

Feeding Prickly Pear Cactus to Small Ruminants in Northern Mexico. I. Goats

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INTRODUCTION

Prickly pear cactus (*Opuntia* spp.) is the most important natural resource in the arid and semiarid areas of Mexico. Prickly pear cactus is a plant that has developed characteristics of adaptation to low water availability and extreme temperature changes, as is present in these areas. Traditionally, prickly pear cactus has been used as fruit, vegetable and forage. Prickly-pear cactus production for forage is variable, because the production techniques used are very poor and in most cases it is grown wild. Prickly pear cactus utilization as a forage for livestock has been mainly due to its availability during critical dry months of the year and to its chemical composition (Table 1). The utilization of prickly pear cactus as feed for grazing livestock has been done by cutting the edges of the prickly pear cactus pads standing in the field and by burning the whole plant or individual pads of the prickly pear cactus, which in turn is chopped into small pieces with hand tools.

Table 1. Chemical Composition of Different Prickly Pear Cactus Species (%).

Specie	Dry Matter	Organic Matter	Crude Protein	Ether Extract	Crude Fiber	Ash	Nitrogen-Free Extract
<i>O. engelmannii</i>	15.1	68.4	3.3	1.2	3.6	31.6	60.3
<i>O. ficus-indica</i>	11.3	89.9	3.8	1.4	7.6	13.1	77.1
<i>O. lindheimeri</i>	11.6	74.5	4.1	1.0	3.0	25.5	66.3
<i>O. rastrera</i>	14.4	59.9	2.8	0.8	16.2	40.1	40.2
<i>O. robusta</i>	10.4	81.4	4.4	1.7	17.6	18.6	57.6
<i>Opuntia</i> spp.	17.0	-----	5.1	1.9	13.2	20.5	59.2

GOAT PRODUCTION

Even though goats may survive and produce under almost all climatic conditions, there is a significant tendency for higher goat populations in the arid and semiarid areas of Mexico. Gall (1981) indicates that it does not mean that goats produce better under these arid and semiarid conditions, but rather there are fewer opportunities for alternative land uses in these areas. A report by INEGI (1993) indicates that goat population in Mexico is close to 11,000,000 head. In 1992, National goat meat production accounted for 42,893 tons. San Luis Potosi contributed with 6,341 tons and Coahuila contributed with 5,511 ton. These two states located in arid areas

contributed with 27.6% of the National production. Goat milk production in the same year was 147,878,000 liters. Coahuila produced 49,875,000 liters, and Durango produced 22,900,000 liters. These two states located in arid areas contributed 49.2% of the National production. It is important to recognize that milk production in these two states is given mostly under intensive conditions, while meat production is under range conditions. Under these conditions goats depend on grazing and browsing on available plants. During the spring, summer and fall goats consume forbs and grasses, and browse consumption is reduced, while during the winter and early spring browse species consumption is increased (Cook, 1972). During the winter and early spring (dry months) the consumption of prickly pear cactus is also increased (Merril and Taylor, 1981). Prickly pear cactus in some cases may contribute all of the moisture goats consume and up to 80% of the total diet. Goats eat at the base of the plant until the plant falls, then they eat the fallen plant without damage to the lips and tongue. Another way of utilizing prickly pear cactus under range conditions is by cutting the edges of the prickly pear cactus pads standing in the field to make it more succulent and easy to consume.

It is very difficult to know the exact amount of prickly pear cactus consumed by goats under range conditions. However, producers from Coahuila state estimate that during the dry months of the year, prickly pear cactus consumption may be from 20% to 40% of their daily intake, which may account for 14.9% to 59.6% of the daily digestible energy requirements for maintenance of 21-kg goats, and for 8.8% to 36.9% of the daily crude protein requirements of 21-kg goats (Table 2).

Table 2. Nutrients Supplied by Different Prickly Pear Cactus Levels of Consumption
 (Maintenance requirements of 21-kg replacement goats:
 Dry-matter (DM) Consumption = 1.05 kg; Digestible Energy (DE) = 1.831 Mcal;
 Crude Protein (CP) = 56.9 g)

CONSUMPTION Prickly pear cactus Percentage of total diet	DM (kg)	Digestible Energy		Crude Protein	
		(Mcal)	% of req.	(g)	% of req.
10	.105	.273	14.9	5	8.8
20	.210	.546	29.8	11	19.3
30	.315	.819	44.7	16	28.1
40	.420	1.092	59.6	21	36.9

CONCLUSION

There is a very high potential for the utilization of prickly pear cactus in goat production, in arid and semiarid areas of northern Mexico. However, the nutritional value of cactus must be improved to get a better performance of goats and the most efficient utilization of prickly pear cactus.

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