

Utilizing Ozone for the Management of Powdery Mildew (*Erysiphe necator* Schwein.) in vineyards: potential and challenges

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Powdery mildew, caused by fungal pathogens, poses a significant threat to grapevines in the DOCa Rioja region. In efforts to improve control strategies while reducing reliance on conventional phytosanitary products, ozone could constitute a potential alternative. However, it has short persistence, thus requiring frequent treatments. This study aimed to assess the suitability of ozone as an active substance for controlling powdery mildew within a phytosanitary strategy aimed at reducing conventional phytosanitary product usage. The strategy integrating ozone with conventional products yielded powdery mildew levels comparable to conventional treatments in both disease incidence and severity. Nonetheless, employing a strategy solely based on ozone applications resulted in higher disease incidence and severity levels compared to the conventional treatment, particularly in the Tempranillo variety. These findings underscore the potential of ozone as a component of integrated disease management strategies in vineyards, offering an environmentally friendly alternative to traditional phytosanitary products. However, caution is warranted when relying solely on ozone, as observed efficacy variations across grape varieties suggest a need for tailored approaches. Further research is needed to optimize ozone application methods and explore its interactions with different grapevine cultivars and environmental conditions. In conclusion, while ozone shows promise as a tool for reducing conventional phytosanitary product usage in powdery mildew control, its effectiveness may be limited as a standalone method, particularly in certain grape varieties like Tempranillo. This study contributes to ongoing efforts to refine disease management strategies in viticulture, emphasizing the importance of integrated approaches for sustainable grape production.

Keywords: incidence, severity, ozone, grapevines, phytosanitary treatment.