THE DISPERSION UNIFORMITY OF A MACHINERY FOR COMBATING DISEASES AND PESTS IN VINEYARDS AND ORCHARDS, EQUIPPED WITH NOZZLES WITH/WITHOUT AIR ABSORPTION

Andreea DIACONU[1], Ioan ȚENU[1], Petru CÂRLESCU[1], Virgil VLAHIDIS[1]

e-mail: andreea_diaconu_a@yahoo.com

Abstract

The chemical method for the application of phytosanitary treatments in the vineyards is most effective for the control of diseases and pests, but also presents some disadvantages, because the pesticides end up in the water, air and soil, polluting them. Pesticides are transferred to plants, fruit, animals and people, with undesirable repercussions on health. The spraying devices are equipped with nozzles, which disperses plant substance in fine droplets on the plant. Their orifice can be decalibra due to hydroabrasive wear, favoring conducting to an uneven treatment, with untreated or overtreated areas, which also determines an excessive pollution. To determine the nozzles dispersion uniformity it was designed and built a laboratory stand, which allows quantification of the machine dispersion uniformity. In the experimental research conducted in laboratory conditions it was used a vineyards pest and disease control machine TARAL 200 PITON TURBO type, which there were mounted flat-jet air absorption-type nozzles IDK 120-02 from LECHLER and ALBUZ AMT 1.2 full cone spray nozzles. The tests were performed for different working pressures (0.2; 0.4; 0.6; 0.8; 1.0; 1.2 and 1.4 MPa) and mounting distances from stand to the spraying machine axis (1500, 1700, 1900 and 2100 mm). In these circumstances, it is reproduced in laboratory the spraying machine working process and it is determined the solution dispersion uniformity. The analysis results show that the air absorption nozzles have a much better uniformity than those without air absorption for all pressures and working distances. The best results, i.e. the dispersion uniformity of 90.93% were obtained by the stand arrangement at a distance of 1900 mm from the machine's axis and at a pressure of 1.0 MPa, for air absorption nozzles.

Key words: dispersion uniformity, nozzles, spraying machine