

EFFECT OF SOIL NUTRIENTS ON THE INVASION OF *PROSOPIS JULIFLORA* AND *OPUNTIA DILLENII* AT BUNDALA NATIONAL PARK

C. M. C. P. CHANDRASEKARA, G. A. D. PERERA AND P. R. G. SENEVIRATNE*

*Department of Botany, Faculty of Science, University of Peradeniya, *Institute of Fundamental Studies (IFS), Kandy*

Prosopis juliflora and *Opuntia dillenii* have invaded the thorn scrub forests in the southern dry forests of Sri Lanka. This study was conducted to identify soil nutrient status that may have influenced the successful invasion of the two alien species.

Soil pH and macronutrients including nitrogen, phosphorus, potassium, calcium, magnesium & sodium were examined in four 40 m diameter circular plots at Bundala National Park. Foliar nutrient contents were estimated in some selected dominant plant species and in two invasive species to compare nutrient absorption. Total nitrogen content was determined using Kjeldahl method while total phosphorus content was estimated using a colorimetric method. Concentrations of potassium, calcium, magnesium and sodium were determined by atomic absorption spectrophotometer. Soil pH was determined using a pH meter.

Results showed that the concentrations of potassium, calcium, magnesium and sodium in the soils of pure invasive plant stands are significantly higher than those of natural forest soil (Pooled t test: $p < 0$, <0.004 , <0 , <0 respectively). Studied invasive species had high potassium and calcium contents in their foliage when they grew in places where the alkali cation concentrations were high.

No differences were observed in the pH, total nitrogen and phosphorus contents between natural forest soil and soil of pure invasive plant stands. Therefore, soil pH, total Nitrogen and phosphorus may not affect the successful invasion of two alien species and the suppression of natural forest species by studied alien species.

The invasion of *P. juliflora* and *O. dillenii* in the study area is strongly influenced by the concentration of alkali cations in the soil. These species can absorb and store high potassium and calcium concentrations when they grow on soils where potassium and calcium concentrations are high. It may be one reason for their ability to grow successfully in such habitats.

Financial assistance by a grant from the University of Peradeniya (RG/ 99/ 65/ S) is greatly acknowledged.