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Comparison of the Salt Tolerance of the Two Under-Utilised Fruit Species, Baobab (*Adansonia digitata* L.) and Tamarind (*Tamarindus indica* L.)

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Abstract

Dryland salinity is a common feature in Sudan. However, very little is known about the salt tolerance of *Adansonia digitata* and *Tamarindus indica*. For this reason an experiment was carried out to investigate the physiological response to salinity.

Seeds of *A. digitata* and *T. indica* were obtained from a wild stand in eastern Sudan. Three weeks after germination, 50 seedlings of each species were selected for uniformity and planted in 2.5 l containers filled with quartz sand. Treatments were prepared by adding 20, 40, 60 and 80 mM NaCl to a common nutrient solution. The seedlings were organised in a random block design with 10 replicates per treatment. In the first 10 weeks seedlings received 100 ml every second day and in the last 10 weeks seedlings received 100 ml per day.

In all salt treatments, baobab leaves showed severe injury symptoms. In the tamarind seedlings only 60 and 80 mM NaCl resulted in leaf injuries (chlorosis). Within the 20-week treatment period, there was a remarkable defoliation in the salt-stressed baobab plants. In the tamarind seedlings, there was only a slight defoliation of leaves with considerable leaf chlorosis in the 60 and 80 mM treatment. Reduction of dry weight by the salt treatments was much higher in baobab seedlings than in tamarind seedlings. In baobab seedlings a reduction of 50 % of dry weight occurred in the 20 mM treatment. However, in tamarind seedlings in the 20 and 40 mM NaCl variant, the reduction of dry weight was less than 50 % after the 20 weeks in comparison to the control plants. Both species accumulated a high amount of Na⁺ and Cl⁻ in the leaf tissue compared to other fruit species.

In conclusion, our results indicate that baobab (*A. digitata*) in the seedling stage can be characterised as a very salt-sensitive tree similar to Citrus species (*Citrus* spp.) and Avocado (*Persea americana*). However, tamarind (*T. indica*) in the seedling stage is a moderate salt tolerant fruit tree species similar to Guava (*Psidium guajava*).

Keywords: *Adansonia digitata*, baobab, growth, ion distribution, salinity, tamarind, *Tamarindus indica*