APPLICATION OF STRONTIUM ISOTOPIC ANALYSIS TO THE PROMOTION OF THE VIGNOLA SWEET CHERRY PGI

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ABSTRACT

The perceived quality of a food commodity may critically depend on the food origin, when regional traditions about the same food production are well-known [1]. This is certainly the case of Vignola Sweet Cherry, which is covered by the Protected Geographical Indication (PGI). The development of a territoriality model for Vignola Sweet Cherry PGI by means of analytical indicators hence represent a very intriguing task, useful for the promotion of the product itself.
In the framework of the pilot project "Ciliegia-UNIMORE2014", we have assessed the effectiveness of the isotope ratio $^{87}Sr/^{86}Sr$ as direct traceability indicator, since this indicator have already provided excellent results in similar studies. [2].
Thanks to the collaboration of single producers and to the Association of sweet cherry, plum and typical fruit of Vignola, we have monitored the $^{87}Sr/^{86}Sr$ ratio in soils, branches and sweet cherry fruits of 3 producing fields, as well as in 100 fruit samples belonging to 20 different cultivars and coming from ten municipalities of the region of production. For a more complete characterization of the cherries, the concentration of 10 metals (major and trace constituents) and the polyphenols content have been determined.

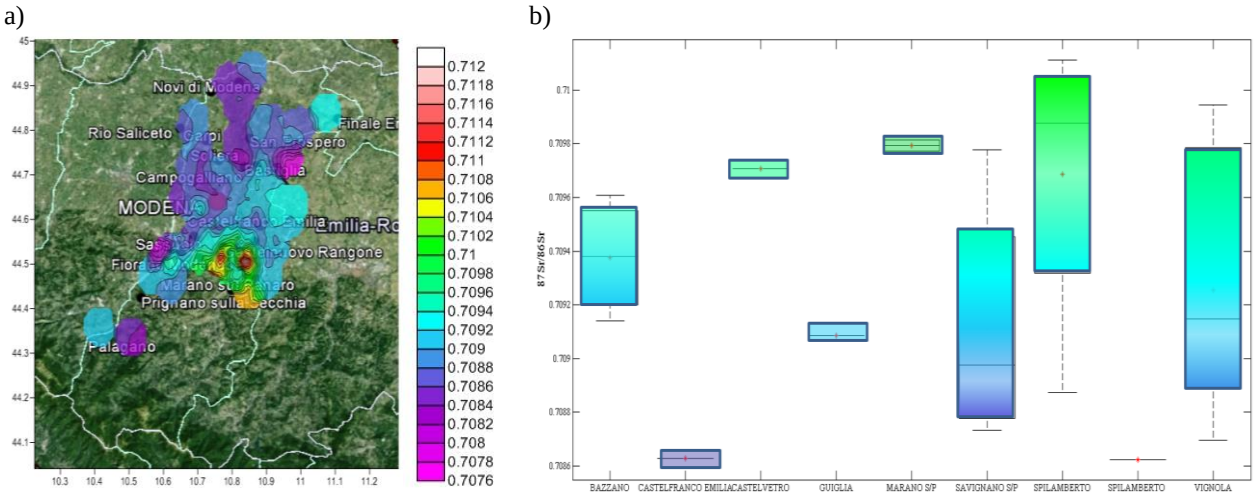

Figure 1. a) Map of the $^{87}Sr/^{86}Sr$ in soils of the Modena province built basing on a previous study [3]; b) box-plot of $^{87}Sr/^{86}Sr$ values determined on specimens coming from municipalities included in the production area of Vignola Sweet Cherry PGI.

As regards the investigated production fields, results show the $^{87}Sr/^{86}Sr$ ratio is essentially transmitted from soils to branches. Furthermore, small but significant differences between isotope ratio data revealed for the production site in the hills and those related to the foothill sites, according to a previous model [3] (**Figure 1a**).
Cherries show $^{87}Sr/^{86}Sr$ values (**Figure 1b**) in good agreement with the ranges predicted by the model for the production area (**Figure 1a**). Explorative data analysis of the whole data – i.e. Sr isotopic ratios, metal concentrations and polyphenol content – can somehow distinguish within cultivars, while no substantial geographic discriminations result.
The pilot project will be completed by characterizing more other samples, in order to enhance the model robustness, and by performing analogous determinations on sweet cherries of different origins, to assess the possible discrimination capacity of the method.

REFERENCES

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