An innovative use of vine-shoots residues and their “feedback” effect on wine quality

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ARTICLE INFO
Article history:
Received 7 March 2016
Received in revised form 5 July 2016
Accepted 24 July 2016
Available online 31 July 2016

Keywords:
Biostimulant
Phenolic compounds
Vine-shoot extracts
Volatile
Wine

ABSTRACT
The possibility of using vine-shoots extracts as viticultural biostimulants has been preliminary studied. For this purpose, two vine-shoot aqueous extracts, Airén extracts from non-toasted (AVS) and toasted vine-shoots (AVS toasted), were prepared and applied on Airén grapevine leaves at veraison time. The resulting wines improved the quality, not only classical oenological parameters (alcoholic degree, pH, total acidity, volatile acidity, colour intensity), but also the varietal aroma potential index and their volatile and phenolic compounds. Both treatments increased the grape yield and decreased the alcohol degree. About volatiles, extracts application increased the varietal aroma typical of Airén variety (norisoprenoids and terpenes) and affected positively the phenolic composition, especially in case of hydroxycinnamic acids, showing a “feedback” effect from vine-shoots to wines. Also AVS wines showed higher spicy sensorial notes than its control. These preliminary results could contribute to a Sustainable Viticulture since vine-shoots could act as soil sinks and surplus metabolites of the vines.

Industrial Relevance: There is a growing interest in the exploitation of vine-shoots, which annually yield between 1.4 to 2.0 tons per hectare, especially in wine-producing countries. An innovative approach to reuse this abundant residue may be as “viticultural biostimulant” where, in this case, Airén vine-shoots (non-toasted and toasted) are extracted and applied foliarly to the grapevine, resulting that there is a “feedback” effect to the wine of the compounds present in vine-shoots, specially volatile and phenolic compounds, improving wine quality characteristics. Both treatments increased the grape yield and decreased the alcohol degree of the resulting wines. This fact contributes to a Sustainable Viticulture with a “from place-to vine-to wine” sense, since vine-shoots could be considered as soil sinks and surplus metabolites in the vine.

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