THE INFLUENCE OF URBAN GREEN WASTE COMPOST ON THE PHYSICAL QUALITY OF SOIL EXPOSED TO EROSION

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Abstract: A field experiment was conducted to assess both direct and after effects of composted urban green waste applied at the rates of 10 and 20 Mg·ha$_{-1}$ on aggregate size distribution, aggregate water stability, water and air properties of Haplic Luvisol developed from loess exposed to surface water erosion. In the first year of the study, compost fertilization resulted in a significant reduction of an unfavorable proportion of clods > 10 mm, while air-dry aggregates with sizes of 1–5 mm and 0.25–1 mm increased within the 0–10 cm layer of the eroded soil. In the second year after compost application, there was a significant increase in the water-stable aggregate content with sizes of 0.25–10 mm in the treated soil as compared to the control plots. However, no significant differences in aggregate size distribution and aggregate water stability were stated in the third year after compost application. A direct influence of compost addition was reflected in a significant decrease in bulk density and significant increases in actual soil moisture, maximum water capacity, saturated hydraulic conductivity, total porosity, the fraction of macropores with diameters > 20 μm, and air permeability in the surface layer of the soil. At the same time, there was a significant decrease in the proportion of soil mesopores with diameters between 0.2 to 20 μm, whereas no significant differences in field water capacity and retention of water useful for plants were observed. Values of Dexter's index *S* of soil physical quality in the compost-amended soil were comparable to those found in the control plots. The dose of 20 Mg·ha$_{-1}$ turned out to be more effective.