



*Redefining Pest Management - a Holistic Approach*

## Practice Abstract N° 30

### **Integrated Pest Management for carrots: multi-criteria assessment addressing human health and environmental risks, impacts and costs**

Integrated Pest Management (IPM) practices for carrots in open field tested in the OPTIMA project were compared based on field trials (July-October 2021), in Aquitaine, France. The OPTIMA IPM practices included innovations in smart sprayers and the use of 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.

The multi-criteria assessment clearly endorses the use of the smart sprayer configuration. This is particularly observed in the reduction of the risk to soil organisms (64%). Concerning bio-PPPs, results singled out the incorporation of Heliosoufre (a bio-PPP containing sulphur, causing chronic risk to bees), and a recommendation to be replaced in the future.



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