

## Variation of root and shoot growth and free proline accumulation in Iranian alfalfa ecotypes under salt stress

### ABSTRACT

To investigate salt tolerance of 20 Iranian alfalfa ecotypes in seedling stage with emphasis on response of seedling roots and free proline accumulation, a greenhouse hydroponics trial was carried out in University Putra Malaysia. The ecotypes were representative of all climatic regions of Iran. The seeds were planted in perforated bottom trays filled with sand and immersed in nutrient solution (media culture). After 8 days when seedlings had reached the first trifoliolate leaf stage the EC of nutrient solution was increased by adding sodium chloride gradually so that at 25 days of trial EC reached to 15 dS m<sup>-1</sup>. The seedlings were harvested after 29 days and observations were taken on root and shoot characteristics and free proline accumulation. The results showed different response of ecotypes in terms of root and shoot biomass and their development and also induced proline accumulation. The response of ecotypes in root parameters was variable but shoots were more affected than roots under salt stress. In the face of increasing salinity, free proline in all ecotypes increased. Eventually the results indicated that ecotypes Shorkat, Mohajeran, Rehnani, Gharghologh and Nik shahri were more tolerant than others in the seedling stage.

**Keyword:** Salt stress; Alfalfa; Proline; Root; Shoot; Iranian