Concentrations of some vital metal macro- and micro elements of the tomato

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Abstract

Healthy diet and the best natural resources of minerals and vitamins are primarily centred around fresh vegetables and fruits. We have grown several tomato varieties in our garden for decades, on the basis of organic biological nutriens alone. Family members point out that their preferred varety tastes better than what they can get on the market.

The research addressed the following questions: (a) how much dry matter and minerals (Na, K, Fe, Mn, Zn, Cu) do tomatoes from around Szeged and from our garden contain? (b) Is it possible to increase the concentratios of potassium and microelements in the crops by applying manure with humus rich in Ca and K, under field conditions and the plant exposed to sun? Of the crops grown in the hot August of 2015, 3 included indeterminate vareties from the Szeged market, and 3 from our garden. The ripe and freshly picked (purchased) tomatoes were measured, cut, and dried, first applying sun drying, then dried at 105 degres. The dry matter content of our varieties was, respectively, a=96g/kg; b=83g/kg; and c=86g/kg, compared to d=65g/kg; e=68g/kg, and f=68g/kg of the market varieties, respectively. In each case, following repeated measurement, our varieties showed a higher dry matter content than the market tomatoes.

Dried tomatoes were explored in a closed teflon tube, by applying the nitric acid-hydrgen-peroxide procedure in a Mars 5 microwave digester. Sample analysis was completed in a flame atomic absorption spectrophotometer (FAAS).

Compared to other fleshy fruits, the fleshy berry of the tomato contain high amounts of potassium (3-4,6g/kg), iron (2,7-7,2 mg/kg), and zinc (1,3-2,3 mg/kg). On the other hand, the concentrations of manganese (0,6-1,2 mg/kg) and copper (0,4-1mg/kg) are average. While significant differences were found between the varieties studied, all varieties grown by us appeared to contain more potassium (4-4,6g/kg), iron (6-7,2 mg/kg), and zinc (1,7-2,3 mg/kg) than the tomato varieties bought on the market.

Key words: tomato, potassium and microelements content, organic biological production