



Comparison of the carbon stock in forest soil of sessile oak and beech forests

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Forest ecosystems are the most important carbon sinks. The forest soils play an important role in the global carbon cycle, because the global climate change or the increase of atmospheric CO₂ level. We do not have enough data about the carbon stock of soils and its change due to human activities, which have similar value to carbon content of biomass. In our investigation we measured the carbon stock of soil in 10 stands of *Quercus petraea* and *Fagus sylvatica*. We took a 1.1 m soil column with soil borer and divided to 11 samples each column. The course organic and root residues were moved. After evaluation, we compared our results with other studies and the carbon stock of forests to each other. Naturally, the amount of SOC was the highest in the topsoil layers. However, we found significant difference between forest stands which stayed on the same homogenous bedrock, but very close to each other (e.g. distance was 1 or 2 km). We detected that different forest utilizations and tree species have an effect on the forest carbon as the litter as well (amount, composition).

In summary, we found larger amount (99.1 C t/ha on average) of SOC in soil of stands, where sessile oak were the main stand-forming tree species. The amount of carbon was the least in turkey oak-sessile oak stands (85.4 C t/ha on average). We found the highest SOC (118.3 C t/ha) in the most mixed stand (silver lime-beech-red oak). In the future, it will be very important: How does climate change affect the spread of tree species or on carbon storage? Beech is more sensitive, but even sessile oak. These species are expected to replace with turkey oak, which is less sensitive to drought. Thus, it is possible in the future that we can expect to decrease of forest soil carbon stock capacity, which was confirmed by our experiment.

Keywords: carbon sequestration, mitigation, *Fagus sylvatica*, *Quercus petraea*, litter

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