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Título artículo: Analysis of the phenolic composition and yield of 'BRS Vitoria' seedless table grape under different bunch densities using HPLC–DAD–ESI-MS/MS

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RESUMEN:

Grapes are considered to be a major source of phenolic compounds as compared with other fruits. To improve the quality of table grapes, some techniques like thinning can be used. In addition, grape cultivars with distinct characteristics are directly linked to its phenolic profile. This study aimed to identify and quantify the phenolic compound profile and yield of the hybrid IIRS Vitoria' seedless table grape under different bunch densities, using a combination of solid-phase extraction (SPE) methodologies and analytical high-performance liquid chromatography-diode array detector with tandem mass spectrometry (HPLC-DAD-ESI-MS/MS). A trial was carried out in 2016, in a commercial vineyard at Marialva, state of Parana (South Brazil). Three weeks after anthesis, the following bunch densities were evaluated: 4.0, 4.5, 5.0, 5.5, and 6 bunches per m² (corresponding to an estimation of 16, 18, 20, 22, and 24 tons ha⁻¹). The randomized block design was used as a statistical model with each treatment was replicated four times, with one vine per plot. Different characteristics were evaluated at harvest, e.g., soluble solids content (SS), total acidity (TA), maturation index (MI = SS/TA), bunch and berry masses, yield, as well hydroxycinnamic acid derivative (HCAD), anthocyanin, flavonol, and flavan-3-ol contents by HPLC-DAD-ESI-MS/MS analysis. The evaluated bunch densities did not interfere with the physicochemical characteristics of the berries, such as SS and MI. Under the density of 6.0 bunches per m², the highest yield of 25 tons ha⁻¹ was reached. Under all bunch densities, the phenolic profile presented the same compounds, but at different concentrations. Under a density of 5.0 bunches per m², the compounds belonging to the anthocyanin and flavonol families were present in high concentrations. In contrast, at the densities of 4.0 and 4.5 bunches per m², there was a reduction in the flavan-3-ol content. With respect to stilbenes, only the trans-piceid and its cis- isomer were detected. However, their concentrations had no significant influence on the evaluated bunch densities.