OPTIMA

Redefining Pest Management - a Holistic Approach

Practice Abstract Nº 12

Development of artificial apple trees for laboratory trials

OPTIMA includes a huge number of laboratory trials in order to select the optimal spraying configuration, among others, for apple crop. Apple crop is a deciduous tree, which does not permit to make trials all the year, because in some periods it does not present vegetation. For this reason, five artificial apple trees were designed with the aim of analyzing phytosanitary application techniques under laboratory conditions. The structures were built using base iron tubes where wooden cylindrical masts were inserted, and at the same time, main branches, also made of wood, were inserted into the masts. The artificial leaves branches made of plastic, are composed of 42 leaves each one. Five structures were build following the same characteristics of the orchard apple trees in Spain, were the field trials will be carried out of the project. The height of each tree is 3.5 m and 1.64 m of width. The foliar branches were analyzed using a planimeter in order to evaluate the target vegetation area. In each artificial tree were placed a total of 110 leaf branches. The leaf branches can be modified in order to simulate different crop stages of the apple trees cobbering the whole range since an initial crop stage to the full vegetation that reaches at the ending of the season. The artificial vegetation has been validated to ensure its usefulness. No statistical differences were observed between the constructed vegetation and the previous tests carried out in the pilot zone, with the real vegetation, regarding the spray coverage under the same treatment conditions. Different spraying configurations were tested in the artificial trees with the aim to evaluate the coverage and select the optimal spraying configuration for this crop.

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