

EFFECT OF EARTHWORMS FEEDING MATERIALS ON VERMIWASH QUALITY AND GROWTH OF SPINACH

K.H.G.M. Tharanga¹, J.D Weerasooriya², R.M.P.Rajakaruna¹, D.M. Jinadasa¹

¹ Department of Soil and Water Resources Management, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka.

² Soil Science Division, Fruit Research and Development Center, Kananvila, Horana, Sri Lanka.

Vermiwash (VW) is a liquid organic fertilizer which is prepared with the use of earthworms and organic matter. Very little attention has been paid to find the best technology for this practice in Sri Lanka. This study was conducted to find the suitable feeding material for earthworms to produce quality VW and to study its effect on growth of Spinach (*Spinacia oleracea*). VW was prepared using mixture of earthworm species (*Eudrilus eugeniae* and *Perionyx excavates*) by feeding different materials; such as Cow Dung (CD), Gliricidea (GL) + CD at 1:1 w/w, Grasses (GR) +CD at 1:1 w/w, Banana Stem (BS) +CD at 1:1 w/w, and GL+GR+BS+CD at 1:1:1:3 w/w. After six weeks of culture, total nitrogen (N), available phosphorus (P), total potassium (K), pH and electrical conductivity (EC) of VW were analyzed once a week for six weeks. A green house experiment was conducted simultaneously to reveal the effect of VW on growth of Spinach. Spinach was grown in 10 different mediums of nutrients [VW, top soils (TS), DOA recommended inorganic fertilizer (DIF), DOA recommended rate of compost (DCP)] and combinations; TS along, TS + VW, TS + 50% dilution of VW, TS +DIF, TS + DIF + VW, TS + DIF + 50% VW, TS + 50% DIF, TS + DCP, TS + DCP + VW, TS + DCP +50% dilution of VW. Results revealed that VW of GL+CD gives the highest P at sixth week and the P level increased from 0.61 to 1.56 ppm with time. Highest K level of 850.62 ppm and highest EC of 3.86 ds/m was observed in the same mixture and it did not changed with time. N level of GL+GR+BS+CD increased from 10.83 to 35.35ppm with time and its N level was the highest during last three weeks. The pH (6.71) of the VW did not change over the treatments or time. A significant difference of the growth parameters and dry matter yield (8.102g) of Spinach were shown by the DIF + 50% diluted VW than those of the other treatments. Therefore 50% diluted VW can be recommended with DIF to get better yield form Spinach.

Key words: Vermiwash, Feeding material, Total N, Available P, Available K, pH, EC, Spinach