



Evaluation of nematode suppression and yield improvement potential of organic substances in sweet potato crop

Osei, K., J. Adomako., Y. Danso., JS. Asante., B. Abugri

Plant Health Division, Council for Scientific and Industrial Research-Crops Research Institute, Kumasi, Ghana
Corresponding author; oseikingsley4@gmail.com

Original submitted in on 27th September 2017. Published online at www.m.elewa.org on 30th November 2017
<https://dx.doi.org/10.4314/jab.v119i1.4>

ABSTRACT

Objective: To investigate nematode suppression and yield improvement potential of two organic materials; poultry manure and chopped neem leaves in sweet potato production.

Methodology and results: A factorial experiment mounted on Randomized Complete Block Design was conducted in 2014 and 2015 at Atebubu and Wenchi, prominent farming communities in the Brong Ahafo region of Ghana. The organic materials were applied on two sweet potato varieties; Apomuden and Santom pona. Poultry manure and neem leaves weighing 100g and 30g respectively were applied per stand. Plant population, nematodes population per 200-cm³ soil at planting and harvest, tuber galls, vine dry matter weight at harvest and yield were analyzed. Significantly, higher ($P < 0.05$) plant population was recorded at Wenchi compared to Atebubu in 2015. Control plots recorded significantly highest plant parasitic nematodes compared with the poultry manure and neem leaf treatments. Consistently, neem leaf amended plots recorded lowest population levels (67, 68 and 33) % and (84 and 84) % less *Meloidogyne* spp., *P. brachyurus* and *H. multicinctus* and *Meloidogyne* spp., and *P. brachyurus* were extracted from neem leaf amended Santom pona plots compared with the control of Santom pona at Atebubu and Wenchi respectively. Poultry manure on Santom pona recorded the highest gall index, which was 78.8% more than observed on Santom pona treated with neem leaves. Neem leaf correlated positively with Apomuden and recorded the highest yield in 2014 at Atebubu, which was approximately 93% higher than the control of Santom pona, which yielded 0.9t/ha. The yield of neem leaf on Apomuden was significantly higher (35% and 41%) than neem leaf on Santom pona in 2014 and 2015 at Atebubu and Wenchi respectively.

Conclusion and application of findings: Nematode management with synthetic products must be discouraged on grounds of mammalian toxicity and environmental degradation. The use of organic amendments should be encouraged for suppression of nematode population densities, improvement in yield and environmental friendliness. The latter option is sustainable and more importantly, tuber crops produced with organic amendments would be free from chemical residues.

Key words: Neem leaves, nematodes, poultry manure, sweet potato varieties