

Abstract

Soil organic matter is an integral part of the soil representing a reservoir of nutrients for plant and soil organisms, especially in accumulation of a biogenic element carbon (C). The accumulation and stabilisation of soil organic matter depends on several mechanisms. The input source for the creation of SOM is the plant organic matter consisting mainly of the litter and above-ground part of the plant herbal biomass. The accumulation of SOM and carbon sequestration is primarily influenced by the chemical composition and amount of OM entering the soil. In this work, the entry of OM into the soil was experimentally verified at locations with an older naturally formed soil type and man-made soil (post-mining sites). As part of the research, other types of forest cover represented by spruce and alder stand were compared. From the measured data of the individual influencing factors, it was found that the composition and quantity of OM is determined significantly with the species composition of the forest. More plant OM was observed in the alder trees area stands on both soil types with a lower C:N ratio, which describes better decomposable OM. By contrast, there were no statistically significant differences between areas on young and old soils. The results suggest increased concentrations of ergosterol in coniferous areas, while demonstrating greater amounts of root biomass. The work confirmed that input of OM do not differ by the age of the soils and any differences will therefore be more related to other mechanisms for converting SOM in the soil.

Key words: soil organic matter, soil organic carbon, organic matter, ratio C:N