Organic Horticulture Symposium 2020

III International Organic Fruit Symposium and I International Organic Vegetable Symposium

DECEMBER 14TH-16TH 2021

Rural and Urban Well-Being and Agroecological Perspecives for the Horticultural Supply Chain

Book of Abstracts & Program

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Innovative analytical tools for the traceability of organically grown cauliflower crop

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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 organic soil within the experimental long-term field MOVE LTE (MOnsampolo VEgetable organic Long Term field Experiment). Results of two years 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.

Keywords: organic cauliflower traceability isotopic markers.