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Ziplock Packaging Film for Reducing Quantitative and Qualitative Losses of Vegetable Amaranth Leaves (*Amaranthus cruentus* L.)

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Abstract

Recently, the demand for African indigenous leafy vegetables (AIVs) such as vegetable amaranth (*Amaranthus cruentus* L.) has been steadily increasing amongst rural, peri-urban and urban dwellers in developing countries due to their high nutritive and medicinal values. Vegetable amaranth has a great potential in creating job opportunities especially for youth and women. However, it suffers significant postharvest losses, owing to its fast rate of deterioration. To address this, a study was conducted to determine the effect of ziplock packaging film bags on the shelf life and nutritional quality of vegetable amaranth leaves cv. Madiira. The vegetable was grown under greenhouse conditions (15 – 27°C, 60 – 80 % RH). Eight weeks after planting, leaves were harvested and either packed in ziplock bags or unpacked (control). The leaves were stored for 4 d (evaluated at 0, 2, and 4 d) and 7 d (evaluated at 0, 2, 4 and 7 d) at 20°C (65 % RH) and 5°C (85 % RH), respectively. The parameters studied were fresh weight loss, carotenoids (lutein, lycopene and β -carotene), chlorophylls, and selected mineral elements (P, K, Ca, Mg, Fe and Zn). Ziplock packaging film bags resulted in lower weight loss (0.2 – 1.5 %) compared with the control (0.4 – 3 %), with the effect being more pronounced at 5°C. The carotenoid contents were significantly higher in leaves under ziplock packaging film compared with control leaves; the results being comparable in both storage conditions. Ziplock packaging film helped to retain chlorophyll content and thus leaf colour during storage with the effect being more pronounced at 5°C. Mineral elements were variedly affected by using ziplock bags depending on storage temperature and duration. The results obtained showed immense potential of reducing postharvest loss by improving shelf life and quality attributes of vegetable amaranth leaves using ziplock packaging film bags.

Keywords: African indigenous leafy vegetables, *Amaranthus* spp., food loss, packaging film, vegetable quality