

NUTRITIONAL WATER PRODUCTIVITY OF TRADITIONAL VEGETABLE CROPS

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Abstract

The objective of this study was to assess nutritional water productivity of traditional vegetable crops (TVCs), namely *Amaranthus cruentus* (Amaranth), *Cleome gynandra* (Spider flower), and *Ipomoea batatas* var. *Bophelo* (OFSP-orange fleshed sweet potato), and Swiss chard. Two experiments were conducted (2013/14 and 2014/15) under a rain-shelter at the Agricultural Research Council, Vegetables and Ornamental Plants (ARC-VOP), Roodeplaat, Pretoria. Leaves of selected TVCs and Swiss chard were collected. The samples were washed with distilled water to remove debris. Thereafter, they were sent to the NviroTek Labs to be analyzed for iron (Fe) and zinc (Zn) content, whilst the remaining samples were sent to the ARC-VOP Analytical Laboratory to be analyzed for β -carotene content. Analysis of variance was conducted, as well as *post hoc* analysis using the Tukey HSD test. Nutritional water productivity (NWP) values ranged as follows: Fe from 375 mg m⁻³-2174 mg m⁻³, Zn from 25 mg m⁻³-268 mg m⁻³, and β -carotene from 260 mg m⁻³-3131 mg m⁻³. The highest NWP for micronutrients was observed from water stressed treatments, which suggests that nutrition per unit of water can be improved if deficit irrigation strategies were to be implemented. Traditional vegetable crops can withstand adverse environmental conditions, therefore, resource poor households are encouraged to cultivate them for household use and also for income generation to alleviate their nutritional food insecurity.

Key words: deficit irrigation, hidden hunger, indigenous vegetable crops, nutritional content, nutritional water productivity