

Spotlight on Agriculture

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PRICKLY PEAR CLADODES (*Opuntia ficus-indica*) AS AN ALTERNATIVE FEED SOURCE FOR LIVESTOCK

INTRODUCTION

Opuntia ficus-indica (also known as spineless cactus or prickly pear) is the most agronomical important species for the production of edible fruits and cladodes. In recent years, there has been an increasing interest in cactus pear (*Opuntia*) as an alternative feed for livestock in the tropical and subtropical regions of the world. According to Khalafalla *et al.* (2007), the increased importance of cactus pear in these regions is mainly due to their drought resistance, high biomass yield, palatability, salinity tolerance and soil adaptability.



THE USE OF OPUNTIA AS FODDER

The idea of feeding cactus to livestock is not recent. For ages, farmers worldwide have been using cactus extensively as emergency forage, to prevent the disastrous consequences of frequent and severe drought (Khalafalla *et al.*, 2007). Although, prickly pear is available in many parts of Namibia, it is still under-utilized for livestock production because its feeding and economic value is unknown.

Given the prevailing drought conditions in Namibia, there is a need to investigate alternative feed sources for livestock to augment limited or scarce feed sources. Thus, enabling livestock to survive critical periods of feed shortages and still be able to produce good quality meat. These alternative

feeds must be affordable but they must also be adapted to drought and harsh conditions in Namibia.

Prickly pear fit most of the requirements of drought-resistant fodder crop and it has been well researched as a feed for cattle, goats and sheep. However, according to Ben Salem *et al.* (1996), *Opuntia* cannot be used or offered to ruminants as a sole diet, but it could be mixed with other feedstuffs to form a balanced diet.



Opuntia cladodes can be chopped into pieces and fed as a supplement to improve the feeding value of low quality roughage, such as cereal straw.

RESEARCH RESULTS

Studies with sheep elsewhere indicated that feeding *Opuntia*-based diets resulted in increased intake, digestibility and growth rates, especially when fed with poor quality roughages (Ben Salem *et al.*, 1996).

Numerous feeding trials have also shown that sundried and coarsely ground *Opuntia* cladodes can be used to replace up to 360 g/kg of Lucerne and some corn in sheep rations (Zeeman, 2005; Einkamerer, 2008; Menezes, 2008).

In Namibia, a study has shown that *Opuntia*-based diets can be used as feedlot diets for Dorper sheep without significantly changing their performance, dressing percentage or carcass value (Shiningavamwe, 2009).

Prickly pear cladodes (*Opuntia ficus-indica*) as an alternative feed source



Opuntia cladodes dried, milled and mixed with other feed ingredients to form a balanced diet.

NUTRITIONAL VALUE OF *OPUNTIA*

The nutritive quality of *Opuntia cladodes* is highly variable depending on plant type (species and variety), cladode age, sampling season, part of the plant and agronomic conditions (soil type, climate, growing conditions) (Misra *et al.*, 2006). Typical results of the chemical composition of *Opuntia cladodes* are shown in Table 1.

Table 1. Chemical composition of *Opuntia ficus-indica* cladodes produced in Namibia

Identification	Moist %		CP %	Ca %	P %	CF %	ADF %	NDF %	Fat %	Ash %	OMD %	ME
	wet	Residual										
Prickly pear	94,80	5,84	8,91	3,006	0,333	9,76	16,56	18,03	1,62	25,66	73,3	8,4

Moist = Moisture (100 - Moisture) = % Dry Matter; CP = Crude Protein; Ca = Calcium; P = Phosphorus; CF = Crude Fibre; ADF = Acid Detergent Fibre; NDF = Neutral Detergent Fibre; Fat = Fat; Ash = Ash (100 - Ash) = Organic Matter; OMD = Organic Matter Digestibility; ME = Metabolisable Energy (MJ/kg)

Generally, *Opuntia* has a high moisture content of 70 % to 95 % and apparent digestibility of about 75 %. In addition, analysis of chemical composition shows that *Opuntia cladodes* (on dry matter basis) are rich in readily available carbohydrates, ash and calcium. It may serve as a good source of fermentable metabolizable energy and vitamin A. On the other hand, *Opuntia cladodes* are low in crude protein, fibre, sodium, and phosphorus. Misra *et al.* (2006) recommend that, in order to meet both maintenance and production requirements of animals, the diet should be balanced with supplementary protein, e.g. oilseed cakes or non-protein nitrogen (NPN) such as urea. Failure to use a nitrogen supplement in *Opuntia*-based diets consumed by ruminants, may limit the ingestion of a diet and its efficient utilization, resulting in a low intake of energy.

CONCLUSION

Opuntia is regarded mainly as a good, cheap source of energy, which may reduce the use of concentrated feeds and expensive fodder crops, consequently reducing the feeding costs and raise ruminant production in dry areas.

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