

CRITICAL WEATHER FACTORS INFLUENCING THE INCIDENCE AND SEVERITY OF CORYNESPORA LEAF FALL DISEASE IN *HEVEA*

Shammi Raj and Annakutty Joseph

Rubber Research Institute of India, Rubber Board, Kottayam-686009, Kerala, India

Received: 11 February 2011 Accepted: 30 April 2011

Raj, S. and Joseph, A. (2011). Critical weather factors influencing the incidence and severity of *Corynespora* leaf fall disease in *Hevea*. *Natural Rubber Research*, 24(1): 124-131.

Recent incidences of attack of the pathogen, *Corynespora cassiicola* on rubber trees in North Kerala and South Karnataka necessitated the study of critical weather conditions which trigger the onset of the disease. Daily leaf fall due to *Corynespora* infection during the January-February period was studied in relation to the prevailing weather parameters at five different locations. A new index, termed the Humid Minimum Temperature Index (HT_nI) was found to be related to disease incidence and severity of leaf fall in all the locations in the traditional rubber growing belt. A value of HT_nI > 5.5 for seven consecutive days was found to be the critical limit for severe leaf fall and HT_nI > 4.0 for consecutive 3 to 4 days for the onset of the disease. Similar results were obtained when leaf fall was studied in relation to spore count per unit area within the canopy. Forecasts during the refoliation period based on the critical values of HT_nI could be utilised to wisely adopt prophylactic measures to combat this disease, a major biotic constraint of rubber productivity.

Keywords: *Corynespora* Leaf Fall Disease, Humidity Thermal Index, Leaf baskets, Leaf fall.

INTRODUCTION

One major biotic constraint affecting productivity of rubber plantation is the *Corynespora* leaf fall disease (CLFD) caused by the pathogen *Corynespora cassiicola*. The disease caused several global epidemics shattering the confidence of rubber growers in new rubber clones. This devastating leaf disease of rubber (*Hevea brasiliensis*) is common in countries like Brazil (Silva *et al.*, 2006), South and South East Asia (Chee, 1988; Darmano *et al.*, 1996; Jacob, 1997; Jayasinghe, 2003) and also for the first time in south China during a survey in 2006 (Jinji *et al.*, 2007). Presently in all the rubber-growing

countries, there is a degree of uncertainty about the disease tolerance of all recommended clones (Fernando *et al.*, 2009). The disease affects both immature and mature trees. The pathogen produces numerous types of lesions, with characteristic blighted leaves, followed by leaf fall. Repeated defoliation results in dieback of shoots and branches, retarding the growth, extending the period of immaturity and sometimes leading to death of the plant (Jayasinghe, 1997). It is not possible to manage the disease in mature clearings by chemicals which are not economical (Jayasinghe *et al.*, 1999). Even though mild

Correspondence: Shammi Raj (Email: shammiraj@rubberboard.org.in)