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Use of sewage sludge compost as the restoration agent on the degraded soil of Tatarstan

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Abstract

One of the characteristics of soils in Tatarstan is their low organic matter content. The decrease in soil organic matter is paralleled by declines in soil fertility. One method to reverse this degradation in soil quality is the addition of organic matter. The use of sewage sludge on soils intended for growing of plant seedlings provides an alternative for sewage sludge disposal. Therefore, the evaluation of the feasibility of using compost from the municipal sewage sludge produced in Kazan for the soil restoration and growth of *Pinus silvestris* seedlings was carried out. The grey forest soil (Haplic Greyzem) was amended with compost at application rate 30, 60 and 90 Mg ha⁻¹ on a dry matter basis. Organic matter content increased with the increase in sludge amendment. The concentrations of individual heavy metal were below the current limits established for Russia and European countries. Sludge amendments enhanced the germination and the number of the seedlings and the increase were more obvious for the soil with highest sludge treatment. The application of composted sludge to soil was followed by the increase in microbial biomass and basal respiration.

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Keywords

Compost from the municipal sewage sludge, Microbial biomass, Microbial respiration, *Pinus silvestris*, Soil restoration