

Title Effect of the variety and growing methods as well as cultivation conditions on the composition of tomato (*Lycopersicon lycopersicum* (L.) karsten) fruit

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Abstract

Tomato is one of the most extensively cultivated horticultural crops in the world. Quality factors such as size, firmness, colour, taste, and nutritional content are important criteria for marketing of tomato fruit. The aim of the present study was to evaluate the effects of different varieties (18), cultivation technologies (forcing, open-field with supporting system, open-field with processing varieties) and the connected ecological conditions on the composition of tomato fruit. We have measured the soluble solids ($^{\circ}\text{Brix}$), carbohydrate, organic acid, lycopene and ascorbic acid contents. These parameters determine the flavour and quality of tomato fruits. The average soluble solids content ranged from 5.2 to 8.7 %. The highest $^{\circ}\text{Brix}$ was observed in the fruits of Favorita (8.7 %, cherry type). Carbohydrate contents constitute nearly 50% of the $^{\circ}\text{Brix}$. The highest carbohydrate content was observed for Favorita and Cheresita 8 (cherry type) whereas the lowest was detected in Falcorosso. Low acid content was found for Nívó and Delphine F1 cultivars. The sugar acid ratio was 40% higher in the case of the cherry types than that of the other varieties. Average lycopene content of examined tomato varieties was extremely diverse (47.7–133.6 $\text{mg}\cdot\text{kg}^{-1}$). Ascorbic acid levels ranged from 226 to 381 $\text{mg}\cdot\text{kg}^{-1}$. In case of open-field cultivation with supporting systems, cherry type varieties showed significantly higher $^{\circ}\text{Brix}$ and carbohydrate content than varieties of round tomato type with average fruit weight of 100-130 g. All varieties examined produced significantly higher organic acid contents in forcing as compared to the values of round tomato varieties cultivated in open-fields with supporting systems and processing varieties. Lycopene content was significantly higher in processing varieties.