

Importance of Forbs on Southwestern Ranges

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Forbs, as a class of range plants, are often looked upon with disfavor when they occur on rangelands. There is good reason for this unfavorable view of forbs. Many forbs are opportunistic and do invade disturbed areas. If vigor of grasses is lowered by heavy grazing, forbs often increase. Because of this phenomenon many range managers consider ranges with abundant forbs to be deteriorated. Some of these forbs may be poisonous and can create additional problems for livestock operators. With this reputation, it is not surprising that forbs have not been held in high favor among some livestock operators and range workers in the past.

However, forbs played a role in most U.S. grasslands before the advent of large livestock operations. In many cases, they were overshadowed by taller grasses and perhaps largely ignored except by early botanists. Some discerning livestock operators recognized the value of these plants and their ability to finish livestock. But it really wasn't until interest in livestock diets and the development of the esophageal fistula technique that researchers could assess adequately the importance of range forbs.

Contribution of Forbs in the Diet

Forbs are important components of livestock diets in the Southwest (Table 1). Studies using esophageal fistulated animals showed that cattle diets contained about 30% forbs on a yearly basis. Obviously, these results do not show seasonal differences, which may be pronounced in many instances. At Fort Stanton, located in south-central New Mexico, forb content of the diets was low in the growing season when grass growth was high and again in the spring when forb growth had largely disappeared. Forb content of the diets was highest in late spring when some of the cool-season forbs were green and the grass was dormant, and again in the fall when forb growth was at a maximum. Annual forbs such as portulaca were important components of cattle diets in the summer of 1974, following a severe drought (Allison et al. 1977).

The one study conducted with sheep supported the idea that

sheep prefer forbs. Yearly sheep diets contained nearly 60% forbs in south-central New Mexico (Table 1).

On desert grassland range, forb content of the diet depends largely on availability. Herbel and Nelson (1966) found that winter was the period of lowest forb content of both Hereford and Santa Gertrudis diets. Rosiere et al. (1975) reported lowest forb contents in diets during spring and summer.

Nutritive Content of Forbs

In addition to supplying considerable quantities of forage for grazing animals, forbs also furnish high quality forage. Table 2 shows that five important Southwestern forbs averaged more than 12% protein on a yearly basis, while phosphorus content was above 0.15% for all species and above 0.20% for four of the five species. Apparently, forb forage is readily digestible and nutrients can be utilized by the animals, as shown by studies in Colorado (Wallace et al. 1972).

Data in Table 2 do not show seasonal changes in nutrient concentration. However, in most cases forbs are consumed when they are growing and their nutritive content is fairly high. In contrast, the protein content of grasses is seldom over 10 or 12% and only at the highest point during the growing season (Nelson et al. 1970 and Pieper et al. 1978). In some cases, it is

Table 2. Protein and phosphorus contents and digestibility of important Southwestern forbs.

Species	% Protein	% Phosphorus	<i>In vitro</i> O.M. Dig.
Dakota verbena ¹	12.0	0.29	77
Scarlet globemallow	14.3	0.21	60
Carruth sageworth	12.8	0.25	67
Leatherweed			
croton ²	12.7	0.15	—
Fendler bladderpod	14.3	0.21	—

¹ Data from Dakota verbena, scarlet globemallow and carruth sageworth are from Cordova (1974).

² Data on leatherweed croton and fendler bladderpod are from Nelson et al. (1970). Digestibility was not determined for these species.

Table 1. Forb contributions to livestock diets on southwestern ranges.

Range type	Season	Type of livestock	% Forb contribution to diet	Source
Blue Grama Grassland, N.M.	Yearly average	Cattle	32	Thetford et al. 1971
Blue Grama Grassland, N.M.	Yearly average	Sheep	60	Thetford et al. 1971
Blue Grama Grassland, N.M.	Yearly average	Cattle	25	Allison et al. 1977
Blue Grama Grassland, N.M.	Two-year average	Cattle	28	Havstad 1977
Desert Grassland, Ariz.	Fall	Cattle	>10	Galt et al. 1969
Desert Grassland, N.M.	Yearly average	Cattle	33	Rosiere et al. 1975
Desert Grassland, N.M.	Yearly average	Cattle	30	Herbel and Nelson 1966
Desert Grassland, N.M.	Yearly average	Cattle	35	Gonzalez-Rodriguez et al. 1977

probably the presence of forbs which minimizes the importance of supplemental feeding of range livestock. In times of extremely high costs of supplemental feed, forbs may be quite valuable on rangelands.

Discussion

Grasses no doubt will remain the mainstay of the range livestock industry. However, the importance of forbs to the grazing animal needs to be recognized. They are generally more easily digestible and more nutritious than grasses, but also possess many weaknesses. For example, many forbs are not readily available for consumption during dormant seasons. Often, they are subject to physical losses following frost or senescence. They are probably not as reliable as grasses for herbage production. Many forbs are unpalatable and pose weed problems. Often they are toxic to grazing animals if too much is consumed. This is particularly a problem on Southwest ranges, where forbs are often the only green plants in some seasons.

Management systems to favor forbs or at least take advantage of them or to avoid them are difficult to implement. However, livestock operators and range people need to be aware of the contribution of forbs. More consideration should be given to them in calculating stocking rates and evaluating treatment effects.

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