

EVALUATING THE DOSE EFFECT OF A DIFFERENTLY TREATED SEWAGE SLUDGE OVER TWO DEGRADED SOILS COMING FROM WORKING QUARRIES

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Key words Soil reclamation Sewage sludge Soil metabolic quotient Soil carbohydrates
Soil enzyme

Abstract

The effects of two doses, equivalent to 100 and 200 Mg ha⁻¹ (dry weight basis), of a dewatered sludge (DS), and of this same sludge once thermally dried (TS) or composted (CS), applied to a clayey (CL) and a sandy (SA) soil, both coming from working quarries, were evaluated in a laboratory experiment. β -glucosidase activity, total (TCH) and extractable (ECH) carbohydrate content, microbial biomass (MB) and basal respiration (BR) were determined in periodically taken samples. The addition of sludge increased all the measured soil parameters. Overall mean values (including the three sludge types) were always significantly higher as the dose was increased. When this dose effect was individually evaluated in each of the three sludges, the general behaviour was always accomplished only in the case of DS. The effect was neither present with TS in the case of β -glucosidase activity nor with CS in the case of MB and BR. When dose effect was present it was quantitatively similar regardless the sludge but it evolved differently depending on the soil and sludge type. Values of metabolic quotient (qCO₂) in any of the sludge type-soil mixtures were never higher as the dose was increased.