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Study on Effects of Incorporating Various Levels of Cactus Pear (*Opuntia ficus-indica*) on Dry Matter Intake, Water Consumption and Performance of Sheep

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Abstract

Poor feed quality and lack of water are the major constraints for livestock production under arid conditions. To solve these problems, looking for potential plants is mandatory. Cactus pear is an extremely drought tolerant, highly productive, multipurpose and succulent plant. It has incomparably high water and land use efficiency. In cactus pear producing regions its fruits plays life-saving role during rainy seasons while livestock depend mainly on its cladodes during dry seasons and drought years. Under the latter circumstances, diarrhoea and bloat are reported to be major problems. In spite of its vital forage use, the nutritive value of cactus pear is little researched. This study aimed at determining the nutritive value of cactus pear, its contribution as source of water and optimum level of inclusion.

A three-months experiment, laid out in a randomised complete block design with eight sheep/treatment, was conducted. Cactus pear replaced the basal diet (grass hay) at 0, 20, 40, 60 and 80% (T1, T2, T3, T4, and T5, respectively) on a dry matter basis. Diets were offered in individual troughs twice daily, aiming at 20% refusals. Common salt licks were available ad libitum. Feed and water consumption and refusals were recorded daily. Animals were weighed weekly. Data were analysed using the SAS software JMP5.

Highly significant differences ($p < 0.001$) were observed for total dry matter intake (DMI), water consumption and live-weight change. The highest DMI was recorded for T4 with $100 \text{ g kg}^{-1} \text{ W}^{0.75}$ followed by T3 and the lowest was found for control, T1 with $77 \text{ g kg}^{-1} \text{ W}^{0.75}$. Sheep in T1 consumed the highest amount of water (1.24 l d^{-1}) followed by T2 (0.068 l d^{-1}) while sheep in T3, T4 and T5 drunk negligible amount of water (0.008 , 0.016 and 0.006 l d^{-1} , resp.). Liveweight change was relatively high ($+17.5 \text{ g d}^{-1}$) in T3 and sheep on the control diet lost weight (-11.12 g d^{-1}).

In conclusion, cactus pear could optimally substitute grass hay up to 60%. It has a substantial contribution in satisfying the water requirement of sheep. Thus, cactus pear could play a significant role in mitigating feed shortage in drought prone areas of the tropics and sub-tropics.

Keywords: Cactus pear, feed intake, hay, sheep performance, water consumption