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SHORT COMMUNICATION

Comparative Resistance of Thirty Sugarcane Clones to Wilt Disease of Sugarcane

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Sugarcane is an important cash crop cultivated extensively in many areas, particularly in the north-western part of Bangladesh. The crop is subjected to many pests and diseases. Among the fungal diseases, wilt associated with *Cephalosporium sacchari* and *Fusarium moniliforme* is found to be of considerable importance particularly late in the season in Bangladesh (Rahman, 1988). There is hardly an area in Bangladesh free from wilt disease (Malek *et al.*, 1982). The disease has a wide occurrence in the cane growing areas. It reduces the germination of seed cane, dyeing up of young shoots, the leaves gradually turn yellow and dry up, the stems become light and hollow and subsequently cane stalks become wilted resulting in total loss for milling. Thus wilt disease ravages sugarcane plant and yield. Sharma (1976) reported that depending on the incidence of wilt, the yield reduction may go as 65%. Ratoons generally recorded higher damage than the plant crop. In Bangladesh, Iqbal *et al.* (1988) reported mean reduction of nine clones on germination, millable cane and weight of canes were 12.8, 19.0 and 23.0% respectively due to wilt disease. Since the fungus is soil-borne, it persists saprophytically for several years and very difficult to control. Substitution of susceptible varieties is one of the most successful and reliable methods to curb the disease (Antoine, 1961). Accordingly screening varieties against the disease tends to be a routine programme before releasing varieties for commercial cultivation. The present paper reports the relative resistance of some promising clones/varieties to virulent isolates of wilt pathogen and their performance under different soil and climatic conditions, so as to identify the resistant ones for recommending to the farmers.

A total of thirty genotypes comprising commercial varieties and promising clones from advance zonal yield trial stage were selected for this study. The experiment was conducted at BSRI farm, Ishurdi, RSRS farm, Thakurgaon and Akandabaria farm, Carew & Co. Ltd. during 2003-2004. Apparently healthy two budded setts of each genotype were planted in single rows of 30 m length. Row to row distance was 1m. When the crop attained the age of 7 months, the canes (15-20 setts/genotype) were inoculated with a highly sporulating composite or mixed culture of wilt pathogen. The collected isolates were cultured in OMA for 10-12 days to sporulate and mixed inoculum was prepared from the fresh culture. Hypodermic syringe method was followed for this where 4 to 5th internode above ground level of standing cane was inoculated with the help of specially made inoculating needle (2 cm long and 2 mm dia) at suitable inclination up to pith region and 1 ml spore suspension (10^6/ml) was inserted by hypodermic syringe and the puncture point was sealed with plasticine to keep it free from any external contamination. After 3 months of inoculation the cane stalks were splitted longitudinally and the intensity of infection and disease reaction were assessed based on disease index within 0-9 scale as follows :

Disease Index	Disease Reaction
0.0 to 2.0	Resistant (R)
2.1 to 4.0	Moderately Resistant (MR)
4.1 to 6.0	Moderately Susceptible (MS)
6.1 to 8.0	Susceptible (S)
Above 8	Highly Susceptible (HS)

Average disease index of three locations was compiled for final disease reaction of different genotypes tested and given in Table 1. It is seen from the table that out of 30 clones/varieties, 25 behaved as resistant (R). Among the 16 varieties prevailing under commercial cultivation, 14 varities viz. Isd 2-54, Isd 17, Isd 19, Isd 20, Isd 25, Isd 28, Isd 30, Isd 32, Isd 34, Isd 35, Isd 36, Co 1148 and Co 1158 showed resistant reaction. Similar results were also reported by Rahman (2001) and Anon.(2004). Only 2 varieties viz. Isd 18 and Isd 33 were found as moderately susceptible (MS) and LJC as moderately resistant (MR) against wilt disease in field condition considering three locations. This result copes with the findings of Anon.(2003). Of the clones tested, I 82-98 and I 245-99 found as moderately resistant (MR) in disease reaction.

Not surprisingly, no clones/varieties were found as susceptible (S) or highly susceptible (HS) to wilt disease. It was found that among the tested genotypes about 83% showed resistant reaction against wilt disease while 10% found as moderately resistant and 7% found as moderately susceptible to wilt pathogen in the field condition.

To sum up, clones rated as R to MR might be recommended for further multiplication. However, MS clones/varieties may be recommended with caution and only when they showed superiority in yield and quality. Otherwise they should be rejected.

Table 1. Reaction of different genotypes against mixed isolates of *Cephalosporium sacchari* at BSRI farm, Ishurdi, RSRS farm, Thakurgaon and Akandabaria farm, Carew & Co. Ltd. during 2003-2004.

Sl. No.	Varieties/ clones	BSRI farm	RSRS farm, Thakurgaon	Akandabaria farm, Carew & Co. Ltd.	Average of Three (3) Locations	
		Disease Index	Disease Index	Disease Index	Disease Index	Disease Reaction
1.	Isd 2-54	0	0.2	0	0.1	R
2.	Isd 17	0.9	1.5	1.2	1.2	R
3.	Isd 18	1.8	6.7	4.0	4.2	MS
4.	Isd 19	0.8	1.2	0.8	0.9	R
5.	Isd 20	0.6	0.4	2.6	1.2	R
6.	Isd 25	2.4	0.6	0.8	1.3	R
7.	Isd 28	1.5	0.4	2.2	1.4	R
8.	Isd 30	0.4	0.2	1.2	0.6	R
9.	Isd 32	0.8	0.6	2.3	1.2	R
10.	Isd 33	6.2	5.2	2.4	4.6	MS
11.	Isd 34	1.9	2.5	0	1.5	R
12.	Isd 35	0.9	0.7	0.4	0.7	R
13.	Isd 36	0.8	0	0	0.3	R
14.	LJC	1.8	3.2	2.3	2.4	MR
15.	Co 1148	1.7	2.1	1.2	1.7	R
16.	Co 1158	1.0	1.2	0.8	1.0	R
17.	I 8-95	1.2	2.2	1.2	1.5	R
18.	I 137-96	0.8	0.6	0	0.5	R
19.	I 131-97	0.8	0.6	0.7	0.7	R
20.	I 202-97	0.2	1.0	2.4	1.2	R
21.	I 82-98	0.8	2.3	3.9	2.3	MR
22.	I 98-98	0.4	0	1.5	0.6	R
23.	I 110-98	0.2	1.0	0	0.4	R
24.	I 117-98	0.8	3.5	0.6	1.6	R
25.	I 139-98	0.6	0.6	1.2	0.8	R
26.	I 142-98	0.8	1.5	0	0.8	R
27.	I 245-99	0.6	1.9	3.8	2.1	MR
28.	I 486-99	0.4	0.8	0.8	0.7	R
29.	I 433-99	0.6	1.1	0	0.6	R
30.	I 446-99	1.0	0.4	0	0.5	R

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