
Growth of *Spinacea Olereacea* from soil treated with urine compared with other soil amendments in Pretoria, South Africa

Joshua Olowoyo*¹

¹University of Limpopo, Medunsa Campus (UL) – P.O.BOX 139, MEDUNSA, PRETORIA, South Africa

Abstract

The challenge of feeding the ever growing population is largely dependent on using the limited land and improving soil fertility. The study investigated and compared the effects of different soil amendments (urine, bio solids, inorganic fertilizers and sawdust) on the growth rate of *Spinacea olereacea*. Soil samples collected from the same area on Medunsa Campus were transferred into experimental pots. Sawdust, urine, bio-solids and chemical fertilizers (NPK) were added to the pot plants and thoroughly mixed with the soil. It was observed from the study that spinach grown in soil treated with urine had significantly higher stem height and leaf lengths and thus higher leaf area when compared with other amendments ($P < 0.05$). Nutritional constituents from spinach planted on soil treated were also very high when compared with other soil amendments. The concentrations of Nitrogen, Carbon, Cu, Cd and Pb were significantly higher from spinach grown in soil treated with chemical fertilizers ($p < 0.05$). A significantly higher concentration for organic matter content was noticed from soil treated with chemical fertilizer ($p < 0.05$). The soil pH ranged between $6.43 \pm 0.35 - 6.84 \pm 0.23$ with significantly higher concentrations from the bio-solids and the lowest concentrations from the urine. The addition of various soil amendments significantly affected the physico-chemical properties of the soil. The study showed that the use of urine as a nutrient had positive impact on the growth of the spinach; however, the bio-solid had more leaves and lower levels of trace metals. **Keywords: *Spinacea olereacea*, urine, organic waste, leaves and agriculture**

*Speaker