IN VITRO SELECTION OF TRUE POTATO SEED GENOTYPES TOLERANT TO DROUGHT STRESS

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Abstract

The biological material used in this study was produced from true potato seed (TPS). Nine genotypes (MIL19-01-08, MIL19-01-22, MIL19-01-37, ZIL19-02-01 , ZIL19-02-11, ZIL19-02-43, GIL19-03-07, GIL19-03-29 and GIL19-03-38) were tested *in vitro* for drought tolerance. Four treatments were used to induce *in vitro* water stress: MS medium with three different concentrations of PEG (1%, 1.5%, 2%) and one variant of MS medium without PEG as control. On culture medium variant with highest concentration of PEG (2%) GIL19-03-29 obtained best results for plantlet height (11.08 cm), leaf number (9.50), root number (5.33), fresh plant weight (0.167 g). In stress conditions GIL19-03-07 recorded best results for plant fresh weight (0.173 g), root length (7.17 cm), plantlet height (12.28 cm) on PEG 1%. Also, ZIL19-02-43 obtained higher values on the culture medium variants with the highest level of water stress for parameters such as root fresh weight (0.146 g), plant fresh weight (0.163 g), root length (7.08 cm) on PEG 1.5%. The potato genotypes GIL19-03-29, GIL19-03-07 and ZIL19-02-43 showed the best tolerance to the water deficit and were selected for further assessments both in protected area (greenhouse) and open-field conditions.

Key words: potato, plant tissue culture, TPS, polyethylene glycol, water stress tolerance