Tropentag, September 17-19, 2018, Ghent

"Global food security and food safety:
The role of universities"

Antioxidant Properties and Amino-Acids Contents of Rothmas and Kaolak Cultivars of Watermelon (Citrillus Lanatus L.) as Influenced by Npk Fertiliser

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Abstract

Importance of fruits and vegetables in diet and health cannot be overemphasised. Watermelon, a fruit vegetable has gained so much popularity in Nigeria now that every one consumes it, urban and rural dwellers alike. The fruit has been found to contain highest lycopene content among fresh fruits and vegetables, it is about 60 % more than that of tomato. Cultivation practices can however influence the health substances contained in fruits and vegetables. Hence, field experiment on watermelon was carried out during the late cropping season (September-December 2016) at the Teaching and Research Farm (Latitude 7°52'37" N and longitude 4°18'13" E) of Osun State University, College of Agriculture, Ejigbo Campus, Nigeria. Influence of NPK 15:15:15 fertiliser at different rates (0 kg/ha, 100 kg/ha, 200 kg/ha and 300 kg/ha) was evaluated on the most popularly cultivated and a hybrid cultivar (Kaolak) and a neglected local cultivar (Rothmas) of watermelon. 200 kg/ha of the fertiliser was found to bring out the optimal yield of both cultivars. Hence, at 0 kg/ha and 200 kg/ha, mature fruits of the cultivars were analysed for the antioxidants and amino-acids using standard analytical methods. Analyzed parameters were subjected to analyses of variance, means where significant were separated using Least Significant Difference (LSD). Antioxidant properties of Rothmas were found to be significantly higher than those of Kaolak with the exception of the radical scavenging ability, lycopene content and metal chelating ability of Kaolak. Fruits that received no fertiliser across the cultivars exhibited more antioxidant potency compared to fruits under 200 kg. From the amino acids analyzed, threonine, serine, glutamic-acid, alanine, valine, phenylalanine and arginine in Rothmas were significantly higher compared to the contents in Kaolak. Except for tryptophan, alanine, lysine and phenylanine, fruits that received no fertiliser had higher contents of amino acids. Where fertiliser is needed to boost soil fertility, a lower rate than 200 kg/ha of NPK 15:15:15 fertiliser needs to be applied so as not to compromise the health-giving substances in the fruits. Local landraces of fruits and vegetables obviously have to be brought into limelight through research.

Keywords: Amino acids, antioxidants, cultivation practices, fruits, watermelon

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