RESEARCH ARTICLE

EFFECTS OF SALINITY ON MORPHOLOGICAL AND BIOCHEMICAL PARAMETERS OF *DALBERGIA SISSOO AND ACACIA NILOTICA* UNDER SALT STRESS

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Abstract: For the past hundreds of year's trees like *Dalbergia sissoo* (shisham), *Acacia nilotica* (Kikar), *Prosopis cinneraria* (Khejri) etc. have inhabited vast areas in the plains of Afghanistan, Pakistan, India, Nepal and Myanmar. These have also been widely used for afforestation in many parts of the country except in the very hot, cold and wet tracts. These have good atmospheric N_2- fixing ability, therefore, are extensively planted in social and agro-forestry programmes. In order to evaluate the effect of soil salinity, present investigation was conducted on two tree species i.e. *Dalbergia sissoo* Roxb. ex DC (Shisham) and *Acacia nilotica* (L.) willd. ex Delile (Kikar) growing under field conditions in Hisar district during the year 2011-2012. It was noteworthy that overall decrease in leaf area due to salinity in *Dalbergia sissoo* was 11.36 % as compared *Acacia nilotica* where it was 9.81 %, indicating that overall sensitivity of *Dalbergia sissoo* to saline conditions was more vis-à-vis *Acacia nilotica*. In *Acacia nilotica* show that specific leaf weight was in the range of 9.53 to 10.96 mg/cm^2 in healthy trees which was higher i.e. 9.62 to 11.99 mg/cm^2 in trees growing under saline sites. The mean specific leaf weight was 10.31 mg/cm^2 under non-saline conditions which was significantly lower than 10.89 mg/cm^2 obtained under saline environment. *Acacia nilotica* tree leaves sampled from the saline sites showed total soluble salts in the higher range of 222.7 to 279.0 mg/g as compared 223.0 to 263.7 mg/g dry weight in trees growing under non-saline sites. The mean value of total soluble solids in *Acacia nilotica* also showed significant increase in non-saline conditions over saline site trees. Relative stress injury in case of *Dalbergia sissoo* was interestingly in the higher range of 52.1 to 60.2 % as compared to 39.8 to 39.9 % in trees growing under saline soils. Hence, the mechanism of salt tolerance is relatively better in *Acacia nilotica* than in *Dalbergia sissoo* as found from morpho-physiological and biochemical studies.

Keywords: Acacia nilotica, Dalbergia sissoo, Relative stress injury, Salinity, Total soluble sugar

Abbreviations: LA – Leaf area, SLW- Specific leaf weight, RSI – Relative stress injury and TSS – Total soluble sugar

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