



Advanced mathematical algorithms to characterize olive varieties through morphological parameters

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Abstract

The morphological analysis of olive leaves, fruits and stones may represent an efficient tool for the characterisation and discrimination of varieties and the establishment of relationships among them. In recent years, much attention has been focused on the application of molecular markers, due to their high diagnostic efficiency and independence from environmental and phenological variables. In this talk, I will present a semi-automatic method of detecting various morphological parameters based on the image analysis tool. A number of morphological parameters has been used to characterise olive varieties from collections placed in different areas all over the world. The data obtained will be crucial for the set up of a new molecular and morphological database and for the analysis of the relationships among cultivars.

With the aid of a computing and image analysis software, we created semi-automatic algorithms applying intuitive mathematical descriptors that quantify many fruit, leaf and endocarp features. In particular, we examined quantitative and qualitative characters such as size, shape, symmetry, contour roughness and presence of additional structures (nipple, petiole, etc.). The preliminary results will be presented from the study of olive cultivars from the Collection of Olive Germplasm of Marrakech (Morocco).

The discrimination efficiency of morphological data was compared to the molecular data and results are discussed accordingly.

