



Tropentag, September 18-20, 2019, Kassel

“Filling gaps and removing traps  
for sustainable resource management”

## Site Adaptability of Mangrove Species in Myanmar

AUNG MYAT SAN, RALPH MITLÖHNER

*Georg-August-Universität Göttingen, Burckhardt-Inst., Tropical Silviculture and Forest Ecology, Germany*

### Abstract

Mangroves, halophytes, play an important role in the sustainability of coastal and marine ecosystems and provide protective and productive functions for the socio-economic development of the coastal communities. Myanmar, a tropical country in Southeast Asia, possesses about 2800 km of coastline along which mangroves occur in three different coastal regions. Due to anthropogenic influences and natural disasters, mangrove forests in Myanmar are being degraded at an alarming rate. Mangrove rehabilitation programs are being carried out in all the coastal regions and site-species matching is crucial for successful mangrove reforestation. Salinity is a limiting factor for the growth of mangroves and osmoregulation is one of the strategies mangrove species use to cope with saline site conditions. The study aimed to observe the interaction between the mangrove species and their growing sites in order to determine the most saline-tolerant species from respective intertidal zones. In each coastal region, two study sites were selected in distinct hydrological habitats; one on an island and one on the coast or delta area. Leaf and soil samples for 21 dominant true mangroves and associated species were collected. The osmotic potential of plants (midday and saturated) and soils were cryoscopically analysed. The difference in osmoregulation of individual species among different habitats and their relationship to their respective soils were determined. The osmotic potential of plants ranged from -1.2 to -7.1 MPa. The study revealed the applicational relevance of saturated leaf osmotic potential as an indicator of site conditions, due to its close proximity to soil osmotic potential. Optimally performing mangroves species from different habitats presented significant differences in osmotic potential. *Avicennia alba*, *Rhizophora mucronata* and *Rhizophora apiculata* from the lower intertidal zone; *Avicennia marina*, *Xylocarpus granatum* and *Bruguiera cylindrica* from the mid-intertidal zone; *Ceriops decandra* and *Excoecaria agallocha* from the high intertidal zone were the species with the lowest midday osmotic potential (the highest internal solute concentration) in their respective zones. These species can be proposed as saline-tolerant species for plantation establishment of mangrove restoration programs.

**Keywords:** Mangrove rehabilitation, osmotic potential, saline tolerance, site indicator, site-species matching