

[P3] Abiotic Stress for Crop Production

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 3 (Poster) (Abiotic Stress for Crop Production)

1:15 PM - 2:00 PM

[P3-06] The Effects of Arbuscular Mycorrhizal Symbiosis on the Growth, Yield and Drought Resistance of Foxtail Millets (*Setaria italica*)

○Wei-Yi Lin, Ou-Chi Chang, Yi-An Chen, Ting-Chen Chang (Department of Agronomy, National Taiwan University, Taiwan)

Arbuscular mycorrhizal fungi (AMF) are the beneficial endosymbionts which can enhance nutrient uptake and stress resistance of host plants. These fungi are able to associate with more than 80% of land plant species, including foxtail millets. Foxtail millets (*Setaria italica*) is widely grown in the world, however, it is still not clear about the potential of applying AMF on millet production and the stress tolerance. We selected two millet landraces collected in Taiwan (line 110) and India (line 209), respectively, and examined the effects of AMF on their growth responses, phosphate concentration and drought tolerance. Phosphate concentration was significantly increased in both lines with AMF treatment, compared to mock-treatment, although the growth was not promoted. It is noteworthy that the thousand grain weight was significantly increased in AMF-treated line 110. Under drought treatment, AMS enhanced the drought tolerance of line 110, while for lines 209, both mock- and AMF-treated plants were strongly tolerant to drought. Furthermore, the low level of malondialdehyde content in both mock- and AMF-treated line 209 and the decreased level in AMF-treated line 110, compared to mock-treated plants, supported the drought-tolerance phenotype that we observed. Taken together, our finding showed that AMF has great potential for improving foxtail millets production. We also observed the effects of host plant genotype on the benefits of AMS. Further study is required to reveal the effects of genotype on AMS and the mechanism of drought tolerance in millets.