



Contribution ID: 648

Type: **Poster (+) Presentation**

Plants control soil gas exchanges possibly via mucilage

Tuesday, 1 June 2021 10:00 (1 hour)

Gaseous matter exchanges in soil are determined by the connectivity of the pore system which is easily clogged by fresh root exudates. However, it remains unclear how a hydrogel (e.g. mucilage) affects soil pore tortuosity when drying. The aim of this study is to obtain a better understanding of gas diffusion processes in the rhizosphere by explaining patterns formed by drying mucilage.

We measured oxygen diffusion through a soil-mucilage mixture after drying using a diffusion chamber experiment. Therefore we mixed soil with different particle size with various amounts of mucilage. Afterwards we saturated the soil and measured the gas diffusion coefficient during drying.

We found that mucilage decreases gas diffusion coefficient in dry soil without significantly altering bulk density and porosity. Electron microscopy indicate that during drying mucilage forms filaments and interconnected structures throughout the pore space. Exudation of mucilage may be a plant possibility to actively alter gas diffusion in soil.

Time Block Preference

Time Block A (09:00-12:00 CET)

References

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Student Poster Award

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Session Classification: Poster +

Track Classification: (MS2) Porous Media for a Green World: Water & Agriculture