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## Using alternate Water Resources for Cultivation of Salt Tolerant Perennial Grasses under Marginal Environment

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### Abstract

Cultivation of salt tolerant perennial grasses using saline water irrigation is potentially an important strategy to save fresh water resources and maximise the forage yield of small-scale farms in the marginal environment. Field evaluation of 40 Buffel grass (*Cenchrus ciliaris* L.) genotypes was conducted at ICBA, Dubai, UAE over eight years (2006–2013) under three irrigation water salinities (EC: 5, 10 and 15 dS m<sup>-1</sup>) to identify salinity tolerance potential based on plant growth, biomass yield and quality attributes. Total annual and average fresh (FW), and dry biomass (DW) varied significantly among genotypes under all salinity levels. Lower DW producing accessions were higher in nutritive value while higher DW producing accessions had lower nutritive value in terms of crude protein (CP) and neutral detergent fiber (NDF). From multivariate analysis, it was shown that accessions 37, 2, 3, 12, and 15 were salt tolerant, high biomass production with adequate nutritive value at different salinities. In contrast, genotypes 21, 23, 24, 25, and 40 were salt sensitive and low yielding. Genotype 37 (Grif 1619) was the most stable and high yielder at all salinity levels. The local accession 38 (MAF 74) had a higher yielding than to 37 but only declined sharply at the highest salinity levels that made it suitable for medium level salinity. It is concluded that wide genotypic diversity exists among a diverse collection of (*C. ciliaris* accessions for salinity tolerance, and Multivariate analysis facilitated the grouping of stable and high yielding accessions into clusters. These salt-tolerant perennial grasses can be grown to maximise forage production and to combat desertification in arid environments.

**Keywords:** Buffel grass, forage quality, genotypes evaluation, water salinity, yield