

Tagungsnummer

P68

Thema

Kommission III: Bodenbiologie und Bodenökologie

Umwelteinflüsse auf Funktion und Diversität von Bodenorganismen

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Earthworm communities in an agroforest system: Impact of tree rows on the distribution in grassland and cropped land

Abstract

Agroforest systems are highly discussed as new and innovative land use systems for arable land in temperate regions. They are recommended due to their beneficial impact on several ecosystem functions and for the general diversification of the cultured landscapes. Tree rows, known as alley cropping systems, are one of the most frequent applications. In May 2016 earthworm communities were sampled in an agroforest system in Reiffenhausen south of Göttingen using an electrical extraction system. Asking for the impact of tree rows on the spatial distribution of earthworms, sampling was done in distances of 0, 1, and 4.5m from the alleys (willow on grassland and poplar on cropland). Also grassland and cropland with no trees were sampled as a control. At Reiffenhausen we obtained 6 different species covering all ecological groups of earthworms. Abundances indicated a step gradient for earthworm numbers in the combination of poplar with cropland with decreasing numbers with increasing distance. However, the gradient was not indicated for willow rows on grassland. An effect of hypnotized earthworm supporting factors like litter entry and shading couldn't be fully confirmed. More data is needed to value agroforest systems for their impact on key organisms and key functions of soil biota.