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# What do they need?: Matching cattle requirements to available feeds

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The goal for most stocker producers typically involves adding value to cattle through additional weight gain. To get to that end goal, those calves must receive a certain amount of nutrients. In Mississippi, cattle producers are fortunate to have a generally abundant forage supply to meet some are all of those nutrient needs, and when forage alone does not meet the levels required to reach desired end goals, a wide variety of supplements are available to support additional gain.

Beef cattle require nutrients to support body maintenance, reproduction, lactation, and growth. The nutritional needs of beef cattle vary by age, class, stage of production, performance level, and weight. Physiological and environmental stressors, such as sickness and weather, can also impact nutritional requirements. Beef cattle need water, protein, carbohydrates, fats, minerals, and vitamins. Of these nutrients, they require water in the greatest amounts daily. The second greatest need is energy, which is supplied by carbohydrates, fats, and protein. Protein is essential in beef cattle diets, and is typically the most expensive nutrient to supplement. Of the nutrients listed above, beef cattle need minerals and vitamins in the smallest quantities, but they are essential to health and productivity.

One of the first steps in determining nutrients needed to be supplemented, is first to determine how much forage an animal can be estimated to consume. While specific requirements for forage or feed intake do not exist, estimates of how much forage or feed animals will consume is needed for diet formulation and prediction of animal performance. Daily dry matter intake of forage and feed is the amount of forage and feed (excluding the moisture content) consumed in a day. Cattle require certain amounts (typically reported in lbs) of certain nutrients every day, such as protein, calcium, and vitamin A. To meet specific nutrient requirements, the percentage of nutrients in the diet for cattle is based on the quantities of forages and feeds consumed daily. Many factors affect dry matter intake, including animal weight, condition, stage of production, milk production level, environmental conditions, forage quality, and amount and type of forage or feed offered. Forage intake capacity is affected by stage of production and forage type and maturity. Forage availability is the most important factor affecting forage intake on pasture. Insufficient available forage restricts intake. A general rule of thumb is that cattle will consume approximately 2.5% of their body weight on a dry matter basis per day.

Extreme temperatures and weather can impact feed intake. The thermal neutral zone is the effective temperature range within which performance rate and efficiency are maximized. As temperatures rise above the animal's thermal neutral zone upper critical temperature (such as in the heat of the summer), the point at which heat stress begins, dry matter intake falls. As temperatures drop below the animal's thermal neutral zone lower critical temperature (such as in the dead of winter), the point at which cold stress begins, dry matter intake increases. The

effects of temperature on feed intake depend upon the animal's thermal susceptibility, acclimation to the conditions, and diet. Mud, precipitation, humidity, and wind heighten temperature effects on feed intake. The duration of these adverse conditions and the photoperiod, or length of daylight, may also influence feed intake. It is important to consider the effects that temperature will have on intake when determining an animal's needs.

Complete tables and a more thorough discussion of beef cattle nutrient requirements can be found at http://msucares.com/pubs/publications/p2528.pdf. Data provided in the nutrient requirement tables can assist producers in determining specific beef cattle nutrient requirements. The values listed in the tables serve as a general guide for matching forage and feeding programs to cattle nutrient needs. Actual nutrient requirements vary depending on many animal and environmental factors. Monitor growth rates of growing cattle to make adjustments to cattle diets to achieve desired performance results. Tabular values are intended for healthy, unstressed cattle in good body condition. Thin cattle need additional nutrients to improve body condition. Cattle under stresses, such as weather extremes or physical exertion, also require extra energy for maintenance.

Forage testing provides producers of the knowledge of the nutrients and helps to eliminate guesswork when it comes to supplementation decisions. This aids producers in matching forage quality to animal requirements, and aids in designing a supplemental feeding program. With a wide variety of forages used for hay production in Mississippi, comes a wide range of forage nutrient quality. More information on forage testing can be found at: http://msucares.com/livestock/beef/mshay.html

While determining, the nutrient requirements for a group of cattle may seem like a daunting task, it can be broken down fairly easily. Having knowledge of both cattle needs, and the nutrients available from the forage gives stocker producers the opportunity to be more efficient and more accurately target their end goals.

For more information about beef cattle production, contact an office of the Mississippi State University Extension Service, and visit msucares.com/livestock/beef.

References: