



Redefining Pest Management - a Holistic Approach

Practice Abstract N° 29

Integrated Pest Management for apple orchards: multi-criteria assessment addressing human health and environmental risks, impacts and costs

Integrated Pest Management (IPM) practices for apple orchards tested in the OPTIMA project were compared based on field trials (February-July 2021), in three different farms in Zaragoza, Spain. The OPTIMA IPM practices included different technological innovations in smart sprayers and biological plant protection products (bio-PPPs), which were compared against a baseline representing current practice.

The choice of environmental, human health, and cost indicators, as well as the definition of their importance, derives from literature, and consultation of stakeholders. The set of indicators encompassed climate change and photochemical ozone formation (Environmental Life Cycle Assessment), risk to pollinators, risk to other beneficial insects, and risk to soil organisms (Environmental Risk Assessment), risks to human health in the local community, namely for farmers (Human Risk Assessment), and operational costs for farmers.

Comparing two IPM practices in the same farm, one using only synthetic PPPs and the other one using also some bio-PPPs, the multi-criteria assessment clearly endorses the latter, which minimized toxicity to human and ecological receptors (from 20% to honeybees to over 60% to soil organisms), as well as decreased life-cycle impacts.



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