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Nutrient Composition of Guava (*Psidium guajava* L.) Fruits as Influenced by Soil Nutrients

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Abstract

Guava is appreciated both as a fresh fruit and an industrially processed product in the form of juices, jellies, and sweets. It's rich in sugars, minerals and Vitamin C. The demand for guava and guava products is rising due to the increasing health consciousness and the fruit's much appreciated nutritional benefits (Gautam et al. 2010). There is, however, limited knowledge of the effect of soil properties in terms of nutrients on guava fruit quality. A study was conducted on the nutritional composition of fruits from 128 trees in four regions of Kenya (Riftvalley, Coast, Western and Eastern). Out of these, 50 trees were selected for additional soil sampling under their crown. The edible portion of the cleaned fruits (pulp plus skin) was divided into two sub-samples. One fresh sub-sample was used to analyse Vitamin C, total acidity, and brix immediately after preparation. The other sub-samples were freeze-dried and later used to analyse proteins, sugars and minerals (Ca, Mg, K, Na, P, and Zn). The soil samples were air-dried and sieved through a 2 mm mesh. Later, minerals were determined by the CAT method. Soil nutrient contents were correlated with fruit nutritional composition of the respective 50 samples by applying Pearson correlation method. Fruit vitamin C content, which was highest in the Eastern region (195.8 mg/100g edible portion) was positively associated with soil Cu content ($r=0.465$; $p = 0.01$) that had also a weak positive correlation with fruit protein content ($r=0.297$, $p = 0.05$). Soil N values, which were lowest in Coast (0.07%), were negatively correlated ($r=-0.463$, $p = 0.01$) with Brix values, which were highest (12.9%) in fruits from the Coast. Soil K content was positively associated with Ca content in the fruits, which was highest in Riftvalley region (112 mg/100g edible portion). Results of our study could help developing a fertiliser regime for guava trees that would improve not only yield, but also quality and nutritional composition of the fruits. The surprising role of soil Cu in enhancing the Vitamin C content of guava fruits needs to be studied in more detail.

Keywords: Guava fruit, nutritional composition, quality aspects, soil Cu, vitamin C, yield