

EVALUATION OF CHOLLA CACTUS AS AN EMERGENCY FEED

J. E. Sawyer, L. A. Knox, G. B. Donart, and M. K. Petersen

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Drought situations frequently occur on rangelands in New Mexico. During periods of drought, the lack of available forage for livestock dictates the removal of livestock or the provision of emergency feedstuffs. Hay and grains are often used as emergency feeds, but may be prohibitively expensive. Another alternative in emergency situations is the feeding of cactus with the spines removed by burning.

Cactus has been used as livestock feed for many years. Ranchers in New Mexico have observed cattle consuming cholla cactus in both dry and normal years. Several studies have investigated the nutritive value of prickly pear cactus, but little information is available on the nutritive value of cholla cactus. Knowledge of the nutritive value of cholla may aid in decisions regarding its use as an emergency feed and make other supplementation strategies more efficient and effective.

A study was conducted at the New Mexico State University Corona Range and Livestock Research Center to evaluate the nutritional quality of cholla cactus and the effect of burning on this quality. Two paired samples were collected from each of

25 cholla plants ranging in size from 1 to 6 ft in height. Half of each pair were burned with a propane torch until all spines were removed. Samples were then analyzed for dry matter (DM), crude protein (CP) and neutral detergent fiber (NDF) content. Neutral detergent fiber is a measure used to describe the portion of a feed that is slowly degraded in the rumen. Samples placed into nylon bags were ruminally incubated in two cannulated cows to determine digestibility.

Table 1 reports the results of measurements of DM, NDF, CP and digestibility for unburned and burned cholla. DM and CP levels were similar for burned and unburned samples. Burning significantly reduced the NDF fraction of the cactus, which reduces the fraction of the plant that is slowly degraded or undegradable. Due to this reduction, burning also significantly increased the digestibility of cholla.

The results shown in Table 1 indicate that while cholla cactus is not a high protein feedstuff, it contains adequate protein for maintenance of cows. The low NDF content of cholla indicate a large amount of soluble carbohydrates for energy. When forages are dormant or forage availability is limiting, the supply of rapidly soluble carbohydrates provides additional energy that the animal requires.

The high digestibility values indicate that cholla is high in quality when utilized by cattle. The low dry matter content of cholla means that a large quantity of cactus must be provided to achieve a desired level of DM intake. For a range cow to consume 20 pounds of dry matter from cholla she would need to browse 160 pounds on an as fed basis. However, the DM content of cholla may vary widely depending on season and climatic conditions.

Table 2 compares burned cholla cactus to some other feedstuffs commonly utilized in emergency situations as well as important forage species, blue grama grass and winterfat.

Cholla cactus is a high quality feedstuff. It contains protein adequate for maintenance, and is highly digestible. The provision of burned cholla as a livestock feed may be a viable option if it is economically feasible.

Table 1. Crude protein, neutral detergent fiber, dry matter, and digestibility percentages for unburned and burned cholla cactus (dry matter basis).

Item	Unburned Cholla	Burned Cholla	SE
CP, %	10.7	11.0	.60 ^a
NDF, %	40.1	31.1	.84 ^a
DM, %	12.4	12.7	—
Digestibility, %	67.0	76.8	3.2 ^b

^an=5

^bn=4

Table 2. Burned cholla cactus compared to selected feedstuffs.

Feedstuff	CP %	NDF %	DM %	Digestibility %
Burned Cholla	11.0	31.1	12.7	76.8
Winterfat	11.0	—	—	54.0
Alfalfa hay	18.7	47.1	91.0	58.0
Blue grama (dormant)	5.0	67.3	93.8	—
Cracked corn	9.8	10.8	90.0	90.0