

Yield response of African leafy vegetables to nitrogen, phosphorus and potassium: The case of *Brassica rapa* L. subsp. *chinensis* and *Solanum retroflexum* Dun.

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Abstract

In this study the growth and yield response of *Solanum retroflexum* Dun. (nightshade) and *Brassica rapa* L. subsp. *chinensis* (non-heading Chinese cabbage) to N, P and K availability in the soil and the interaction effects of these three nutrients were determined by means of pot experiments in a greenhouse. *S. retroflexum* was most sensitive to the availability of nitrogen in the soil. Sufficient nitrogen needed to be available to achieve optimum growth but adding too much adversely affected biomass production, suggesting a fairly narrow optimum range for nitrogen availability. The production of the crop was also dependent on the adequate availability of phosphorus and potassium but any adverse effects due to excess availability were less distinct than for nitrogen. In the case of *B. rapa* subsp. *chinensis*, an optimum availability range was identified for N and K and a critical level of availability for P. The decline in biomass production caused by adding N in excess of the optimum was reversed by applying both P and K at rates that were in excess of the respective optima.

Keywords: *Solanum retroflexum* Dun., *Brassica rapa* L. subsp. *chinensis*, nightshade, non-heading Chinese cabbage, nutrient response, nitrogen, phosphorus, potassium, optimum application rates