Multi-isotope and elemental pattern for tracing the geographical origin of Treviso Red Chicory (NE Italy)

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Unique fingerprint of PGI protected Treviso Red Chicory compared to red chicory produced in Padova (Veneto, NE Italy)

Where?
Protected Geographical Indication (PGI) area

Legend
TRS1= alluvial plain; clayey-skeletal (Pleistocene)
CMS1/TRE1= alluvial plain; fine-loamy (Holocene)
VDC1= alluvial plain; fine-loamy (Pleistocene)
MOG1/ZRM1= alluvial plain; fine-silty (Pleistocene)

How?

Conclusion

Multi-element analysis allows a good preliminary geographic fingerprint
Isotope composition have been applied to verify the geographic origin:
✓ C3-plant (Calvin cycle);
✓ δ13N, δ34S and δ18O in soil and chicory samples show the local agricultural practices;
✓ δD and δ18O are probably related to: composition of soil water, organic material and plant physiology
Strontium isotope ratios in upper soil samples show a clear discrimination between the farms
Discrimination analyses provide a clear sample separation according to the provenance of samples, despite the overlap between the late chicory variety in different sites
The elemental and stable isotopic fingerprints give a clear discrimination between the investigated sites

Next steps
Multi-element and stable isotopes composition in water and fertilizer sample
Sr isotope determination in red chicory, water and fertilizer samples
A further improvement is expected with an increasing number of data