Indian J. Genet., **66**(2): 153-154 (2006)

Short Communication

Evaluation of wild species of jute (*Corchorus* spp.) for fibre yield and resistance to stem rot [*Macrophomina phaseolina* (Tassi) Goid.] and stem weevil (*Apion corchori* Marshall)

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(Received: March 2006; Revised: June 2006; Accepted: June 2006)

The two cultivated species of jute (*Corchorus capsularis* L. and *C. olitorius* L.) are prone to disease and pest attack. Suitable parents having resistance to stem rot and stem weevil need to be identified for breeding work. With this view, 84 out of collected 300 germplasm of seven wild species of jute maintained by Central Research Institute for Jute and Allied Fibres (CRIJAF), Barrackpore, were taken up for evaluating quantitative traits and resistance to stem rot and jute stem weevil under natural field condition.

Out of the 84 accessions, 66 belonged to 6 wild species and 18 of two cultivated *Corchorus* species of jute including five checks, 2 of *C. capsularis* and 3 of *C. olitorius* namely, JRC 212, JRC 321 and JRO 524, JRO 632, JRO 878, respectively. Accessions of wild species were collected from African countries by International Jute Organization (IJO). Some of the accessions were taken from recent collections made in the year 2001-02 under National Agricultural Technology Project "Conservation of Biodiversity". These accessions were evaluated at CRIJAF (22° 45' N, 88° 16' E and 30 m altitude) during March 2003 in an augmented randomized block design [1] and each plot consisted of single rows, 3 m long and 0.3 m apart. Recommended agronomic practices were followed to raise a good crop. No insecticide or fungicide was applied in the conduct of experiment. The incidence percentage values calculated on the basis of number of plants infected in a row were transformed using inverse sin angular transformation.

Among wild species, higher mean values (Table 1) for plant height (175.43 cm), basal diameter (1.00 cm), days to first flowering (90.72) and fibre yield (4.14 g) were observed in *C. fascicularis* accessions. However, maximum range for plant height (113.43-217.19), basal diameter (0.47-1.33) and fibre yield (0.05-6.61) was observed in *C. trilocularis* accessions. The lowest mean fibre yield was noted in *C. pseudo-olitorius*. The cultivated (*C. capsularis*) accessions had shown higher mean values for plant height (292.87 cm), basal diameter (1.87 cm), days to flowering (93.32) and fibre yield (12.06 g) compared to all entries. The accession WCIJ-150 (*C. fascicularis*) took maximum number of days (189) to flower (Table 2).

High to moderate level of resistance against stem rot and stem weevil was observed in the wild species under study (Table 2). Accessions WCIJ-150 (*C. fascicularis*), NM/02-44 (*C. pseudo-olitorius*) and WCIJ-010 (*C. tridens*) were found resistant to stem rot infection. However, accession (WCIJ-142) belonging to *C. aestuans* was susceptible and accession (KBA-205) was highly susceptible to stem rot infection. High susceptibility (28.35%) to stem rot was also observed in accession WCIJ-078 of *C. trilocularis*. All the checks except JRC 321 were susceptible (10.16-13.58%) against stem rot. Accessions belonging to *C. fascicularis*, *C. pseudo-olitorius*, *C. urticifolius* and *C. tridens* were highly resistant to stem weevil infestation (infestation 0.00%). Accessions WCIJ-142 and KB A-205 of *C. aestuans* were respectively resistant and moderately resistant to stem weevil. However, the accession WCIJ-078 (*C. trilocularis*) and both accessions of *C. urticifolius* were resistant to stem weevil. Accessions of cultivated species, *C. capsularis* and *C. olitorius* were moderately susceptible to stem weevil infestation (infestation from 21.50-33.97%). *Corchorus* species have previously been identified as potential source of resistance to stem rot [2].

Thus, accessions belonging to wild species *C. fascicularis*, *C. pseudo-olitorius*, *C. tridens* and *C. trilocularis* appear to be useful for interspecific hybridization for improvement of cultivated jute. Thus,

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Table 1. Mean values for plant height, basal diameter, days to flowering and fibre yield in different wild species of jute

Species		Plant height (cm)	Basal diameter (cm)	Days to 1st flower	Fibre yield (g)
C. aestuans Linn. (N=17)					
	Mean	147.29	0.85	66.63	3.97
	Range	105.43-199.39	0.53-1.25	19.25-99.25	0.76-9.97
	SD	26.62	0.21	30.16	2.78
C. fascicularis Lam. (N=6)					
	Mean	175.43	1.00	90.72	4.14
	Range	156.19-189.99	0.87-1.15	23.25-189.05	2.18-6.61
	SD	11.09	0.13	53.90	1.79
C. pseudo-olitorius Islam & Zaid. (N=3)					
	Mean	116.99	0.47	15.52	-0.2
	Range	88.19-164.39	0.41-0.53	14.45-16.05	-0.78-0.39
	SD	41.37	0.06	0.92	0.59
C. tridens Linn. (N=12)					
	Mean	145.65	0.82	31.53	1.63
	Range	110.43-176.99	0.53-1.15	15.25-54.25	-0.14-3.81
	SD	20.51	0.19	13.48	1.22
C. trilocularis Linn. (N=26)					
	Mean	148.97	0.76	28.17	2.65
	Range	113.43-217.19	0.47-1.33	16.25-95.25	0.05-6.61
	SD	23.96	0.19	15.64	1.98
C. urticifolius Wight & Arn. (N=2)					
	Mean	151.49	0.95	34.33	4.16
	Range	141.99-160.99	0.87-1.03	45.25-47.25	3.92-4.39
	SD	13.44	0.11	18.28	0.33
C. capsularis Linn. (N=9)					
	Mean	292.87	1.87	93.32	12.06
	Range	235.43-343.39	1.59-2.03	55.45-154.25	0.05-16.85
	SD	32.95	0.14	35.41	5.08
C. olitorius Linn. (N=9)					
	Mean	271.31	1.40	27.14	10.61
	Range	228.72-305.19	1.11-1.79	11.29-40.45	5.99-13.74
	SD	27.63	0.21	9.76	3.03

SD = Standard deviation

this study has helped in identifying resistant accessions of wild species under natural situation. Further study is needed to confirm the resistance under artificial condition before utilizing the resistant accessions in breeding work.

Acknowledgements

The authors would like to thanks Dr. A. Saha and Dr. A. K. Mahapatra for providing the seeds of the wild species.

Table 2. Mean plant height, basal diameter, days to first flowering, fibre yield and mean disease and pest incidence percentage in different accessions of different species of jute

Species	Plant height (cm)	Basal dia. (cm)	Days to 1st flower	Fibre yield (g)	Stem rot	Stem weevil
C. aestuans						
WCIJ-142	190.99	1.11	90.25	7.81	15.18	–0.19
KBA-205	127.03	0.77	20.25	3.26	22.25	15.06
C. fascicularis						
WCIJ-052	180.43	1.15	77.25	5.76	12.36	1.42
WCIJ-150	177.19	0.91	189.05	2.39	–1.67	–3.91
C. pseudo-olitorius						
WCIJ-092	164.39	0.47	16.05	0.39	7.91	–3.91
NM/02-44	88.19	0.53	14.45	–0.78	–7.53	2.68
C. tridens						
WCIJ-010	145.99	1.15	24.59	1.09	–1.67	–3.91
NLA/03-33	147.83	0.99	20.72	3.30	2.78	1.42
C. trilocularis						
WCIJ-106	217.19	1.03	25.45	5.25	14.27	2.68
WCIJ-132	149.19	0.99	37.45	3.85	7.18	2.68
WCIJ-078	166.99	1.09	23.25	6.61	28.35	8.59
C. urticifolius						
WCIJ-070	160.99	1.03	45.25	4.39	17.11	–0.19
WCIJ-112	141.99	0.87	47.25	3.92	6.42	–0.19
C. capsularis						
CEX-003	320.43	1.97	154.25	16.85	2.78	22.83
CIN-019	343.39	1.87	121.25	15.39	6.42	22.02
C. olitorius						
OIN-022	275.59	1.37	32.45	11.35	3.36	37.22
OMU-004	301.19	1.79	34.45	13.74	7.97	43.58
Checks						
JRO 524	349.65	1.70	186.75	18.89	13.58	28.50
JRO 632	315.30	1.53	34.25	16.59	12.81	33.97
JRO 878	336.35	1.51	177.50	16.16	10.30	28.96
JRC 212	310.15	1.94	127.25	14.00	10.16	23.35
JRC 321	298.30	1.96	62.50	14.52	5.55	23.70
LSD (0.05)	53.67	0.45	12.09	8.27	17.59	21.57

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