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# Nutrient concentration of forage sorghum (Sorghum bicolor L) varieties under influenced of salinity and irrigation frequency.

ABSTRACT

The responses of forage sorghum [Sorghum bicolor (L.)Moench] varieties to salinity and irrigation frequency were studied from December 2008 to December 2009 at Universiti Putra Malaysia. Two salt tolerant varieties of forage sorghum, namely Speedfeed and KFS4, were grown under salinity levels of 0, 5, 10, 15 dS m-1 and irrigated when the leaf water potential reached -1(control),-1.5 and -2 MPa. Salinity and irrigation frequency significantly ($P \leq 0.01$) affected nutrient concentration of forage sorghum varieties tested. The factorial treatment combinations were arranged in a randomized complete block design with three replications.Sodium content decreased 7 and 17% among the irrigation frequency treatments of -1.5 and -2 MPa, respectively. Abrupt increases in Na contents were noticed at 5 and 10 dS m-1 salinity when Na accumulation increased 4 to 9 fold. Potassium diminished 29, 38 and 54% under 5, 10 and 15 dS m-1 salinity treatment respectively, and decreased 4 and 10% with increase in water stress to -1.5 and -2 MPa respectively. Accumulation of K+, Ca2+ and Mg+ in the shoots was strongly inhibited by salinity.Salinity substantially reduced plant growth as reflected by a decrease in the dry forage yields, and percent of mortality at high salinity levels. The maximum dry forage yields were 45.1, 38.9, and 38.5 g plant–1 for frequent, intermediate, and infrequent irrigation regimes, respectively. Based on salinity, the forage dry weight in control plants had the highest yield (44.09 g plant–1), while plants under the high salinity treatment gave the lowest yield (32.76 g plant–1).

**Keyword:** Nutrient concentration; Forage sorghum; Salinity; Irrigation frequency.