

Morpho-Physiological and Yield Characteristics of Interspecific Hybrids between Cultivated Eggplant (*Solanum melongena* L.) and Wild Relatives in Response to Drought Stress

*Ranaweera¹, G.K.M.M.K., Fonseka¹, R.M. and Fonseka², H.

¹Department of Crop Science, University of Peradeniya, Sri Lanka

²Onesh Agriculture pvt. Ltd. Sri Lanka

*Corresponding email: madhusankaranaweera111@gmail.com

Drought has been identified as one of the principal global problems, which further exacerbates under climate change. Crop wild relatives are a genetic resource with an array of traits of interest, including tolerance to biotic and abiotic stresses. The aim of this study was to evaluate the drought tolerance of ten interspecific hybrids between seven different cultivated varieties of *Solanum melongena* L. and three wild relatives (*Solanum insanum*, *Solanum incanum* and *Solanum lichtensteinii*). The experiment was conducted in a protected house at the University Research Station, Meewatrura, Peradeniya (WM2b) during Maha 2018. The experimental materials were subjected to three irrigation treatments viz: field capacity (control, I₁) and two droughts stress levels (70 % and 40 % of field capacity: I₂ and I₃). Plant morphological characters, physiological characters and yield attributes were measured. Results revealed that drought stress (I₂ and I₃ treatments) significantly ($P \leq 0.05$) reduced the plant height, canopy width, number of leaves, number of branches, number of fruits and finally the average yield of all interspecific hybrids. The proline content and chlorophyll concentrations (a, b and total) were significantly increased ($P \leq 0.05$) in the plants under the drought stress. Relative water content also significantly increased ($P \leq 0.05$) for I₃ level. Total soluble solids of fruits were increased significantly ($P \leq 0.05$) due to the drought stress. Moreover, interspecific hybrids MEL2 × INS1, MEL3 × INS1, MEL5 × INS1, MEL6 × INS1 and MEL7 × INS1, have shown better performance under I₁ and I₂ treatments while, MEL2 × INS1, MEL3 × INS1, MEL5 × INS1, MEL6 × INS1, MEL7 × INS1 showed best tolerance under I₃ treatment. Thus, those interspecific hybrids have potential to utilize as genetic materials for future breeding programs to develop drought resistant eggplant varieties.

Keywords: Drought stress, Eggplant, Interspecific hybrids, *Solanum incanum*, *S. insanum*, *S. lichtensteinii*, *S. melongena*