

Use of *in vitro* techniques for early screening of sugar cane lines against smut (*Ustilago scitaminae*) disease

Sugarcane (*Saccharum officinarum*) is a crop with high commercial importance in tropics and subtropics. In commercial cultivation, sugarcane plant is susceptible to number of diseases among which smut disease caused by *Ustilago scitaminae* is rated as one of the most harmful fungal disease. Main objective of the present study was to check the possibility of using *in vitro* techniques as an early screening method for the smut disease.

In addition to that, toxic effects of the pathogen was also subjected to investigate. Five lines of sugarcane i.e., SL 8302, Ph56/226, Mali, CO 775 and CO 740 were used. According to the field performance it was categorized in to susceptible (SL8302, Ph 56/226 and Mali) and resistant (CO 775 and CO 740) lines. Shoot tip explants with young leaves were cultured from each line, in MS medium supplemented with 2, 4 -D (3mg/1) to induce callus formation. Then 15 day-old callus was inoculated with a spore suspension of the pathogenic fungi. The comparative ease of the mycelium growth over the callus was considered as the criteria of evaluating the degree of resistance.

Results clearly indicated that lines CO 775 and CO 740 were resistant while the lines SL 8302, Ph 56/226 and Mali were susceptible. *In vitro* generated shoots in MS medium supplemented with NAA (5mg/1) of each line were also tested in the same manner in sugar free MS medium and showed the same trend as callus. This behavior of the callus as well as the plantlets agreed quite well with the result of a field experiments with mature plants. Thus, it can be concluded that, *in vitro* techniques could be reliably employed in early screening of sugarcane lines against smut disease.