



Redefining Pest Management - a Holistic Approach

Practice Abstract N° 10

Reducing the use of plant protection products in carrot fields by band spray applications

Carrots are high value crops that unfortunately demand high amounts of fungicides to be applied in numerous applications to properly control *Alternaria* leaf blight. Severe epidemics of this disease can reduce the yield up to 40 to 60%. Under high pressure, no single control measure is sufficient to manage the disease adequately on its own. Therefore, the disease management currently relies on the combination of plant protection products (PPPs), the use of partial resistant varieties and monitoring with a disease forecaster. The use of PPPs (synthetic or biologic) could be reduced by the use of band spray applications instead of broadcast applications, by using an appropriate nozzle configuration (combination of nozzle type, size, spray angle) at optimal nozzle height and distance. These optimal settings depend on the carrot growth stage, planting system and cultivar, which determine the leaf foliage width and thus the target zone. As an example, configurations with 4 nozzles per bed (either 4 standard flat fan nozzles XR 80 04 or XR 80 02, 4 air induction nozzles AI 80 04, or 2 air induction nozzles AI 110 04 in combination with 2 off-center nozzles AIUB 85 04) have been shown to have a clear advantage over standard broadcast applications, with lower application rates (L/ha), much lower losses outside the target zone (up to 33%), good uniformity, and higher deposition for target zone widths from 1.2 to 1.8 m in a planting system with 1.83 m beds and 0.5 m inter-bed distance. In addition, the lowest levels of spray deposition recovery were obtained with the broadcast application with XR 110 04 nozzles, justifying the improvement of spray applications of carrot crops with optimized technologies using adjusted nozzles types and band spray configurations.



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