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FIRST RESULTS ON SPRAY DEPOSITION, COVERAGE AND EFFICACY OF DIFFERENT DELIVERING NOZZLES IN FIXED-SPRAY INSTALATIONS ON A NARROW-WALL ORCHARD

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Abstract: Training system is a toggle key that affects the whole farming technique. Compare to the past, a more efficient attempt is carrying on to identify some solutions to treat apple orchards with fixed-spray systems. One of the limitations of this technique, which is commonly used to apply chemicals for plant protection in South Tyrol since the 50's and 60's, is to treat the entire orchard surface with circular sprinklers designed for frost defense which are positioned over the canopy. With short trees and narrow-wall canopy is more easier to cover the target and, at the same time, to reduce the losses of products used for plant protection. The narrow-wall training system has the peculiarity of being well adaptable to a so-called solid set canopy delivery system, as the vegetation is slightly developed in volume and therefore is well exposed to treatments. During the year 2015, some experimental plots were arranged with specific sprinklers for localized applications on the row in a narrow-wall apple orchard. Using tartrazine as tracer, those installations have been compared in deposits obtained on vegetation and losses closer to rows, moreover a tunnel sprayer was included in the comparison. Furthermore, water sensitive papers have been used to define the coverage quality of different sprinklers models. A greater amount and homogeneity of deposition along the profile of the plant and along the row have been observed for tunnel sprayer. The different fixed installations have allowed to contain the extension of the area affected by losses of liquid in the vicinity of the row when operating without wind interference and have ensured a sufficient deposit, even if less homogeneous. Infact, treatments against scab and powdery mildew have been applied with the different types of delivering nozzles and the efficacy results seem to be promising.

Key words: Fixed spraying, narrow-wall orchard, irrigation sprinklers, spray drift, fungicide efficacy