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SALT TOLERANCE OF TURF GRASS *Puccinellia distans*: I. GROWTH RESPONSE AND ION ACCUMULATION[1)]

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ABSTRACT

The aim of this study was to see the salt tolerance of turfgrass *Puccinellia distans* in term of ion accumulation and ionic interactions under salt stress condition. Plants were grown hidroponically in culture solution with addition of NaCl (0, 25, 50, 100 and 200 mM).

High concentrations of NaCl brought about growth reduction; the decrease of shoot dry matters was in the range of 30-84% and 30- 70% for root dry matters. Althought the yield of plants decreased so much in the presence of 200 mM NaCl, but plants were able to remain alive without showing any visible symptoms of injury. Much more Na was accumulated in the roots than in the shoots. Exposing plants to salinity results in the decrease of K, Ca and Mg contents.

RINGKASAN

Tujuan dari penelitian ini ialah untuk melihat daya adaptasi tanaman rumput *Puccinellia distans* terhadap cekaman garam ditinjau dari aspek akumulasi ion dan interaksi antar ion. Tanaman ditumbuhkan pada kultur air dengan pemberian NaCl (0, 25, 50, 100 dan 200 mM).

Konsentrasi NaCl yang tinggi menyebabkan penurunan pertumbuhan. Penurunan pada daun (pucuk) berkisar antara 30-84%, sedangkan untuk akar 30-70%. Walaupun terjadi penurunan produksi bahan kering yang tinggi, tanaman mampu bertahan hidup pada 200 mM NaCl tanpa terlihat gejala keracunan NaCl. Unsur Na lebih banyak diakumulasi pada akar dibanding pada daun. Perlakuan stres garam menyebabkan turunnya kadar K, Ca dan Mg pada tanaman.

INTRODUCTION

It has been proposed that for turfgrasses, the most important purpose is not yield of forage, but their survival, density, color and other qualities are important consideration (Lund *et al.*, 1981). *Puccinellia distans*, a halophytic monocotyledon, is known as turfgrass for covering the sides of roads and garden in the areas having high concentration of NaCl. However, there has been little information on salinity tolerance of this halophytic monocotyledon.

Lunt *et al.* (1981) reported that *Puccinellia distans* survived relatively well when the plants were grown in sand cultures with addition of 330 meq of NaCl, as shown by the reduction of growth only 25% as compared to control plants. In their work, NaCl treatments were started when the plants were 4-months old. However, the mechanism of tolerance of this halophytic monocotyledon in the terms of ion accumulation and ionic interactions has not been elucidated.

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