Symptoms on seedlings are sore shine, root rot, stem rot, necrotic leaves, dark pathces on cotyledons, and leaf spots (figure 7). Green pods had infection in many parts, and the hyphae colonizing most of the pods surfaced after 24 h of incubation in storage conditions (figure 8), causing pod rot.

Results also indicated that the pathogen was transferred from infected seeds to the soil. This means that infected seeds can cause spread of the pathogen in soil, where they are not known to occur. The danger of transmitting the pathogen through seeds has been reported earlier[12, 13].

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SELECTION FOR RED ROT RESISTANCE IN SUGARCANE

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RED rot is the most destructive disease of sugarcane in India. Many important varieties have gone out of cultivation because of this disease. Control methods are ineffective. Sugarcane being a highly heterozygous and polyploid species, one needs large progenies/seedlings for a search for disease-resistant varieties or clones. Degree of parental resistance had no effect on frequency of resistance in seedlings[1,2], but results contrary to this have also been reported[3,4]. The present study was therefore undertaken to study the role of parental resistance in the progenies of 14 intervarietal crosses.

Seven parental varieties, viz. the moderately resistant CP 44-101, Co 7637 and Co 1148; the moderately susceptible Co 7620 and Co 617; the susceptible Co 62174; and the highly susceptible Co 7717 were studied[5]. The fluff (true seed) of 14 crosses (table 1) was sown in a glasshouse in February 1982. The seedlings were transplanted in the field on 25th May 1982. Plant-to-plant and row-to-row distances were kept 75 and 90 cm respectively. Seedlings were harvested in February 1983 and ratoon crop was maintained. After six months standing canes were inoculated by the standard plug method[6]. The inoculated canes were split open longitudinally after 100 days and were graded into 5 grades (1, highly susceptible, to 5, resistant) on the basis of linear spread, condition of the top leaves, width of the lesion, and presence or absence of white spots, as suggested by Srinivasan and Bhat[7].

Table 1 shows the percentages of seedlings with the different grades of red rot resistance. Higher percentage ($\geq 20\%$) of resistant/moderately resistant seedlings was recorded in five crosses, all of which involve CP 44-101 as one of the parents.

Correlation between mid-parental reaction and percentage of resistant and moderately resistant clones among the progenies was positive and highly significant ($r = 0.55^*$ and 0.86^{**}), whereas correlation with percentage of susceptible and highly susceptible clones was negative and highly significant

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Table 1 *Red rot rating and per cent selected clones from 14 crosses of sugarcane*

Cross (parental reaction)	Av. score	No. of clones	Per cent clones					Selected clones (%)
			R[a]	MR	MS	S	HS	
CP 44-101 × Co 1148 (MR × MR)	4.0	41	12	29	21	8	30	17.67
CP 44-101 × Co 617 (MR × MS)	3.5	59	2	22	24	12	40	3.38
CP 44-101 × Co 61174 (MR × S)	3.0	85	0	22	22	10	46	2.35
Co 7620 × CP 44-101 (MS × MR)	3.5	99	1	20	27	17	35	9.09
Co 7620 × Co 62174 (MS × S)	2.5	65	0	9	15	22	54	6.15
Co 7620 × 7717 (MS × HS)	2.0	48	0	4	10	19	67	2.08
Co 7637 × CP 44–101 (MR × MR)	4.0	31	0	20	23	9	48	9.67
Co 7637 × Co 62174 (MR × S)	3.0	26	0	12	11	27	50	3.85
Co 7637 × Co 7717 (MR × HS)	2.5	55	0	11	22	15	52	7.27
Co 1148 × Co 617 (MR × MS)	3.5	76	2	14	12	11	61	5.26
Co 1148 × Co 7717 (MR × HS)	2.5	19	0	10	21	16	53	0.00
Co 1148 × Co 62174 (MR × S)	3.0	40	0	12	20	15	53	5.00
Co 617 × Co 62174 (MS × S)	2.5	78	0	4	18	23	55	5.12
Co 617 × Co 7717 (MS × HS)	2.0	81	0	8	22	19	51	4.24
With Av. score: Correlation r_i			0.55*	0.86**	0.34	− 0.64**	− 0.65**	
With Av. score: Regression b_i			2.63	9.60	2.62	− 5.41	− 9.45	

[a]R, resistant; MR, moderately resistant; MS, moderately susceptible; S, Susceptible; HS, Highly susceptible. *,**, Significant at 5% and 1% respectively.

($r = -0.64^{**}$ and -0.65^{**}). The trend in regression values was similar. These results show that resistant parents gave higher percentage of resistant seedlings and lower percentage of susceptible seedlings and vice versa. Such results can be exploited to select resistant varieties by incorporating resistant parents in the breeding programme.

Out of 803 seedlings 49 were selected on the basis of red rot resistance, general vigour, cane thickness, erectness and brix values in juice. The cross CP 44-101 × Co 1148 had the highest percentage of desirable seedlings (17.67). The results indicate the high general combining ability of CP 44-101 for red rot resistance, and CP 44-101 × Co 1148, Co 7637 × CP 44-101, Co 7620 × CP 44-101, and Co 7637 × Co 7717 were specific combinations for desirable clones with red rot resistance in sugarcane.

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