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“Filling gaps and removing traps
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The Significance of Net Covers in Postharvest Quality Management: Increasing and Preserving Health Promoting Carotenoids in Vegetable Amaranth

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Abstract

Vegetable amaranth are not only important sources of nutrients, but also rich in health promoting compounds, such as carotenoids. However, in the open field, the crop suffers from insect pest and diseases, and unfavourable weather conditions that severely affect its quality, including carotenoids. The present study evaluated the effect of net covers on carotenoids in vegetable amaranth (*Amaranthus cruentus* L. cv. Olevolosi). The experiment was laid in a randomised complete block design with three replications. The crop was grown at Egerton University, Kenya for 8 weeks either under net covers (white, 0.9 mm pore size) or in the open (control). Microclimate (soil moisture, temperature, relative humidity and PAR) was monitored throughout the production period. After harvest, the leaves from each treatment were kept at room temperature conditions (temperature; 20 ± 3 °C, relative humidity 65 ± 5 %) for ten days. Data were collected at harvest and during storage, at 2-days interval. Carotenoids (lutein, lycopene and β -carotene) as well as chlorophyll a and b were extracted using acetone-hexane and analysed using UV-VIS spectrophotometer. Net covers resulted in increased lutein (20 %), lycopene (15 %), β -carotene (26 %) and chlorophyll b (40 %) content compared with the control. However, chlorophyll a content was not affected by net covers. Net covers also led to reduced loss of carotenoids and chlorophylls content during storage. The findings demonstrate the potential of using net covers in improving nutritional quality of vegetable amaranth.

Keywords: Agricultural nets, amaranthus spp., antioxidative compounds, postharvest loss reduction, protected culture