Title Industrial implementation of black ripe olive storage under acid conditions

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Abstract

Restrictions on the discharge of chloride in wastewater streams have recently increased, and processors of black ripe olives have to look for alternative storage systems to the traditional brines. Ripe olives of the Hojiblanca variety were stored under aerobic and anaerobic conditions in industrial underground tanks for one year. The aerobic systems assayed with or without NaCl produced a continuous consumption of sugars as they diffused from the fruits to the surrounding liquid. At the same time sugars accumulated in the liquid for months when anaerobic conditions were employed and a high concentration of acetic acid was used. In the end, glucose was consumed with time as well and, in addition to yeasts, acetic acid and lactic acid bacteria grew in the cover solutions. The assessment of olives stored under the different systems and processed as black ripe olives revealed that the traditional aerobic brines gave rise to darker and firmer fruits. However, olive industries must eliminate chlorides from their waste streams. Promising new storage systems were (i) anaerobic preservation of olives in water with an initially high concentration of acetic acid, and (ii) aerobic preservation in water with an initially low concentration of acetic acid. Both systems produced a good quality product, free of microbial spoilage and organoleptic defects.