

# Jahrestagung der Deutschen Bodenkundlichen Gesellschaft

# Abstractband

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### Effect of agroforestry on labile organic carbon in organically farming plots

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In the light of climate changes, soil tillage and nutrient mining as business as usual have resulted in soil organic carbon loss at a rate equivalent to 10 % of the total fossil fuel emissions for Europe as a whole. Therefore, there is an urgent need to have a paradigm shift from extensive to recourse-efficient agriculture that is based on sustainable agricultural practices. Calculations of carbon content within terrestrial ecosystems and changes in carbon accumulation/sequestration as a result of human activities are the first step towards a better presentation of the role of these ecosystems.

Organically farming plot surrounded by a forest was studied for the dynamic of accumulation of organic carbon depending on the distance from the forest line. Sequential soil respiration measurements were performed in order to obtain potentially mineralizable carbon content (PMC) and the rate of mineralization of OC. Samples were taken from the forest soil, 1 m, 5 m and 10 m from the forest line. Amount of PMC was linear to the distance from the forest line. The parameters studied were compared with the plots with conventional farming. As expected the amount of PMC in the forest soil was the highest (2872.5 mg C per kg soil) with the lowest rate of mineralization, followed by the 1 m, 5 m and 10 m from forest line. While the control plot cultivated as business as usual showed the lowest PMC of 552.7 mg C per kg soil with the highest rate of mineralization. Management practices can either increase or decrease soil organic matter content. Leaving crop residue on the soil surface, reducing or eliminating tillage, using cover crops, or other methods that add organic matter control mineralization/sequestration of SOC.