		1.6	1.5		0.02	0.02	
CD (5%)	1.9	2.1		3.1	3.1		NS	NS	

NS = Not significant

Table 2. Seed yield of jute varieties

Treatment	Seed yield (kg.ha ⁻¹)		Mean
	1980	1981	
Varieties			
JRC 212	836	871	854
D 154	844	876	860
JRO 878	889	924	907
JRC 7447	876	906	891
SED	9	11	
CD (5%)	18	23	
Spacing			
30 x 10 cm	796	814	805
30 x 15 cm	938	988	963
30 x 20 cm	871	907	889
30 x 25 cm	840	868	854
SED	9	11	
CD (5%)	18	23	