

February 28-March 01, 2019
London, UK

J Plant Physiol Pathol 2019, Volume 7
DOI: 10.4172/2329-955X-C1-030

Exploring opportunities for *Brassica napus* L. nutrition and yield in smallholder maize-tobacco production systems in Africa

Nothando Dunjana

University of Agricultural Sciences and Technology, Zimbabwe

Nutrition and an alternative source of income particularly for vulnerable communal households. Increased participation by smallholder farmers in tobacco production offers opportunities for organic waste generation and utilisation in vegetable nutrition and soil fertility management. The study set out to investigate the effects of co-composting tobacco waste and cattle manure in *Brassica Napus* L. nutrition in smallholder maize-tobacco production systems. The field experiment was set on a sandy loam soil at Marondera University of Agricultural Sciences and Technology farm during the dry season (May- August) of 2017. The experiment consisted of aerobically co-composted treatments; (i) Tobacco Leaf Scrap-Cattle Manure (TSC-CM), (ii) Tobacco Stalk-Cattle Manure (TSK-CM), (iii) Tobacco Leaf Scrap-Tobacco Stalk (TSC-TSK) and (iv) Cattle Manure (CM) all applied at 20 t ha⁻¹, (v) 250 kg ha⁻¹ NPK basal fertiliser and an unamended (vi) control treatment with top dressing fertiliser applied at 120 kg N ha⁻¹, except for the control. Leaf yield of *B. napus* L. was measured at 3, 5, 7, 9 and 11 Weeks After Transplanting (WAT). Oven-dried sub-samples of the leaf samples were analysed for total N, P, K, Ca,

Mg and Na content. Fresh leaf yield significantly ($p < 0.05$) varied at 3, 5, 7, 9 and 11 Weeks After Transplanting (WAT). Cumulatively fresh yield doubled (> 20 t ha⁻¹) over the control (10 t ha⁻¹) for all treatments. Nitrogen uptake peaked at 50 g kg⁻¹ at 5 WAT, with a low of 10 g kg⁻¹ at 11 WAT in sole inorganic fertiliser, while a combination of co-composts and inorganic fertiliser showed less variation in the range 20 and 40 g kg⁻¹. This reflected more gradual nutrient release and uptake with combined organic and inorganic nutrient sources. Leaf P content did not significantly vary ($p > 0.05$) across treatments which indicated the low supply capacity of P of the co-composts and CM, suggesting the need for P augmentation. Significantly ($p < 0.05$) higher uptake of Ca, Mg and Na at 3 WAT confirmed the multiple nutrient supply capacity of co-composts and CM over the sole inorganic and control treatments, although K was comparable in sole inorganic fertiliser. Therefore, tobacco waste utilisation proffers a viable option for improved *B. napus* L. nutrition and yield for vulnerable and resource constrained farming households in Africa.

ntandodunjana@yahoo.com