



Characterisation of the genetic diversity of the chestnut heritage, soil biodiversity and biofertility in Emilia-Romagna, Italy

Introduction

The aim of the project was to set up a collective study shared by the scientific community and chestnut growers to find out about the genetic variability of chestnut germplasm and to enhance and promote the role of the chestnut grower as a 'guardian' of biodiversity and land protection.

The scientific data collected characterised the genetic diversity of Emilia-Romagna's chestnut-growing heritage and the broad biodiversity and biofertility present in the soils, highlighting the genetic variability of the region's different varieties of chestnut fruit and identifying for each variety the most suitable soil characteristics for its cultivation.

In particular, the analyses highlighted the 'diversity' of chestnuts and distinguished all the different varieties in the area under study, from the 'Carrarese' to the 'Pelosa', the 'Svizzera', the 'Pastanese', the 'Biancherina' and others. DNA analyses have shown that the different types of Marroni, a typical product of Emilia-Romagna, share the same DNA profile with extraordinary precision, proving that all plants derive from a single strain of Marroni from the Apennines.

Varieties recognised as being at risk of extinction were taken from the collection fields available in Emilia-Romagna (Granaglione and Zocca) and were placed in special catalogue fields at two actual partner companies that became their custodians.

Subsequently, the quality of the organic substance was verified by applying indices that provide indications of the capacity of the soil to conserve or dissipate the organic carbon present. Thus, after specific sampling and analysis, the microbial biomass, metabolic quotient (qCO_2), microbial quotient ($qMic$), mineralisation quotient (qM) and soil biological fertility index (IFB) were evaluated, to highlight alarm and early warning situations with regard to organic matter content and possible loss through mineralisation.

In addition, soil and its biodiversity were studied using the biological quality index (QBS-ar) at some geopedologically different sites, suitably selected from those from which genetic material is taken. It emerged that the soil of the chestnut grove is a habitat for an enormous quantity and variety of organisms.

Lessons learned

For companies in the Apennines a niche strategy is needed, built on the exclusivity and excellence of local products, in particular chestnuts, through the valorisation of traditional chestnut cultivation, for better environmental sustainability, soil care and protection of biodiversity, adaptation to climate change and product quality.

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Further information

<https://www.pedologia.net/it/BIODIVERSAMENTE-CASTAGNO/cms/Pagina.action?pageAction=&page=InfoSuolo.47&localeSite=it>





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