

I-60/74—A Promising Clone Resistant to Red Rot

M. A. Malek, S. Rahman, M. M. Kamal, S. M. Nahar, M. I. Talukder and M. Kalimuddin
Sugarcane Research and Training Institute,
Ishurdi, Pabna, Bangladesh.

ABSTRACT

I-60/74—a promising clone having good agronomic characters was tested against red rot disease. The average of 3 years test results revealed that the clone was highly resistant to the disease. The varieties Isd-2/54 and Co. 1158 selected from the resistant and the susceptible groups respectively were used as standard throughout the study. But they were found inferior to I-60/74 when their overall reactions to red rot were compared and considered.

INTRODUCTION

Red rot is the most devastating disease of sugarcane in India (Abbott, 1956). Bangladesh being on the same agro-ecological region is also not free from the severity of red rot disease which is widely spread throughout the country. Amongst all the cane disease red rot is still the most destructive one (SRI Annual Report, 1979). It is mostly responsible for low productivity (Ahmed *et al.*, 1977) and has stumped out many important commercial varieties at different times. For example, sixteen varieties have so far been released by this Institute, of which only four viz. Isd-1/53, Isd-2/54, Isd-9/57 and Isd-16 are now in commercial cultivation. The rest including some introduced varieties like BO. 17, BO. 34, BO. 70, Co. 527, Co. 640, Co. 1148, Co. 1158, Q.97 etc. became susceptible to red rot in different periods and are no longer in commercial cultivation. The variety Co. 1158 which was covering about 60% of cane areas even upto last year is now suffering from high incidence to red rot. The present leading variety Isd-2/54 has already started showing some tendency to red rot infection. Singh *et al.* (1983) reviewed the works of some authors and commented that the pathogen of red rot is capable of developing new strains which account for gradual susceptibility of tolerant varieties. Therefore, testing and releasing new varieties seems to be the best means of achieving a good control of this disease. With this aim in mind the promising clone, I-60/74, a cross between Co. 631 x BO. 22 was passed through a test against the disease during 1981, 1982 and 1983 and the results are reported in this paper.

MATERIALS AND METHODS

Two isolates of red rot have been detected in this region, one having greyish mycelium with greenish pigmentation in its spores and filaments having profuse setae in its culture. The other has whitish mycelium with no pigmentation in its spores and filaments with sparse or no setae in its culture. The greyish isolate is more virulent than the whitish one. The present study was made with the greyish isolate.

The inoculation tests were made using standard plug method. The canes of 10 months old were inoculated with a 12 days old, uniform and sporulating culture of *Physalospora tucumanensis* Speg. After two months and a half, the individual canes were split open and the index of virulence was determined. The rating as recommended by Hutchinson (1968) was used in determining the resistance/susceptibility. The varieties Isd-2/54 and Co. 1158 were used as standards for disease resistance.

Index of virulence was determined using the formula :

$$\frac{\text{Lesion's length}}{\text{Length of inoculated internode}} \times \frac{\text{Lesion's width}}{\text{Width of inoculated internode}}$$

Scale

Rating

Numerical

(if the figures based on the above formula read as follows)

0	=	Immune	=	0
Over 0 -1.0	=	Very Highly Resistant	=	1
" 1 -1.5	=	Highly Resistant	=	2
" 1.5-2.0	=	Resistant	=	3
" 2.0-2.5	=	Moderately Resistant	=	4
" 2.5-3.0	=	Intermediate	=	5
" 3.0-3.5	=	Moderately Susceptible	=	6
" 3.5-4.0	=	Susceptible	=	7
" 4.0-4.5	=	Highly Susceptible	=	8
" 4.5-...	=	Very Highly Susceptible	=	9

RESULTS AND DISCUSSION

Three years results show that I-60/74 is highly resistant to red rot, while Isd-2/54 is moderately resistant and Co. 1158 is susceptible. The pathological tests are presented in table 1.

Table 1. Test results of I-60/74 for red rot tolerance.

Varieties/ strains	Red Rot			Average
	Rating			
	1981	1982	1983	
Isd-2/54	4	5	3	4
Co. 1158	4	9	7	6.66=7
I-60/74	2	1	3	2

I-60/74 is considered more promising than any of the standards. As mentioned earlier, Isd-2/54 is currently the variety occupying the maximum cane growing areas. But it was found to be moderately resistant while I-60/74 was highly resistant. Therefore, it may be assumed that the clone would successfully replace any of the commercial varieties including Isd-2/54. It is expected that red rot can not easily wipe out this clone if released as a variety atleast for the next few years unless a new virulent strain develops. Singh *et. al.* (1983) are also of the same opinion.

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