

RESEARCH REGARDING THE INFLUENCE OF THE FAN SPEED OVER THE OPERATING PROCESS OF A MACHINE FOR PEST AND DISEASE CONTROL IN VINEYARDS, WITH SOLUTION RECOVERY

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Abstract

Pest and disease control in vineyards is one of the major technological links that require high costs; therefore, the construction of the spraying machines has an important role in the development of effective treatments, while achieving low consumptions of phytosanitary solution. In order to improve the working process, the vineyards and orchards sprayers are equipped with axial fans, which provide the transport of the toxic liquid droplets dispersed by the nozzle and the agitation of the foliar mass, favoring the deposition of the substance on both sides of the leaves. In order to reduce the solution losses during the working process, an equipment for recovering the droplets that are not retained by the foliar mass was designed and developed. The recovery equipment was mounted on a low volume sprayer for vineyards and intensive orchards, type TARAL 200 PITON TURBO, equipped with an axial fan; the solution dispersion is achieved hydraulically, due to the high pressure of the liquid. The solution recovery equipment consists of two reclining vertical panels, positioned on each side the vineyard row; at the base the panels are equipped with gutters for collecting the solution which is not retained by the leaf system. The recovered solution is taken from the gutters with a hydraulic pump and transferred to the graded collection receptacles. The hydraulic circuit of the machine is equipped with flow meters in order to measure the total amount of solution sprayed by each pad. The experimental investigations were carried out in laboratory conditions, for different working pressures in the hydraulic system, for fan speeds of 800, 1100 and 1400 rpm, and for different positions of the recovery panel. The analysis of the experimental results shows that the working process of the sprayers is complex and endowing with the recovery equipments may significantly reduce the consumption of the toxic solution used for pest and diseases control.

Key words: axial fan, solution recovery equipment, fan speed.
