

Mycorrhizal inoculation under reduced fertilisation modulates aroma precursors in must and volatile composition in wines of *Vitis vinifera* 'Danmarpa Polonia'

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Streszczenie

Mycorrhizal associations are increasingly recognized as modulators of grapevine physiology and secondary metabolism, yet their influence on aroma precursor formation under reduced fertilization remains insufficiently explored. This five-year field study investigated the effects of ecto mycorrhizal, arbuscular mycorrhizal, and combined inoculation on glycosidically bound and free volatile compounds in must and wine of *Vitis vinifera* 'Danmarpa Polonia' under reduced mineral fertilisation. Treatments were arranged in three biological replicates under rainfed conditions. Combined ectomycorrhizal and arbuscular inoculation significantly increased total free volatiles and glycosidically bound aroma precursors in must compared to the fully fertilised control. Wines produced from this treatment also exhibited significantly higher total volatile concentrations. Principal component analysis confirmed a clear separation of dual-inoculated vines from the control treatments. The results suggest that combined mycorrhizal inoculation under reduced fertilisation may enhance aromatic potential while supporting more sustainable viticultural practices.

Słowa kluczowe

glycosidic aroma precursors, mycorrhizal fungi, ectomycorrhiza, arbuscular mycorrhiza, fertilisation, grapevine

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