

**Project Title** : Determination of the Efficacy of Air Assisted Sprayer Equipped with Some Air Injector Nozzles Used to Control Powdery Mildew (*Uncinula necator*) and European Grapevine Moth (*Lobesia botrana*) in the Vineyards

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**Supporting Body** : GDAR

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**Summary** : Air-assisted sprayers are widely used in spray operations in vineyards in the Aegean Region where the vineyard production has a significant share in the Turkish economy and the use of air assisted sprayers in the future is expected to show a significant increase. In sprayers, the droplets formed by nozzles are carried to the target in air stream generated by means of a fan on the sprayer. Studies conducted indicate that generally hollow cone nozzles are used and spray applications are mostly achieved at high pressures (> 25 bar) and high application rates. On the other hand, using high pressures make the droplet diameter sensitive to the risk of drift. The drift that occurs during the spray applications results in unavoidable loss of pesticide. Especially during the full vegetation period, the pesticide used at higher application rates and pressures runs off the soil surface. The importance of these phenomena could be exposed when the fact that spray applications carried out 4 or 6 times a year is considered. The pesticide drifted from the target is a threat for human being and environment while this type of spray makes both, the application and plant protection fail. Obtaining an acceptable biological efficacy requires the appropriate surface coverage and uniformity.

The experiments in this study will be conducted in a vineyard during the period of 2011 and 2013 in the province of Manisa. Three different nozzles (Conventional nozzle, Lechler ID, and Teejet AITX) and three phenological periods (blossom, ripening and full vegetation) will be considered. For blossom period 60 l/da and for ripening and full vegetation period 100 l/da will be applied as conventional application rates. In the experiments 50 % of each conventional application rate will be also employed. Therefore, four different application rates will be applied during the experiments.

The causes of the failure of spray application and the problems related to the residue in the Aegean Region could be the increased dosage of pesticide in order to increase the biological efficacy, using uncalibrated sprayers, selection of inappropriate nozzle type and incorrect application parameters. Hence, the objective of this study is to make some modifications on existing sprayers while employing some new nozzles in order to reduce the pesticide losses due to drift while sustaining the biological efficacy and increasing the surface coverage, reducing the drift and the amount of pesticide used and to provide reduction in spray costs to control Powdery Mildew (*Uncinula necator*) and European Grapevine Moth (*Lobesia botrana*) in the Aegean Region.