

IS CLIMATE INIMICAL TO THE DEVELOPMENT OF ABNORMAL LEAF FALL DISEASE IN NATURAL RUBBER PLANTATIONS IN NORTH EAST INDIA?

C. Bindu Roy, Sailajadevi*, Shammi Raj, Nripen Kr. Gogoi* and Jacob Mathew

Rubber Research Institute of India, Kottayam 686 009, Kerala, India

*Regional Research Station, Agartala, India

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Abnormal leaf fall (ALF) disease caused by *Phytophthora* spp. is one of the most destructive diseases of rubber (*Hevea brasiliensis*) in South India. High incidence of pod rot and ALF disease caused by *P. botryosa* was observed in Tripura (North East India) during 1988 and 1989 but not during the subsequent years although a *Phytophthora*-susceptible rubber clone RRIM 600 is widely cultivated in this area. Therefore, a possible threat of *Phytophthora* exists in the rubber plantations of North East India. In this study *Phytophthora* was isolated from soil and litter collected from rubber plantations in Agartala, Tripura and Kottayam in India. It was found that *Phytophthora* inoculum density was low in Tripura and they were less virulent. As weather plays an important role in development and spread of *Phytophthora* disease, a comparison of weather parameters between Tripura and Kottayam during May to August 1988 to 2009 was made. A hot weather with low relative humidity coupled with less number of continuous rain spells may be some of the important factors preventing inoculum build up for initiating *Phytophthora* infection in rubber plantations of Tripura. Low virulence of *Phytophthora* would also have contributed to near complete absence of ALF in NE India.

Keywords: Abnormal leaf fall, Climate, *Hevea brasiliensis*, North East India, *Phytophthora*

INTRODUCTION

Abnormal leaf fall (ALF) disease caused by *Phytophthora* spp. is one of the major diseases of rubber (*Hevea brasiliensis*). In South India, severe defoliation occurs annually during June-July, coinciding with the South West monsoon period. Crop loss due to *Phytophthora* was estimated to be 7 to 32% in the traditional rubber growing regions of India (Jacob *et al.*, 2006). Pod rot and ALF disease on rubber plantations of North East India (NE India) caused by *P. botryosa*

were observed in Assam, Meghalaya and parts of Tripura (Pathalia, Taticheri and Warrangberi) during 1988 and 1989, but not during the subsequent years (Mondal *et al.*, 1994). Due to high incidence, extensive dieback of twigs and branches as well as pod rot were noticed in most of the affected rubber trees. Pods were mostly infected (60-80%) and remained attached to the rubber trees in mummified and undehisced condition and about 50-60% trees were totally affected. Leaf fall was 70-80% during that period. The severe outbreak of ALF