

Morpho-physiological and mineral nutrient characterization of 45 collected Purslane (*Portulaca oleracea* L.) accessions

ABSTRACT

This study was carried out to determine, evaluation and characterization of the morphological, physiological as well as mineral nutrient variations among all forty-five purslane accessions collected from different locations of West Peninsular, Malaysia. Significant differences ($p < 0.05$) were observed for all those traits measured regarding morphological, physiological and mineral composition. Morphological traits viz. plant height varied between 20.06-40.8 cm; number of main branches, 1.4-4.4; number of nodes, 8.4-31; internode distance, 2.1-3.43 cm; stem diameter, 2.12-3.8 mm; number of leaves, 97-1019; leaf area, 1.03-2.21 cm², number of flowers, 14-826.8; root length, 5.09-11.7 cm; fresh weight, 40-280 g; and dry weight varied between 2.71-29.16 g. Among physiological traits, total chlorophyll content varied between 26.2-39.52 (SPAD value), net photosynthesis, 20.8-28.73 $\mu\text{mol CO}_2/\text{m}^2/\text{sec}$; stomatal conductance, 0.02-0.28 cm/sec; transpiration rate, 0.46-2.48 mol/m²/sec; and water vapor deficit varied between 0.51-2.65 mol H₂O/m²/sec. Analysis of mineral macro and micronutrient compositions showed that all accessions contained appreciable amount of essential nutrients. Among the macro nutrient elements, N, P, K, Ca and Mg contents ranged respectively between 31.2-100, 2.51-8.2, 78.4-276, 9.1-62.2 and 8.7-32.55 ppm. Whereas micronutrient elements; Zn, Fe and Mn ranged respectively between 0.31-1.09; 1.01-13.09 and 0.06-1.32 ppm. This great variability among the purslane accessions may contribute enhancing the genetic improvement of the species for desired traits.