Atypical ageing defect in Pinot Blanc wines: influence of the grapevine production management.

Atypical ageing (ATA) is a wine aroma fault occurring in white wines characterised by an early loss of varietal aroma as well as nuances of wet mop, acacia blossom, shoe polish and dirty rag among others. 2-aminoacetophenone (2AAP) – a degradation product of indole-3-acetic acid (IAA) – has been described as the major odour-active compound and chemical marker responsible for this off-flavour. Depending on the aroma intensity of wines, its odour threshold varies from 0.5 to 10.5 µg/L. It seems that a stress reaction in the vineyard triggered by climatic, pedological and viticultural factors can ultimately cause ATA development in wines and therefore shorten their shelf-life. To the best of our knowledge, the impact of conventional and organic approaches on the development of this aroma fault has not yet been evaluated. Therefore, the aim of this study was to investigate the influence of three grapevine management systems on the occurrence of ATA. As white wines are characterised by a higher risk of ATA development, the experiments were carried out on Pinot Blanc grape samples (and corresponding wines) cultivated using a conventional and two organic approaches over the course of three vintages (2016, 2017, 2018). The management systems mainly differed for the fertilisation regime (mineral, organic and green manure) and the in-row weed control (chemical and mechanical).
The amino acid profiles as well as the 2AAP and its precursors were quantified in musts and wines using an ultra-high performance liquid chromatographer (UHPLC) coupled to a high-resolution mass spectrometer (HRMS). The results revealed the existence of a strong vintage effect and the lack of influence of the agronomic system on the concentrations of the compounds under examination. It was concluded that an efficient implementation of different grapevine production systems do not affect ATA development.

Authors: Delaiti Simone[1], Nardin Tiziana[1] ,Roman Tomas[1], Pedò Stefano[1], Zanzotti Roberto[1] and Larcher Roberto[1]

[1]*Edmund Mach Foundation (FEM)*

***corresponding author:** simone.delaiti@fmach.it

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