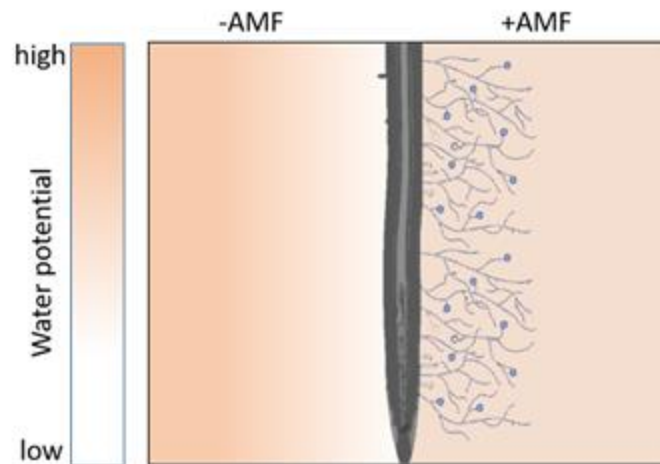


The role of arbuscular mycorrhiza fungi in plant water status

Introduction: Water scarcity in soil and atmosphere escalates stress on vegetation and threatens future agricultural production and forest survival, especially in the face of climate change. Recent literature has identified soil drying as a primary cause of transpiration reduction globally. Thus, detailed knowledge of water flow processes, particularly belowground, is required to fully understand and predict plant behavior under drought episodes and future climate conditions.



Although Arbuscular Mycorrhiza Fungi (AMF) are assumed to play a pivotal role in plant response to soil drying, studies investigating the impact of AMF on plant water status and soil-plant hydraulic conductance are limited.

Hypotheses: This project aims to test the following hypotheses:

1. AMF limit the drop in matric potential across the rhizosphere, especially during soil drying. The underlying mechanism is that AMF extend the effective root radius and hence reduce the water fluxes at the root-soil interface.
2. The follow-up hypothesis is that AMF enhance soil-plant hydraulic conductance and plant water status during soil drying.

Methods: Measuring transpiration and leaf water potential during soil drying of two maize genotypes; a mutant that suppresses AMF colonization and the corresponding wild-type. The plants will be grown in a walk-in climate-controlled chamber and placed on automated wireless balances. The latter will record the weight every 10 minutes to obtain gravimetric transpiration rate. Complementary measurements will be done to assess soil dryness after the last irrigation.