

recent years two methods of maceration seem to guarantee better than others these objectives, while also allowing good organization and automation of work: the thermal maceration and pneumo-carbonic replacement. An evaluation of these techniques has been made in a large cellar, defining for the two operational lines the productive potential, the need for labor, energy consumptions and economic costs. Chemical and sensory evaluations were carried out for wines produced from grapes with the same characteristics.

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THE USE OF HYPERSPECTRAL IMAGING IN THE VIS-NIR TO DISCRIMINATE 'ITALIA' TABLE GRAPES FROM DIFFERENT HARVEST TIMES

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This study evaluated the feasibility of using a spectral scanner VIS-NIR (DV Srl, ver 1.4., Italia) with a detector in the region between 400-1000 nm to discriminate 'Italia' table grapes from different harvest times (HT). Fifteen clusters were harvested for 4 HT between October and November 2010; spectra were acquired on 15 intact berries from each bunch, which were averaged resulting in a total of 60 spectra. Classification models were constructed comparing 2 methods: SIMCA (Soft Independent Modeling of Class Analogy) and PLS-DA (Partial least squares discriminant analysis). The SIMCA model was developed building individual PCA models for the spectra of each HT. Different pre-treatment methods were tested in order to enhance the power of the model, thus enhancing the score differences among samples from different HTs. To this aim scores for the first principal component (PC1), obtained after each transformation, were subjected to one-way analysis of variance (ANOVA), and means were separated using Tukey's test. The transformation which allowed the best separation among scores of grape from different HT was the Second Derivate of Savitzky Golay, therefore the PCA model obtained from the spectra subjected to this pre-treatment were used for SIMCA classification. The PLS-DA model were developed applying the PLS2 algorithm and using the "discriminant equation" option in the WINISI II (version 1.50). In order to construct discriminant models to classify bunch spectra by the 4 HTs, spectral variations were correlated with the 4 established categories. All models were constructed using full cross-validation (leave-one-out), suitable for small sample sets. No pre-treatments were applied in this last case since they did not improve the final result. The SIMCA method was unable to correctly classify grapes from the III HT (33% of correct classification), resulting less efficient compared to the PLS-DA model. With PLS-DA model, all the grapes were correctly classified (100%) with the exception of those from the II HT which were classified at the 87%. The overall results demonstrate that this instrument has excellent potential for the discrimination of grape quality. In particular, this approach can be considered a fast methodology that allows growers to improve fruit harvesting.

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STEEL SIEVES FILTER AND STRIPPING FOR THE QUALITY OF EXTRA VIRGIN OLIVE OIL

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Filtration is a widely spread procedure adopted after the olive oil extraction process to remove the suspended solids and to eliminate humidity, making the oil more brilliant and more stable. In Tuscany, the most common filtration equipment are filter-presses. Those devices are able to reach the aims of filtration but they show some disadvantages. First of all, filter-presses consume not re-generable filter sheets. These represents a direct purchasing cost as well as an indirect cost due to the trapping of a relevant oil amount. Furthermore, the use of filter sheets implies complications for their disposal. To partially overcome these issues a new filtration equipment able to reduce the filter sheets consumption has been designed. The main idea is the addition of steel sieves before the filter-press capable to retain the suspended solids. In this way, the filter sheets only have to hold the humidity of oil. The addition of the sieves increases the amount of processed olive oil up to about five times before the filter sheets has to be substituted. In addition, the opportunity of performing the stripping techniques to remove the dissolved oxygen from the olive oil is provided. The dissolved oxygen is shortly consumed by the oil in a few days and seems to act as a starter for the subsequent autoxidation reactions. This was confirmed by the faster quality decay kinetics during shelf-life of the oils with higher dissolved oxygen concentration, according to previous researches. In the presented device, the adoption of the stripping technique was able to halve the dissolved oxygen concentration in the treated extra virgin olive oils. Thus, the innovative filter should be able to considerably reduce the filter sheets consumption, and to improve the olive oil shelf-life through the reduction of the dissolved oxygen amounts. However, before the adoption of this kind of devices at the industrial scale, further investigations are necessary.

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SHELF LIFE MONITORING OF FRESH-CUT VALERIANELLA LOCUSTA LATERR USING NON-DESTRUCTIVE TECHNIQUES

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The aim of this work was to select the main quality parameters to be used for the shelf life assessment of fresh-cut *Valerianella locusta* Laterr., among the mostly requested baby-leaf commercialized in the Italian market. Fresh-cut *Valerianella locusta* Laterr. samples were purchased directly from the producer, the day of the packaging, and stored at three temperatures (4°C, 10°C and 20°C). The sampling was performed for 15 days for the *Valerianella* samples preserved at 4 and 10°C, and for 7 days for the samples preserved at 20°C. The research was focused on testing non-destructive analytical systems for quality monitoring during the shelf life. A sensory device (electronic nose, EN) and two optical systems (vis/NIR spectroscopy and fluorescence) were applied. Moreover conventional chemical (pH and humidity) and nutritional (total phenolic content, TP) parameters were investigated. EN