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Type of presentation:

Oral presentation

Title:

Reduced arbuscular mycorrhizal fungi richness in salix tree roots in comparison to vine roots of an agroforestral vineyard system.

Authors:

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Institution(s):

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Abstract (300 words maximum): :

Global warming and extreme events such as droughts or floods are challenging agriculture leading to soil erosion and increased pest pressure. The implementation of trees in agricultural fields (agroforestry) is expected to minimize soil erosion, reduce pest pressure and increase microbial activity. The soil microbiome including arbuscular mycorrhizal fungi (AMF) play an important role in soil fertility by forming symbiotic associations with land plants and connecting trees with neighbouring crops, which profit from shared and facilitated nutrient and water uptake. The aim of this master thesis was to study the impact of salix trees on soil chemistry and AMF diversity, in a vineyard located in the Western part of Switzerland. Amplicon sequencing was used to identify different AMF orders in soil and root samples. First, looking at all sequences, we found that the relative abundance of AMF is significantly lower in tree roots compared to vine. Next, focusing on the AMF sequences, we found that root samples of tree and vines had a lower diversity than soil samples, while the richness was higher in vine roots compared to tree roots. An ordination analysis finally suggested that the AMF community composition of tree roots was more different to vine roots, than soil samples of trees are to vine roots. To summarize: salix trees did not have an impact on AMF diversity. Furthermore, the slope position or the field management had more impact on soil chemistry than the impact of trees, indicating that enhancing sustainability in vineyards may require measures beyond implementing agroforestry into a viticultural system.

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