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Salt tolerance in cultivars of tall fescue (*Festuca arundinacea*)

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Key words: tall fescucae, salt tolerance, integrated evaluation, morphological indexes, physiological indexes

Introduction Salt stress is a major problem in forages. High salinity causes ion imbalance, toxic levels of cytoplasmic sodium, and drought stress. The characteristics of salt tolerance have been studied in 9 tall fescue accessions (*Festuca arundinacea*).

Materials and methods Using pot experiments of 9 accessions of tall fescue under different salt levels (0%, 0.4%, 0.6%, 0.8%), three morphological indexes (main plant survival rate, relative height and relative biomass) and two physiological indexes (Electric conductivity and free proline contents) were observed. Using these indexes, comprehensive evaluation of salt tolerance has been done, and according to the results of integrated evaluation, the order of salt resistance was then presented.

Results Salt tolerance features were comprehensively assessed. The results showed that with the increasing of salt concentration, plant survival rate, the relative height and the relative biomass decreased, relative electronic conductivity rate and free proline contents increased. At lower salt stress, no significant difference among the materials in the indexes was detected, but the salt sensitive materials showed a significant increase or decrease than salt-tolerant group in different indexes in response to increased salt stress. (Figure 1).

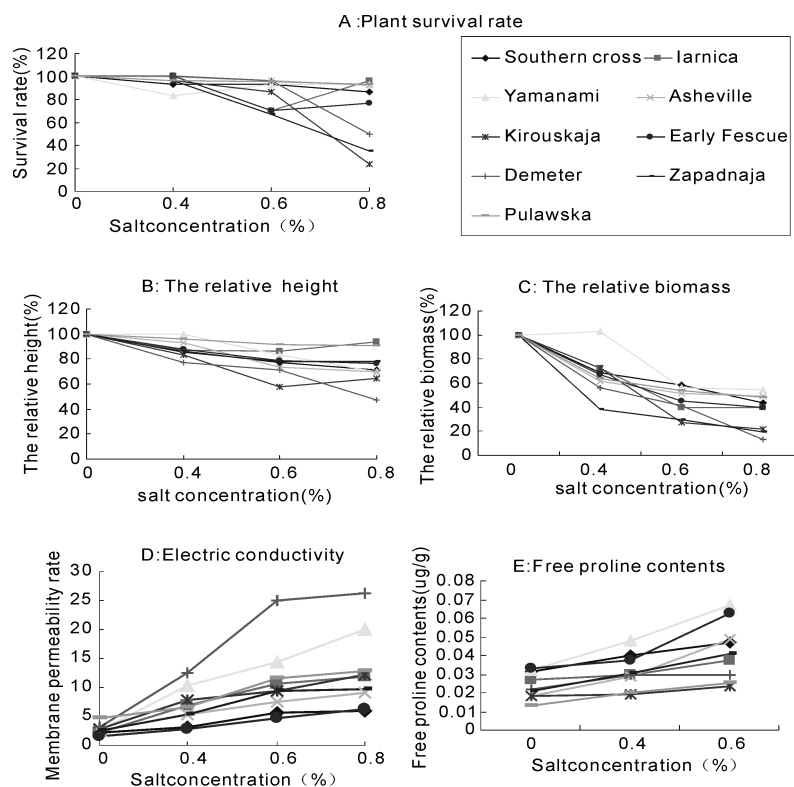


Figure 1 Effect of salinity on the indexes.

Conclusions With the increasing salt stress, all the materials showed a decrease to various extents in plant height, biomass and survival rate. The accumulation of free proline and relative electronic conductivity rate increased in all the materials. The comprehensive appraisal resulted in a salt tolerant group including Pulawska, Yamanami and Iarnica.

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