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Chemical Control Measures Against Patch Canker Disease in Rubber Plantations

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Abstract

The rubber plantation industry plays a significant role in Sri Lankan economy in terms of foreign exchange earnings. Rubber cultivations are affected by a number of economically important diseases and insect pests which lead to significant yield losses. During the recent past, an abnormal bark cracking at the collar region and oozing of latex of trees was frequently reported to the Rubber Research Institute. The disease has been identified as Patch Canker condition and the causative agent was reported as a fungal like pathogen *Pythium* spp. This study reviews the recommendations to treat patch canker disease in rubber plantations. The effects of the fungicides namely mancozeb 80%, mancozeb 64%+metalaxil-MZ72, carbendazim 50% ai, hexaconazole 50 ai, captan 50% WP, thiram 80% WP and copper oxychloride 50% WP were evaluated on the mycelial growth of the *Pythium* spp. using the poisoned food technique (PFT) *in vitro*. Hundred parts per million (100 ppm), 200 ppm, 600 ppm and 1,000 ppm active ingredient of each chemicals were subjected to testing. The field trials were carried out at Pussella Estate, Kuruwita Estate and Woodend Estate which were identified as the affected fields with *Pythium* spp. One hundred and twenty five moderately affected, ten years old rubber trees were selected out of five hundred trees of one hectare for the field tests of the chemical treatments at each estate. Four fungicides namely mancozeb 80%, carbendazim 50% ai, thiram 80% WP and thiophanate methyl 70% WP were tested *in vivo*, based on their behavior *in vitro* also to represent different chemical mode of action. In the PFT, the most suppression of mycelial growth in plates containing was from mancozeb at a concentration of 200 ppm. Carbendazim and mancozeb+metalaxil were both inhibitory to *Pythium* spp. in culture at concentrations ranging 400-600 ppm. Fungicides thiram, copper oxychloride, hexaconazole and captan were not inhibitory to *Pythium* spp. at 600 ppm. According the field test fungicides mancozeb and carbendazim showed the highest average disease recovery index while the low average disease recovery index were recorded for fungicides thiram and thiophanate methyl. Based on *in vitro* and *in vivo* investigation the fungicides mancozeb and carbendazim were extremely effective in controlling the pathogen *Pythium* spp. No further cankers developed from the bark surface after the applications of mancozeb and carbendazim treatments. Treating affected trees with mancozeb or carbendazim will reduce the severity of patch canker caused by the *Pythium* spp.

Keywords: Natural rubber, Patch Canker disease, Chemical controlling