## ABSTRACT

The abnormal leaf fall disease of rubber trees is a limiting factor in natural rubber production in India and other rubber growing countries. A tractor operated air carrier sprayer incorporating an air moving device (AMD) was developed for fungicide application on rubber trees and its performance under laboratory and field conditions were evaluated. The sprayer was operated for all the nine combinations of the three air flow rates of 1.24,1.34, and 1.51  $m^9$ /s and the three tractor travel speeds of 2.6,3.6,and 4.6 km/h. Spray droplet density on targets placed at seven altitudes from the ground between 7.5 to 22.5 m at 2.5 m interval were obtained. Efficacy of the above nine treatments in the control of abnormal leaf fall disease was assessed and compared with aerial sprayed and unsprayed control treatments.

The sprayer developed is capable of atomizing the spray fluid into fine droplets and depositing on targets even at an altitude of 22.5 m from the ground. The air flow rate , tractor travel speed and target height did have a significant effect on spray deposition on the lower and total surfaces of the targets. The upper surface of the target was not affected by the air flow rate or travel speed.

.

At the highest target level of 22.5 ത from the ground a droplet density of 4.9 no./sq cm is obtained on the total surface of the target for an air flow rate of 1.51 m<sup>9</sup>/s and at a tractor travel speed of 3.6 km/h. Maximum per cent leaf retention of 98.73% is obtained in the middle portion of the tree sprayed at 2.6 km/h travel speed and with an air flow rate of 1.51 m<sup>9</sup>/s. The maximum leaf retention observed for the aerial sprayed and unsprayed control treatments are 98.74% and 77.98% respectively. The operating cost of the tractor operated air carrier sprayer is estimated to be rupees eighty five against rupees three hundred and ten of aerial spraying.

Kevwords :-Abnormal leaf fall disease, air carrier sprayer, aerial spraying air moving device ,rubber tree, droplet density, leaf retention.