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EFFECTS OF DIFFERENT PRODUCTION SYSTEMS ON RED FRUITS NUTRITIONAL PROPERTIES

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Red fruits are considered as emerging crops in Portugal, with a high growth potential. Among which, raspberries (*Rubus idaeus* L.), blueberries (*Vaccinium myrtillus* L.), and currants (*Ribes rubrum* L.) have been increasingly cultivated, similarly to strawberries (*Fragaria x ananassa* Duch.), a widespread culture in Portugal, for being considered valuable sources of phytochemicals with bioactive properties [1,2]. Given this tendency, there is a growing concern for production in more sustainable forms, by reducing the application of chemical fertilizers, replacing the well-known conventional production and boosting the fruits quality. With that in mind, the objective of this study was to analyse and compare the nutritional value and sugars composition of raspberries and blueberries, subjected to conventional production and using a biostimulant ("Ecoser"), and currants and strawberries, obtained by conventional and biological production. The nutritional value was evaluated following official food analysis methods (AOAC) and the free sugars profile was obtained by HPLC-RI [3].

In all the analysed fruits, as expected, carbohydrates were the major macronutrients found. In raspberries and blueberries, the second most abundant macronutrients were proteins, which levels were increased by "Ecoser" fertilization. In raspberries, it also enhanced the production of carbohydrates, leading to a higher energy value. Regarding currants and strawberries, following carbohydrates, proteins were the most abundant macronutrients, which levels decreased in biologically produced strawberries. This production type increased the ash levels in both cultivars and decreased the carbohydrates concentration, which was reflected in a lower caloric value. In terms of free sugars composition, all the analysed red fruits presented fructose, glucose, and sucrose, with the exception of blueberries, where sucrose was not detected. The treatment with "Ecoser" enhanced free sugars production in raspberries, having the opposite effect in blueberries. On the other hand, the biological production allowed increased levels of fructose and glucose, but lower concentrations of sucrose in currants, whereas in strawberries, fructose and glucose were produced in lower quantities and sucrose production was increased. These observations led to conclude that the effect of the production type on sugars composition depends on the cultivated fruit.

This study provides valuable information regarding the composition of red fruits subjected to different production systems, allowing producers to adopt the most suitable system for each cultivar.

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