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A continuous microwave system for olive paste conditioning in olive oil extraction plant

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A microwave system was developed and applied in an industrial-scale olive oil extraction plant to evaluate the impact of the microwave treatment used to condition the olive paste, to analyze the installation and determine any advantages to improving the process continuity. To this purpose the extraction efficiency of the olive oil plant was investigated for different operating conditions of the microwave system and compared with conventional methods to condition the olive paste. The microwave system was evaluated in terms of extraction yield of the olive, electrical and thermal energy consumption and olive oil quality. The energy consumption evaluation shows that the use of the microwave system requires an additional electric power but non request thermal power with respect to the traditional malaxers machine. The short process time obtained with the microwave treatment resulted in a low peroxide value compared with the conventional method. Using the microwave treatment, a higher concentration of volatile compounds with spicy and bitter notes was obtained. No significant differences were found with extraction yield. The experiments showed the potential of the continuous microwave system to conditioning the olive paste as an alternative technique to effectively condition olive paste.

Biography

Alessandro Leone is an Associate Professor in Agricultural Mechanics and Food Processing Plants, SAFE Department - Engineering Area, University of Foggia, where he teaches "Mechanics and Mechanization in Agricultural", "Food Engineering" and "Work Safety". His major research topics includes, food processing plants: agro-food industry plants and process settings, processing logic control, recovery of agro food waste by-products to useful composts in agriculture, as well as waste management and agricultural mechanics: analysis of the vibrations transmission mode from the vibrating heads to the trunk of olive trees, and subsequent optimization; study, design of mobile elevating work platforms; safety devices on tractors and machinery.

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