



Redefining Pest Management - a Holistic Approach

Practice Abstract N° 9

Assessment of optimal operative parameters for a vineyard smart sprayer

In the ambit of OPTIMA WP4 activities a set of laboratory and field tests were carried out in order to select the optimal configuration of a Caffini Synthesis tower shaped air-assisted sprayer, starting point for the development of the OPTIMA smart sprayer for vineyards. In laboratory tests aimed at assessing the vertical spray profiles using different types of nozzles (conventional hollow cone, conventional flat fan and air induction flat fan) were made using an ad hoc test bench. Results pointed out that the most effective sprayer configurations to precisely match the vine target at full growth stage were obtained activating 6+6 nozzles flat fan nozzles operated at 4 bar pressure. Tests made with a sonic anemometer to evaluate the air velocities on the target pointed out that setting the PTO revolution speed at 450 rev/min and using the low fan gear enabled to get average air velocities between 4 and 6 m/s in correspondence of the target, which is the optimal range to maximise spray deposition and prevent spray drift. Field tests pointed out that using the optimised sprayer configurations with flat fan nozzles, either conventional or air induction, the average spray deposit on the leaves increased by 40% with respect to that obtained using a reference conventional axial fan sprayer equipped with hollow cone nozzles operated at 14 bar pressure.



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