

Waste not, want not! – methods of improving spray deposition and reducing drift in vineyards

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ABSTRACT

The challenge for grape growers is to apply pesticides precisely to the target areas as inaccurate application is wasteful of resources and can cause harm to the environment. New sprayers incorporating modern engineering designs can be chosen but many growers have limited resources to spend on spraying equipment.

This paper describes various methods developed by the author in the past decade to improve penetration within the canopy and ensure droplets hit the target. Trials have been conducted to evaluate modern nozzle designs, nozzle orientation, air volume and velocity in relation to canopy density and timeliness throughout the growing season.

Air induction nozzles, fitted to a canopy sprayer reduced drift by 75% and showed no significant difference in disease control when compared to hollow cone nozzles in season-long field trials.

Air restrictors, deflectors and variable speed fans help direct and reduce airflow from the sprayer in an attempt to match air volume and speed with increasing canopy growth, as the season progresses. Results from field trials have shown improvements of up to 30% increase in deposition and up to 75% reduction in drift.

Most of the developments made for U.S. grape growers are relatively inexpensive, the emphasis is on effectiveness and on-farm construction. For example, the orientation of sprayer nozzles affects the spray pattern being emitted from an air blast sprayer. A simple vertical patternator was designed and developed to measure spray liquid emitting from canopy sprayers. Nozzle orientation was altered to find the optimum spray pattern for both canopy and the fruit zone. Reduction in pesticide application of 20% was obtained and field results show the importance of correct nozzle orientation if pesticides are to be applied effectively to the target.

Reference

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