

The effect of tunnel growing conditions on yield and fruit quality in floricane raspberry cultivars

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Growing raspberries in high tunnels is becoming more and more common. Inside the tunnel the conditions including temperature, light, humidity and cultural practices such as substrate, irrigation and fertilisation are very different from those in the open field. The aim of our study was to examine the effect of tunnel growing conditions on yield and fruit quality in three floricane raspberry cultivars.

Cultivars ‘Glen Ample’, ‘Glen Dee’ and ‘Maurin Makea’ were grown in Helsinki in an open field and in a high tunnel. These two growing sites were adjacent to each other. The total yield was higher in a tunnel as compared to the open field, although fruit size was not different between the two growing sites but was only affected by cultivar. Fruit from plants grown in the open field had higher concentrations of soluble solids (sugars) and titratable acids than the fruit from plants grown in the tunnel. However, the total phenols (analyzed using Fast Blue BB method) or the antioxidant activity (analyzed using FRAP method) in fruit were not affected by growing conditions. The concentration of total phenols was different between the cultivars. Generally, ‘Glen Dee’ fruit had the lowest contents of sugar and acids and also fewer phenols than the fruit of other cultivars. In conclusion, the contents of health beneficial compounds in fruit were not affected by tunnel cultivation, but fruit taste may be affected, as differences in sugar and acid contents were observed.

Keywords: beneficial compounds, fruit taste, *Rubus idaeus*, sugars, titratable acids, total phenols