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## Effects of long term application of chicken manure and spent mushroom substrate on organic matter and storage of water in sandy soils

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The aim of this study was to evaluate the effects of long-term application of exogenous organic matter on soil organic matter and water storage. Addition of organic matter is of importance in sandy soils that are in general poor in organic matter, acidic, conducive to drought and used in agricultural production throughout the world. In this study the sandy podzol (63-74% sand) was amended with chicken manure or waste spent mushroom substrate through more than 20 years. Soil organic matter content, water retention curves, acidity and structural stability were determined at three depths in the top 60 cm in organic amended and control plots. Enrichment of the soil with chicken manure and spent mushroom substrate caused increase in soil organic matter content in the top 0-20 cm from 1.34 to 3.50% and from 0.86 to 4.71%, respectively. Corresponding increases in field water capacity were from 13.6 to 31.8 m<sup>3</sup> m<sup>-3</sup> and from 17.7 to 27.2 m<sup>3</sup> m<sup>-3</sup>. Both amendments improved soil structure, reaction and nutrient status. In general, these positive effects were greater in chicken manure than spent mushroom substrate amended soil and less pronounced at depths 20-40 cm and 40-60 cm compared to upper soil. Increase in the field water capacity and water storage capacity made the soils amended with organic matter more drought resistant. Our findings provide valuable insights the spent mushroom substrate left after growing the mushrooms and chicken manure are environmentally friendly and economical viable soil management practices to increase soil quality and crop productivity.

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