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5<sup>th</sup> International Conference on

## **Agriculture & Horticulture**

June 27-29, 2016 Cape Town, South Africa

## Influence of growth stage harvest on the quality of baby spinach during postharvest storage

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aby spinach is normally harvested during a fairly early stage of the normal spinach, usually between 30 and 45 days after planting. Beveral studies have shown that concentration of nutrients in spinach may vary owing to a combination of factors. In addition, harvest date/stage after a specific planting date may also play a decisive role in the spinach content as well as postharvest shelf life. Thus, the aim of this work was to investigate the effect of growth harvest stage on the quality and postharvest storage of baby spinach. Seeds were sown on 3 different occasions, and in each set of occasion, the harvest was performed at 3 growth stages at 7 days intervals. The middle stage was corresponded with the period commonly used for baby spinach by commercial farmers. Throughout the study, when spinach leaves are harvested, they were exposed to 4°C, 10°C and 20°C for 12 days. The first stage, which refers to spinach leaves harvested after 28 days of planting have shown the highest level of antioxidant activity and flavonoid contents during harvest. Thus, the level of antioxidants during harvest was 0.65 mg.g<sup>-1</sup> at 4°C, 10°C and 20°C and postharvest (0.43 mg.g<sup>-1</sup>, 0.35 mg.g<sup>-1</sup> and 0.20 mg.g<sup>-1</sup> at 4°C, 10°C and 20°C for 12 days, respectively). It was then followed by stage II with 0.29 mg.g<sup>-1</sup>, 0.23 mg.g<sup>-1</sup>, and 0.17 mg.g<sup>-1</sup> at 4°C, 10°C and 20°C for 12 days, respectively. The least levels of antioxidant activity was observed in the stage III, where spinach leaves were stored at 10°C and 20°C with the value of 0.10 mg.g<sup>-1</sup> and 0.02 mg.g<sup>-1</sup>, respectively. Flavonoids showed similar trend, since highest content of flavonoids was observed in stage I (12 mg.g<sup>-1</sup>) and II (9.30 mg.g<sup>-1</sup>) at 4°C for 12 days. Whereas, the lowest flavonoid contents were yielded in stage III, particularly in samples stored at 20°C with 3.56 mg.g<sup>-1</sup> for 12 days. However, the level of antioxidants and flavonoids was well maintained at 4°C in all 3 treatments compared to 10°C and 20°C. The study findings suggest that harvesting baby spinach a few days earlier than the commercial timing of harvest may influence the most retain of antioxidant activity and flavonoid contents when stored at 4°C.

## Biography

Mudau F N has completed his BSc Agri. (Crop Science) at the University of Venda in 1996. He then registered for MSc in Horticulture at the University of Stellenbosch where he conducted research on citrus nutrition. He completed a PhD (Horticultural Sciences) at the University of Pretoria and has done extensive research in Herbal Medicine. He then joined the Industrial Development Corporation (IDC) under Food and Beverages (Now Agro-Industries) Strategic Business Unit (SBU); HealthCare and Education (SBU) as a Specialist. He has served as a board member of South Horticultural Sciences Society, Rotondo Pty Ltd, Berekisanang a subsidiaries company under Industrial Development Corporation. He is a board member of *Crop Production Journal* and a reviewer in local and international journals. He is currently a Full Professor at the University of South Africa. He has a vast experience in project development and implementation in Agro Industries, Education and Healthcare sectors.

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