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Application of innovative methods for tracing the authenticity of organic farming foods



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In recent years there has been a growing demand for organic products as consumers consider them as safer and healthier than conventional products. It is now well known that the difference in fertilization practices of the two cultivation methods influences the isotopic distribution of some elements present in fruits and vegetables, with particular reference to nitrogen. The possibility of using the $^{15}\text{N}/^{14}\text{N}$ ($\delta^{15}\text{N}$) isotopic ratio as a screening tool for the differentiation of biological products from conventional ones is based on the fact that $\delta^{15}\text{N}$ values of synthetic fertilizers are close to 0‰, thus determining higher $\delta^{15}\text{N}$ values of nitrogen metabolites of the organic crops respect to those of crops obtained by conventional agronomic practices. Sicilian citriculture is currently involved in a marked crisis mainly related to the lack of a commercial strategy along the whole chain of production. A growth potential for the Sicilian citriculture is the conversion to organic production. Thus, the question of the authenticity of foods labeled as organic becomes an imperative requirement. Our recent researches, aimed at identifying new markers by monitoring the $\delta^{15}\text{N}$ and other components derived from primary and/or secondary metabolism in citrus fruits from organic and conventional commercial farms and experimental fields, have shown that $\delta^{15}\text{N}$ analysis may contribute to the differentiation between organic and conventional fruit. Moreover, in case of supply of organic fertilizers in conventional regime, a model of multivariate analysis, including $\delta^{15}\text{N}$ and other quality parameters (TSS, TA, ascorbic acid, total polyphenols, ORAC units), can contribute to a reliable discrimination between organic and conventional fruit.

Biography

Simona Fabroni has completed her PhD in Food Science and Technology at the age of 27 years from University of Catania and is a permanent researcher at the Council for Agricultural Research and Economics, Research Center for Olive, Citrus and Tree Fruit, with 13 years experience. She has published more than 20 papers in reputed journals.

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