

3rd Global Summit on

Plant Science

August 07-09, 2017 | Rome, Italy

Assessment of drought tolerance in chestnut seedlings with and without ectomycorrhizal fungi

Pabitra Aryal

Eastern Illinois University, USA

Drought stress is one of the major problems in many agricultural studies including chestnut. ECM symbiosis alleviates the impact of highly stressed soils on plant growth by increasing access to water and nutrients, reducing the impacts of drought. Stomatal characteristics are important variables to look for drought response for drought tolerance of plants. This study compared stomatal density and dimensions between the chestnut seedlings, inoculated with and without ectomycorrhizal fungi. Stomatal density and dimensions were measured in microscopic fields of leaf epidermal peels taken from the abaxial leaf surface. Area of stomata was calculated by measuring the length and width of the stomata assuming that each stomata was a perfect ellipse. Significant differences were found between two treatments for stomatal complex area and stomatal complex width and they were found to be lower in inoculated seedlings together with stomatal length. But stomatal density was found to be higher in inoculated seedlings. As the ECM fungi found in oaks, chestnut and other trees of fagaceae help to increase water and mineral absorption, well-hydrated leaf may transpire its water several times mostly through stomata, could be the reason behind higher number stomata in inoculated seedling to make more pore space for transpiration and balance their water status. All the lower values of stomatal dimensions showed chestnut seedlings inoculated with ECM were drought tolerant supported by significantly higher value of Fv/Fm in inoculated seedlings.

paryal@eiu.edu