

PRECISION FARMING AND USE OF UV-C LIGHT TO REDUCE THE USE OF PESTICIDES: LESS COSTS AND MORE ENVIRONMENTAL SUSTAINABILITY FOR VITICULTURE

SCORPION project focuses on reducing pesticide use in viticulture by utilizing precision farming and UV-C light technology. These methods aim to provide sustainable and cost-effective solutions for managing fungal diseases in vineyards.



Precision Farming

Precision farming utilizes prescription maps and real-time environmental recognition systems to target pesticide application precisely. The machine distributes the correct dose using Variable Rate Technology, ensuring chemicals are applied only where necessary, reducing overall usage.

UV-C Light Technology

The project explores UV-C light for its germicidal properties, using short-wavelength ultraviolet light (100-280 nm) to break down the DNA and RNA of harmful fungi and bacteria. Night-time treatments are more effective, requiring lower doses and preventing pathogens' self-repair mechanisms.



Experimental Developments

- **LED vs. Mercury Vapor Lamps:**
Initial tests favored 254 nm mercury vapor lamps over LEDs.

- **Field Tests:**
Conducted in Spain, Holland, and Portugal, optimizing the UV-C module for the WETA robot platform, considering factors like geometry, irradiance, speed, energy consumption, and safety.

These innovative methods offer several benefits:

- **Sustainability:** reduces chemical pesticide use.
- **Cost-Effectiveness:** Lowers input costs.
- **Enhanced Crop Protection:** Improves pathogen control with minimal impact on crops and human health.

