

FORAGE QUALITY BASICS AND BEEF CATTLE REQUIREMENTS

Neutral detergent fiber – cell wall components that can be removed with a neutral detergent solution.

- Related to animal intake: As neutral detergent fiber increases, animal intake decreases.
- Range of neutral detergent fiber in Bermuda grass: 58 percent (vegetative) to 65 percent (mature).
- Range of neutral detergent fiber in ryegrass: 47 percent (vegetative) to 60 percent (mature).

Acid detergent fiber – hemicellulose is removed with an acid detergent solution, and what is left is cellulose and lignin.

- Correlated with digestibility: As acid detergent fiber increases, digestibility decreases.
- Range of acid detergent fiber in Bermuda grass: 29 percent (vegetative) to 40 percent (mature).
- Range of acid detergent fiber in ryegrass: 23 percent (vegetative) to 32 percent (mature).

■ **Low neutral detergent fiber equals high intake.**

■ **Low acid detergent fiber equals high digestibility.**

Total digestible nutrients – calculated measurement using the acid detergent fiber value of forage; it estimates the portion of the forage that can be digested by cattle.

- As total digestible nutrients increase, forage quality increases.
- Total digestible nutrients (percentage of ration) requirements for pregnant cows: 49 percent (early gestation) to 64 percent (late gestation).
- Total digestible nutrients (percentage of ration) requirements for lactating cows: 55 percent (late lactation) to 68 percent (early lactation).
- Total digestible nutrients (percentage of ration) requirements for replacement females: 50 percent (before breeding) to 62 percent (gestation).

Crude protein – calculated from the nitrogen content of the forage.

- The crude protein value is important since protein contributes energy and provides essential amino acids for rumen microbes as well as the animal itself.
- The more protein that comes from forage, the less supplement is needed.
- Energy value and intake of forages are more important than crude protein, however.
- Crude protein (percentage of ration) requirements for pregnant cows: 7 percent (early gestation) to 9 percent (late gestation).
- Crude protein (percentage of ration) requirements for lactating cows: 9.5 percent (late lactation) to 12.5 percent (early lactation).
- Crude protein (percentage of ration) requirements for replacement females: 7.2 percent (before breeding) to 10.3 percent (gestation).



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