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On the Ground

- The use of easily accessible information to forecast when standing forage may lack nutrients to sustain cattle production could be valuable to the ranching community.
- Our study was designed to determine if forage crude protein and acid detergent fiber could be reasonably predicted using precipitation, season, and temperature.
- In south Texas, monthly precipitation in the fall accounted for 63% of the variation in crude protein and 73% of the variation in acid detergent fiber.
- A better understanding of how forage nutritive value changes over the year can improve strategic supplementation efforts.

Keywords: forage quality, nutritive value, strategic supplementation, seasonal precipitation.

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Developing management practices to better utilize forage resources can improve cattle performance and efficiency. Cattle operations that utilize rangelands depend on rainfall distribution, forage quality, stocking rates, and various other management practices. In the cow/calf phase of the cattle industry, forages supply the majority of the crude protein (CP) and energy to meet cattle nutrient requirements. Forages in south Texas have been reported to be deficient in digestible energy and CP for lactating cows and marginal for dry cows at certain times of the year.[1] A challenge for grazing cattle operations is maintaining a nutritionally adequate forage base throughout the entire year.[2] The ability to use easily accessible information to predict when standing forage may lack the nutrients to sustain cattle production could be valuable to the ranching community.

The Situation

It is important to understand how range forage nutritive value and cattle nutrient requirements change over time. Allen and Segarra[3] defined forage quality as the degree to which a forage meets the nutritional requirements of a specific kind and class of animal. If forage quality alone is not able to meet cattle nutrient demands, then supplementation can be provided to bridge the gap and achieve desired performance objectives of the ranching operation. Figure 1 provides an example of the nutritional gap that can occur between forage and a spring or fall calving cow herd in south Texas. At certain times of the year, CP intake requirements of these cows are not met by the forage alone; consequently, cattle production will be reduced unless supplemental CP is provided.

With the cost of supplemental feeds increasing, especially during times of drought, it is important to know when to begin supplementing to maintain management objectives. A better understanding of range forage nutritive value can improve strategic supplementation outcomes. Forage testing costs money and takes time, but the expenses may be necessary in order to make better management decisions.[4] If simple weather parameters can be used to predict the nutritive value of forage, ranchers could save time and money when determining if supplementation is needed. Other authors have found that current seasonal rainfall can be useful in predicting forage yield and subsequently used to make stocking rate decisions[5,6]; however, there is limited information that correlates historical weather patterns to forage quality. Consequently, the objective of our study is to determine if the forage nutritive value parameters of CP and acid detergent fiber (ADF) can be reasonably predicted by precipitation, season, and temperature in south Texas.

Study Site Description

We conducted our study on a ranch near Kingsville, Texas between 2006 and 2011. The climate in the region is mild, with short winters and warm temperatures throughout the year. Average annual rainfall is 74 cm. Rainfall patterns are historically bimodal, with the highest probability of rainfall during May/June and September; January and February have

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