



Redefining Pest Management - a Holistic Approach

Practice Abstract N° 11

Optimal spray configuration for an efficient and sustainable PPP use in apple trees

One of the objectives of H2020-OPTIMA project is to develop a smart-sprayer for a more efficient and sustainable use of Plant Protection Products (PPP) in apple trees. The starting point was the Futur Inverter Qi 9.0 H3O (Pulverizadores Fede S.L., Cheste, Spain), which represents the high level of the technology available in the market. Twelve different nozzles technologies which may lead to an improvement in the distribution were selected and tested in laboratory conditions. During the trials, vertical distributions of all the configurations were evaluated using a vertical test bench (AAMS-Salvarani, Maldegem, Belgium). Complementarily, coverage trials were arranged using artificial apple trees and measured using water sensitive papers (Syngenta, Basel, Switzerland) placed in twelve different positions, 4 levels in height and 3 in depth. During the process, air characteristics for the selected sprayer's configurations were measured and characterized using a 2D anemometer at the outlet section of the sprayer. Results from the different experiments showed that, for the considered apple canopy characteristics, the best spray technologies were the Lechler IDK 90 02 at 10.9 bar and Lechler IDK 90 03 at 4.9 bar, both flat fan spray pattern. For the two tests, the optimal airflow settings were a large rotary speed of the fan with a blade angle of 30°, generating 26195m³/h. The main difference between both configurations was the generated droplet size, an important characteristic with a clear and direct influence on the environmental risk (spray drift), coverage and bio-efficacy. OPTIMA project will evaluate drift and bio-efficacy in future trials, to encounter the optimum technology for the orchard apple crop.



THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT N. 773718

optima-h2020.eu

