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Enhancing Table Grape Production: Addressing Challenges and Opportunities for Sustainability and Quality Improvement

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Abstract

Table grapes, being consumed as fresh, raisins, and transformed products are among the most appreciated fruits worldwide. Its popularity is increasing also due to its organoleptic and nutritional qualities that meet the consumers' interest in healthier foods. Recent data from International Organization of Vine and Wine (OIV) revealed that table grape production has doubled in the last twenty years, and varietal availability has increased thanks to the several breeding programs.

To maintain the socio-economic impact of this sector, new challenges need to be addressed. As for the entire agrifood sector, table grape production faces decreasing water availability, increasing temperatures, but also with fungal diseases, all consequences of climate change. Moreover, the need to align with new market trends is growing the interest of the researchers. In this context, new opportunities are emerging in the sector of *ready-to-eat* grapes with higher *shelf-life*, especially for major exporting countries such as Chile, Italy, and USA. This area of the market is currently dominated with the production of raisins for snacks, while the possibility of allocating part of the grape production to fresh-cut markets is less explored. Strategies to improve postharvest performances, reduce fungi attacks and postharvest decay of existing or new table grapes varieties are essential in this latter context.

Current literature and ongoing projects highlight the importance of developing strategies that combine breeding and sustainable management to cope with these new challenges and open new perspectives. Exploring the wide biodiversity and studying the physiological and molecular responses of different cultivars to identify involved genes is becoming fundamental to select new genotypes better adapted to the changed environment and consumers' needs. Moreover, a faster improvement might be obtained by combining breeding with innovative and sustainable technologies in pre- and postharvest stages to increase resilience, quality, and *shelf-life*.

Keywords: Table grape, quality and shelf-life, sustainability, postharvest, ready-to-eat.