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IMPROVING THE QUALITY OF THE PRODUCTION OF BLUEBERRY THROUGHOUT THE INOCULATION OF BACTERIAL BIOFERTILIZERS

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Introduction: In the last times, the consumption of foods with nutraceutical qualities has been on the rise, among them, the consumption of red fruits stands out for their antioxidant capacity due to their high concentration of phenolic compounds, being blueberries one of the most important. In recent years it has been observed that biofertilization with beneficial bacteria can improve production and increase the concentration of antioxidant compounds in plants such as strawberry [1]. Thus, the use of safe bacteria should be the main premise in the use of biofertilizers. In this work, we propose the use of bacteria with beneficial qualities and lactic acid bacteria to improve the quality of the production of blueberries.

Metodología: Three strains of the *Rhizobium*, *Lactobacillus* and *Paenibacillus* genera and a combination of the former were used as biofertilizers in a field trial carried out in Covilhã (Portugal), in a randomized assay with plant distributed in three blocks (n = 12) (Fig.1). with buffer plants between treatments. For this purpose, the bacterial inoculum was prepared according to Flores-Félix et al. [1]. Production per plant, fruit size, average fruit weight, hardness, colour, ashes, Brix degree, total phenols compounds and anthocyanin content were analysed [2].

Figure 1. General view of field assay.

Resultados y discusión: The results showed that the inoculated treatments presented an increase in the calibre of the fruits with respect to the control without inoculation. In turn, an increase in the sugar concentration (Brix degree) of the fruits from treated plants was observed between 0,5 to 2 degrees (fig. 3), mainly those in which the lactic acid bacteria had been applied. In turn, the fruits from the treatments with *Rhizobium* (39,28±6,51), *Lactobacillus* (42,57±7,93) and *Paenibacillus* (39,86±4,38) showed increases in the concentration of total phenols (g GAE/ 100 g fw) respect to the control (30,96±4,45) (fig. 4). Additionally, an increase in the concentration of total anthocyanins (g CRE/ 100 g fw) was observed in all biofertilized treatments with *Rhizobium* (4,34±0,57), *Lactobacillus* (4,67±0,82) and both combined (4,43±1,55) with respect to the control (2,82±0,35) (fig. 5).

Figure 2. Blueberries in different states of maturation.

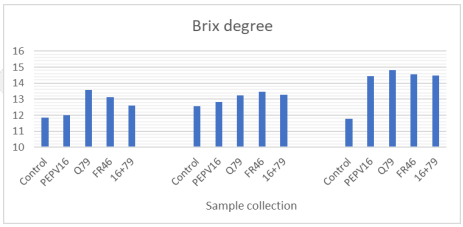

Figure 3. Brix degree of blueberries from each collection time.

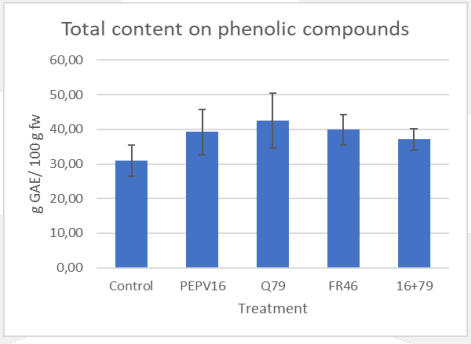

Figure 4. Total content of phenolic compounds.

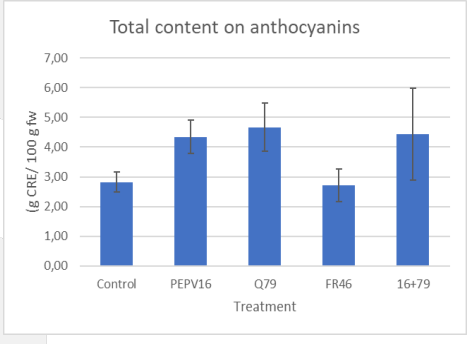

Figure 5. Total content of anthocyanins.

Conclusiones: The use of bacterial biofertilizers is a tool to improve blueberry production and nutraceutical qualities by increasing the concentration of phenolic compounds with antioxidant capacity present in these fruits.

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Referencias bibliográficas

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