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Evaluation of the water tolerance ability of *Alysicarpus vaginalis* L. as a ground cover

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With the current scenario of climate change, the frequency of unpredictable drought occurrence has increased. This has led water scarcity to emerge as a major concern in outdoor planting activities, especially in landscaping. Therefore, use of plants with less water requirements, without losing the aesthetic and functional value in the landscape has become a key requirement in the landscape industry. In this context, the current study was conducted to investigate the ability of drought tolerance of *Alysicarpus vaginalis* L. (Fabaceae), commonly known as Aswenna (S), as a drought tolerant ground cover plant. Tip cuttings of *A. vaginalis* were planted in pots and arranged in Completely Randomized Design inside a plant house. Water stress conditions were imposed on plants through irrigating the plants up to the field capacity daily (T1-control), every fifth (T2), tenth (T3), fifteenth (T4) and twentieth (T5) day. Each treatment consisted of 30 plants as replicates. Morphological characteristics were recorded up to 60 days along with the survival rate of plants. General Linear Model (GLM) was used for the statistical comparisons. All the plants survived under all treatments, though a temporary loss of quality was observed under induced water stress conditions. All the growth parameters differed significantly among the treatments ($p < 0.05$ at 5% level of significance), where the highest leaf area ($113.52 \pm 13.84 \text{ cm}^2$), number of leaves (50.80 ± 5.59), leaf fresh weight ($1.25 \pm 0.16 \text{ g}$), leaf moisture content ($1.00 \pm 0.73 \text{ g}$), shoot moisture content ($1.01 \pm 0.13 \text{ g}$) and shoot fresh weight ($1.29 \pm 0.17 \text{ g}$) were observed in T2. Meanwhile, plants in T5 showed the lowest morphometric parameters except for leaf hair density ($648.14 \pm 15.96 \text{ hairs/cm}^2$) and root Length ($19.18 \pm 0.63 \text{ cm}$). Therefore, the significant water stress resistant characteristics were observed at T5. Based on the findings, it can be concluded that *A. vaginalis* positively responded to water deficit conditions in the plant house. Therefore, this would be a potential plant to be used in outdoor landscaping as a water stress resistant ground cover plant, with low maintenance requirements.

Keywords: *Alysicarpus vaginalis*, Drought resistant plants, Ground cover, Water stress