Proceedings of the Joint Meeting AGI-SIBV-SIGA
Assisi, Italy – 19/22 September, 2011
ISBN **978-88-904570-2-9**

Poster Communication Abstract – 9.20

MOLECULAR AND CHEMICAL MARKERS TO TRACE THE GENETIC IDENTITY AND THE GEOGRAPHICAL ORIGIN OF POTATOES

AVERSANO R.*, ADAMO P.*, FRUSCIANTE L.*, IORIZZO M.*, QUETEL C.**, ZAMPELLA M.V.*,**, CARPUTO D.*

*) Department of Soil, Plant, Environmental and Animal Production Sciences, University of Naples "Federico II", Via Università 100, 80055 Portici (Italy)
**) Institute for Reference Materials and Measurements (IRMM), EC - DG Joint Research Centre, Retieseweg 111, 2440 Geel (Belgium)

Molecular markers, traceability, authentication, multi-elements, Sr isotope ratio

There is a growing interest in agricultural productions combining safety and quality attributes with clear regional identity. Therefore, in the last few years several strategies have been employed to refine the capacity for the authentication of food products. In the frame of a project funded by MiPAAF, we emploied SSR markers to distinguish the potato varieties commonly used in southern Italy for early productions. In addition, we also applied multi-element and Sr-isotope ratio analyses to determine their geographical origin. SSR analysis allowed the identification of 37 alleles analysing 8 microsatellite loci. Only two alleles were present in all varieties, while the other 35 showed a varying degree of polymorphism. The presence of private alleles was highlighted in all the varieties, allowing the identification of each of them. The elemental concentrations investigated were [Mn], [Cu], [Zn], [Rb], [Sr] and [Cd]. They were combined to the Sr isotopic signature data. Results provided evidence that potatoes grown in soils formed from alluvial sediments were characterised by lower amounts of Rb, those grown in soils formed on carbonate rocks showed higher Cd contents, while potatoes grown in soils formed from volcanic substrates have higher amounts of Zn and lower $n(^{87}Sr)/n(^{86}Sr)$. The combined use of biological and chemical markers to prevent frauds and to valorize food products is discussed.