

Effect of culture filtrate of *Colletotrichum falcatum* on callus growth of different sugarcane varieties

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SUMMARY

Sugarcane (*Saccharum officinarum* L.) is one of the important cash crops of India. Among diseases affecting sugarcane, red rot (*Colletotrichum falcatum*) is the most important one, which causes heavy yield losses. The pathogen affects the crop right from planting to harvest stage, the scope for developing completely red rot resistant variety becomes further limited due to the existence of considerable impediments in field screening methods, which could be probably overcome by newer screening approaches such as *in vitro* toxigenic screening established by tissue culture research for further crop diseases. To know the effect of culture filtrate of *C. falcatum* on growth of different sugarcane varieties calli were treated with culture filtrate of 15, 30, 45 and 60 days old at concentrations of 0.05, 0.10, 0.20 and 0.50 per cent, culture filtrate used at concentration of 0.05 per cent showed least effect on the growth and survivability of the calli irrespective varieties, where as 0.50 per cent showed detrimental effect. It was found that callus of variety CoC-92061 was more susceptible, where as CoC-671 was least susceptible to the culture filtrate of the pathogen.

Key words : Sugarcane, Varieties, Pathogen, Susceptible, Culture filtrate.

The red rot of sugarcane caused by *C. falcatum* has assumed economic status during recent years in northern districts of Karnataka. Due to this disease, the popular variety CoC-92061, which is having the potential high cane yield and sugar recovery is being with drawn from the cultivators in Karnataka. Despite this problem, studies on disease have not received much attention. Further, the information is lacking on screening for disease resistant varieties under *in vitro* condition.

The variety CoC-92061, which is highly susceptible to red rot disease was grown in and around Varada sugar factory of Haveri districts. It may be due to the prevalence of favourable environmental conditions for the disease. Survey also revealed that, CoC-92061 is a popular variety among the farmers with all its desirable traits especially, high yielding and high sugar recovery, but unfortunately it suffers from the red rot in and around Varada sugar factory areas. It is likely that variety may re spread over all the parts of northern Karnataka. In due course disease is expected to be intensified. The pathogen is soil borne and also sett borne, because of this unique trait it may spread in other susceptible varieties also. Hence, it is necessary to work out for the resistance of the variety through latest techniques of tissue culture studies by exploiting somaclonal variation.

To know the effect of culture filtrate of *C. falcatum* on the growth and different sugarcane varieties calli were treated with different concentrations in different days of culture filtrate and the results are discussed in this paper.

MATERIALS AND METHODS

In the present experiments, tissue culture studies were carried out with a three sugarcane varieties viz., CoC-671, CoC-92061 and CoC-86032 by adopting normal tissue culture technique as suggested by Liu *et al.* (1980), Gonzalez *et al.* (1985), Jimenez Gonzalez *et al.* (1990), in order to obtain the higher per cent of callus required for screening against red rot disease using culture filtrate of *Colletotrichum falcatum*. Dhumale *et al.* (1994), found that Murashige and Skoog medium (MS) was the best for callus induction and diffraction in sugarcane. Hence, same media was used in the present study.

An extensive survey was conducted during *kharif* season of 2002-03 to know the incidence, severity and distribution of red rot of sugarcane around the sugar factories and northern Karnataka. Survey of the disease over a period of time provides information about the intensity and distribution and effect on yield. In addition, it will be a some of information of severity of disease on different popular sugarcane varieties cultivated extensively in northern Karnataka. The sample of red rot affected sugarcane setts were collected from Varada sugar factory areas of Haveri district and used for isolation of pathogen.

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