

IN VITRO SCREENING AS AN EARLY DETECTION TOOL FOR SENSITIVITY TOWARDS CORYNESPORA LEAF FALL DISEASE IN *HEVEA BRASILIENSIS*

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Corynespora leaf fall disease, caused by the fungus *Corynespora cassiicola*, is a highly devastating disease adversely affecting the growth and productivity of *Hevea brasiliensis*. Early screening of the newly developed, improved clones towards this disease is highly desirable. Cultivating tolerant clones with improved yield and other secondary characters will be a better strategy for disease management rather than adopting chemical control measures for susceptible clones. Towards this objective, we explored the possibility of employing *in vitro* assay for early screening, making use of the pathotoxin, cassiicolin produced by the fungus. Eight different clones of *Hevea*, four each belonging to the susceptible and tolerant groups as established from previous field observations were selected for this study. Both detached leaves and calli derived from these clones were employed in the bioassay experiments wherein the disease sensitivity was tested using crude culture filtrate generated from a highly virulent strain of *C. cassiicola*. Two experiments were performed using detached leaves, one being leaf wilt bioassay using whole detached leaf and the second one employing leaf segments subjected to vacuum infiltration with crude culture filtrate. In the whole leaf assay, sensitivity to crude culture filtrate was evaluated by visual identification of the degree of wilting of different clones at specific time intervals. In the case of leaf segments subjected to vacuum infiltration, visual observation of the necrotic lesions as well as electrolyte leakage measurement were carried out. In the *in vitro* screening experiment of callus using fungal exudates, changes in the colour and texture of the callus were taken into account for evaluating the extent of cellular damage. Results of all these experiments conform earlier field observations of sensitivity ranking of different clones towards Corynespora leaf fall disease. These methods, being quite simple and fast, can be employed in the early screening of new hybrids and pipeline clones to determine the degree of tolerance towards this disease.

Key words: Corynespora leaf fall disease, Crude culture filtrate, *Hevea brasiliensis*, *In vitro* screening, Leaf wilt bioassay, Vacuum infiltration.

INTRODUCTION

Hevea brasiliensis recognized as the major commercial source of natural rubber is a recently domesticated perennial, tropical tree crop. As with any other agricultural crop, incidence of diseases increased with

domestication and so far, more than one hundred pathogens have been identified as capable of attacking the rubber tree. In India, the adverse climatic conditions like cloudy weather, low temperature, very high humidity as well as more unpredictable