

Title Search for suitable maturation parameters to define the harvest maturity of plums (*Prunus domestica* L.): A case study of candied plums

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Abstract

Plums (*Prunus domestica* L.) of a greengage variety, from South–East of Portugal, are used to produce a traditional candied product, “Ameixa d’Elvas”, which has a Protected Designation of Origin, recognised by the European Union. To obtain a good texture quality in candied plums, it is necessary to define accurate maturation parameters. Parameters such as the total soluble solids (TSS), titratable acidity (TA), TSS/TA, and pH are not always suitable for this purpose. In order to find a more reliable maturation parameter, plums were collected during the commercial harvesting period, in two orchards, Vila Viçosa and Cano in different years (2003 and 2005). Total polysaccharides (PS) and uronic acids (UA) were quantified in the alcohol-insoluble residues (AIR) of pulp. In all harvests, the content of polysaccharides and uronic acids present in the AIR increased as the maturity of the fruits progressed. To the dataset that comprised the TSS, TA, TSS/TA, pH, PS, and UA measured in these plums, a linear discriminant classifier was applied to obtain a reliable parameter to predict fruit quality upon candying. The models built showed errors of lack of fitness of 0.005% for the content of UA in the AIR and 0.8% for PS, which contrasted with the errors of 17%, 21%, 17%, and 11%, for the TSS, TA, ratio TSS/TA, and pH, respectively. Considering that the variability associated with the content of PS was higher than that observed in UA estimation, and the easy and fast determination of UA, it is proposed that the UA content in AIR be used as a reliable harvesting maturity parameter, complementary to TSS and/or TA, to obtain a high quality candied product. An easy and quick laboratory methodology is proposed for the determination of the UA in plums.