

## The effect of salinity on growth and ion accumulation in six turfgrass species

### ABSTRACT

The objective of this study was to evaluate the effect of salinity on the growth and ion accumulation in six turfgrass species namely *Paspalum vaginatum*, *Zostera japonica*, *Zostera matrella*, *Digitaria didactyla*, *Cynodon dactylon* cv 'Satiri', and *Cynodon dactylon* cv 'Tifdwarf'. Six salinity levels were applied with electrical conductivity of 0, 88, 176, 264, 352, 440 and 528 mM (sea water). At the highest salinity level (528 mM), the least shoot dry weight reduction was observed in *P. vaginatum* (40%) compared to control treatment, followed by *C. dactylon* 'satiri' (44%) and *Z. japonica* (48%). While at this salinity level, maximum shoot reduction was recorded for *Z. matrella* (55%) followed by *C. dactylon* 'Tifdwarf' (53%). At the highest salinity (528 mM), root dry weight reduction was also least in *P. vaginatum* (23%) followed by *Z. japonica* (29%), while the highest recorded in *C. dactylon* 'Tifdwarf' (44%) followed by *D. didactyla* (39%). Increasing the salinity level decreased the  $K^+$ ,  $Ca^{++}$ ,  $Mg^{++}$  content and  $K/Na$  ratio but increased  $Na^+$  content in the shoot and root tissues. *P. vaginatum* was the less  $Na^+$  accumulating species at all salinity levels followed by *Z. japonica* and *Z. matrella*, while *C. dactylon* 'tifdwarf' was the highest  $Na^+$  accumulating species followed by *D. didactyla* and *C. dactylon* 'satiri'. *P. vaginatum* was among the least  $K^+$  reducing species at all salinity levels followed by *Z. japonica* and *Z. matrella*, while the highest  $K^+$  reducing species was *D. didactyla* followed by *C. dactylon* 'tifdwarf' and *C. dactylon* 'satiri'. The highest  $K^+ /Na^+$  ratios at all salinity levels were recorded in *P. vaginatum* followed by *Z. japonica* and *Z. matrella*.