



## Application of innovative methods for the traceability of organic cauliflower

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### Abstract

Different researches have been carried out over the years to investigate on new and reliable systems to test the authenticity of products obtained using organic cultivation methods. At the same time, the monitoring of some chemical components, deriving from primary and/or secondary metabolism of organic and conventional products, has highlighted the diversity induced by the two production techniques while the difference in fertilization practices has been shown to impact on the isotopic distribution of some elements present in fruits and vegetables, with particular reference to nitrogen. The INNOVABIO ('Application of innovative methods for the traceability of organic farming products') research project (Italian Ministry of Agricultural, Food and Forestry Policies n. 93173/12/22/2017) aims to build up an integrated system able to validate, through the acquisition of isotopic data and other chemical and biochemical parameters, the authenticity of organically managed horticultural produces. Experiments have been carried out at CREA-OFA and FEM labs on soil, leave and fruit samples of cauliflower grown at CREA-OF Monsampolo del Tronto (AP) by using six different fertilization treatments. Two organic treatments ("organic" and "1/3 organic") were performed on a organically managed soil since many years. Three conventional treatments ("conventional", "1/3 organic" and "2/3 organic") were carried out on a formerly conventionally managed soil. Finally, one organic treatment "organic + agroecological service crops" was performed on a certified soil for organic farming within the experimental long-term field MOVE LTE (MOnsampolo VEgetable organic Long Term field Experiment). Preliminary results of the first year of project have showed that multivariate analysis of isotopic data combined with classical quality parameters (TSS, TA, cut resistance, L\*, a\*, b\*, head height, head diameter, ascorbic acid content, total polyphenols, ORAC units) performed by Linear Discriminant Analysis gives the possibility to discriminate organic products from conventional ones thanks to the different isotopic signature impressed by the different nitrogenous source combined with the qualitative pattern of the crops, significantly affected by the different treatments.

### Biography

Simona Fabroni is graduated in Food Science and Technology (2004) at the University of Catania and received her PhD in Food Science and Technology (2009) at the University of Catania (Italy). In 2005 she obtained the Scuola Superiore di Catania (belonging to the network of Italian Schools of Excellence) degree in Food Science and Technology. From 2010: Permanent Researcher at CREA, Council for Agricultural Research and Economics, Research Center for Olive, Fruit and Citrus Crops, Acireale (CT), Italy. In 2014 she was recognized with a National Italian Award for the best innovative PhD thesis in Citriculture.

[7<sup>th</sup> International Conference on Food Science and Food Safety](#) | March 16-17, 2021

**Citation:** Simona Fabroni, Application of innovative methods for the traceability of organic cauliflower, Food Safety summit 2021.7th International Conference on Food Science and Food Safety | March 16-17, 2021, 06