



RESPONSE OF SHOOT AND ROOT DRY WEIGHT, SHOOT: ROOT RATIO IN THREE SPECIES OF *Faidherbia* AND *Balanites aegyptiaca* TO VARYING MOISTURE AVAILABILITY REGIMES IN NORTHERN NIGERIA

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ABSTRACT

Efforts to mitigate the threat of desertification in the water limited front line states of northern Nigerian must involve planting carefully selected tree species that tolerate prolonged dry weather conditions. A screen house experiment was conducted to evaluate the growth response of seedlings of three species of *Faidherbia*, and *Balanites aegyptiaca* to varying moisture availability (unstressed, mild, moderate and severe stress) regimes. Shoot and root dry weight, as well as shoot: root ratio, were measured. Shoot and root dry weight increased ($P \leq 0.05$) with age in all the plant species under the four moisture availability regimes. Under unstressed conditions, *F. nilotica* produced significantly higher shoot dry weight than *F. senegal*, *F. albida* and *Balanites*. On the other hand, *F. senegal* produced consistently higher shoot dry weight under all moisture availability regimes than the other species of *Faidherbia* and *Balanites*. *F. senegal* also produced consistently higher root dry weight both in unstressed plants and under all moisture availability regimes than other species of *Faidherbia* and *Balanites*. Shoot: root ratio declined significantly with age in all species and for all moisture regimes. This was significantly higher in *F. nilotica* and lowest in *F. albida* for moderate and severe moisture stress regimes, and in *F. senegal* under mild and unstressed conditions. These results suggest that *F. senegal* is a species of choice for afforestation/re-vegetation programmes in the arid and semi-arid regions of northern Nigeria.

Key words: *Balanites* sp., *Faidherbia* spp., moisture, root, shoot weight.

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