

## **Plant Water Relations and Forage Quality in *Leucaena leucocephala* (Lam.) de Wit and *Acacia saligna* (Labill.) as Affected by Salinity Stress**

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**Abstract :** This research was conducted to study the effect of different salinity concentrations on the plant water relation and forage quality on two multipurpose forest trees species seedlings *Leucaena leucocephala* (Lam.) de wit and *Acacia saligna* (Labill.). Five different salinity concentrations mixture between sodium chloride and calcium chloride (v/v, 1:1) were applied. The control (Distilled Water), 2000, 4000, 6000, and 8000 ppm were used to water the seedlings for 3 months. The research results presented showed a marked variation among the two species in response to salinity. The *Leucaena* was able to withstand the highest level of salinity compared to *Acacia* all over the studied parameters except in the relative water content. Although all the morphological characteristics studied for the two species showed a marked decrease under the different salinity concentrations, except the shoot/root ratio that showed a trend of increase. The water stress measure the leaf water potential was more negative with as the relative water content increase under that saline conditions compared to the control. The forage quality represented by the crude protein and nitrogen content were low at 6000 ppm compared to the 8000 ppm in *L. Leucocephala* that increased compared that level in *A. saligna*. Also the results showed that growing both *Leucaena* and *Acacia* provide a good source of forage when that grow under saline condition which will be of great benefits to the agricultural sector especially in the arid and semiarid areas were these species can provide forage with high quality forage all year around when grown under irrigation with saline. This research recommended such species to be utilized and grown for forages under saline conditions.

**Keywords :** plant water relations, growth performance, salinity stress, protein content, forage quality, multipurpose trees

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