

Distribution of REEs in soil-citrus limon system(L.) Osbeck

Ioppolo,A¹, Castrianni,A,G¹, Saiano, F¹, Palazzolo, E¹.

¹Department of Agricultural ,Food and Forestry Sciences, University of Palermo, Palermo, Italy

The consumers have an increasing interest about food traceability with respect to safety, quality and typicality issues. The knowledge of a chemistry relationship between the soil and the agricultural products is an important tool for the quality assessment of food. Citrus Limon is the most important fruit tree crop in the world and the detection of potential fraud could improve by using tools linking the chemistry composition of this production to its typical growing area. This study use rare earth elements (REEs) as geochemical tracers. The REEs are a set of 14 elements, from lanthanum to lutetium that can be divided in light rare earth elements (LREEs), from La to Gd and heavy rare earth elements (HREEs), from Tb to Lu. The REEs have recognized as very useful tracers due to their generally coherent and predictable behaviour. The aim of the research is to observe whether the fruits of various cultivars of citrus cultivated on the same soil and their products (fruit and juice) reproduce the same distribution of REEs. Taking into account of our previous works carried out on grapevine – soil system [1,2], we applied the same technique to evaluate and trace the REEs distribution in soil– Citrus Limon fruits system. Sampling of soil and of fruits was carried out in the CREA experimental farm located in Acireale (CT, Sicily) where are present several Citrus Limon cultivars cultivated in Sicily. The REEs amount, the HREEs/LREEs relations and their distribution in the fruit and citrus juice with respect to the own soil were determined and calculated. The intriguing results obtained with a geochemical approach are the first on the soil–Citrus Limon fruits system.

[1] A.Pisciotta, L.Tutone, F.Saiano Food Chemistry. 2017, 221, 1214–1220

[2] P.Censi, F.Saiano, A.Pisciotta, N.Tuzzolino Sci. Total Environ. 2014, 597–608