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## ABSTRACT BOOK

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### 4. Soil health in achieving the Sustainable Development Goals 4.12 133530 - Soil degradation control, remediation and reclamation

#### REAPPLICATION OF COMPOSTED SEWAGE SLUDGE FOR CONTINUE RESTORATION OF DEGRADED SANDY SOIL: EFFECTS ON SOIL ATTRIBUTES AND MYCORRHIZAL FEATURES

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Sewage sludge (SS) is a good soil amendment, due its high contents of organic matter and mineral nutrients. Reapplication of SS is a way to increase its disposal and at same time improving even more the soil fertility and its biological properties. This is particularly important for recovery of degraded soils, which requires large nutrient inputs to promote plant growth. Arbuscular mycorrhizal fungi are relevant in soil microbiota, being an indicator of soil biological activity. We aimed to assess the effects of SS reapplication on soil properties. In 2005 we conduct an experiment on sandy, impoverished and degraded soil in Southeastern Brazil, where rates of SS (2.5; 5; 10; 15; 20 Mg ha<sup>-1</sup>) and mineral fertilization (as recommended by literature) were utilized as treatment for soil recovery, as well a control without any intervention. Native tree species from Atlantic Forest biome were planted for vegetation cover. In 2016 the same treatments were reapplied in the area, but at this time we used composted SS at different rates (10; 20; 30; 40; 50 Mg ha<sup>-1</sup>). After four years we investigated its effects on soil fertility (moisture and mineral nutrients) and mycorrhizal status (root colonization and sporulation) at wet and dry season. The higher rates of SS application increased the contents of P, Ca, Mg, Cu and Zn in the soil. Independently of rate, the soil treated with SS had higher moisture, at both wet and dry seasons. This results reinforce the value of SS for use in soil recuperation and vegetation growth. The SS treatments resulted in root mycorrhizal colonization being 18% higher than mineral fertilization, with no difference between seasons. At dry season an increased sporulation was observed at control soil, possibly due grasses favored by reduced tree growth in this soil. By other hand, at wet season the sporulation was higher under the 50 Mg ha<sup>-1</sup> rate, suggesting complexity on the factors controlling mycorrhizal ecology on soil.

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