

Efficient Management of Supplements to Improve Gain

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Supplementing feeder calves can often seem like a daunting task. However, supplementation is often necessary, particularly in summer months when forage quality may be lacking, to achieve desired gains. There are a few simple rules of thumb that can aid in the decision making process. First it is important to consider the needs of your animals, secondly it is important to know the nutrients already available to the animals in the form of hay or available grass and lastly comparing these needs to what animals are receiving from forage to determine what nutrients are still needed to meet desired gains is a good plan to tackle supplement management.

Supplementing to meet the requirements of your calves is a concept often overlooked, and may cause added feed expense. In growing cattle, requirements are highly influenced by weight, gain, frame size, and sex. As expected, as cattle grow larger and faster their requirements will increase, and it is a good practice to supplement based on the average weight of growing cattle over a feeding period rather than targeted final weights. Table 1 gives estimated energy and protein requirements for growing steers and heifers at several levels of body weight and anticipated gain. It is important to remember that cattle have ultimate requirements for pounds of energy and protein, and the amount fed may be decreased if a higher percentage protein or energy is available in the supplement. A more thorough discussion of estimating requirements of beef cattle can be found at <http://msucare.com/pubs/publications/p2528.pdf>.

Table 1. Growing Steer and Heifer Nutrient Requirements: 1,200 lb at Finishing¹

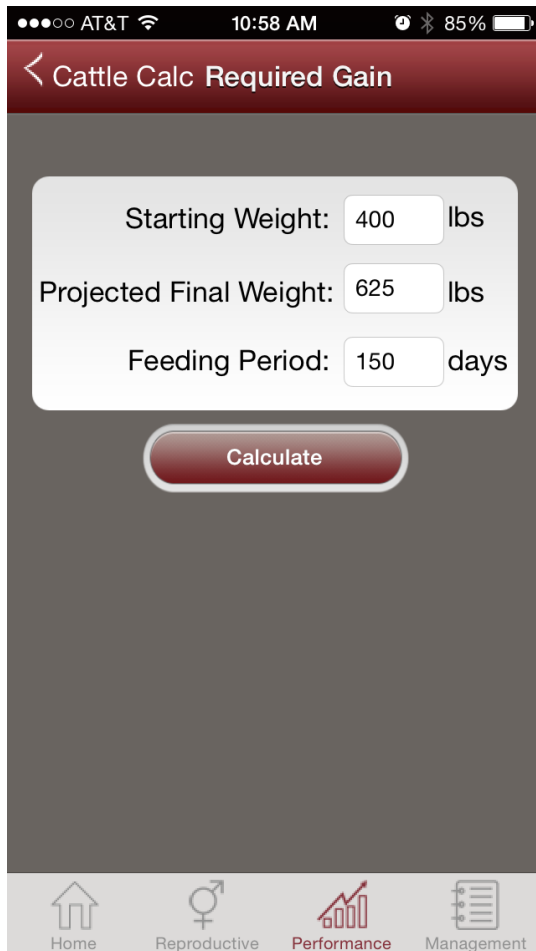
Body weight, lb	ADG, lb	Dry matter intake, lb/day	Diet Nutrient Density		Daily Nutrients / Animal	
			TDN, % dry matter	CP, % dry matter	TDN, lb	CP, lb
300	0.5	7.8	54	9.4	4.2	0.73
	1.0	8.3	58	11.5	4.8	0.95
	1.5	8.6	63	13.7	5.4	1.17
	2.0	8.6	68	16.2	5.8	1.40
	2.5	8.6	73	18.7	6.3	1.61
	3.0	8.3	80	22.0	6.6	1.83
400	0.5	9.7	54	8.8	5.2	0.85
	1.0	10.3	58	10.4	6.0	1.07
	1.5	10.6	63	12.2	6.7	1.30
	2.0	10.7	68	14.1	7.3	1.51
	2.5	10.7	73	16.1	7.8	1.72

	3.0	10.4	80	18.7	8.3	1.94
500	0.5	11.5	54	8.4	6.2	0.97
	1.0	12.2	58	9.8	7.1	1.19
	1.5	12.6	63	11.2	7.9	1.41
	2.0	12.6	68	12.9	8.6	1.63
	2.5	12.6	73	14.6	9.2	1.84
	3.0	12.2	80	16.8	9.8	2.05
600	0.5	13.2	54	8.2	7.1	1.08
	1.0	14.0	58	9.3	8.1	1.31
	1.5	14.4	63	10.6	9.1	1.52
	2.0	14.4	68	12.1	9.8	1.74
	2.5	14.4	73	13.5	10.5	1.95
	3.0	14.0	80	15.4	11.2	2.16
700	0.5	14.8	54	8.0	8.0	1.18
	1.0	15.7	58	9.0	9.1	1.42
	1.5	16.2	63	10.1	10.2	1.64
	2.0	16.3	68	11.3	11.1	1.85
	2.5	16.2	73	12.7	11.8	2.05
	3.0	15.8	80	14.4	12.6	2.27

Often when the time comes to make supplementation decisions, many producers neglect to consider the hay or forage cattle are consuming. 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 hay nutrient quality.

In 1992, a Memorandum of Understanding was signed by the Mississippi Agricultural and Forestry Experiment Station and the LSU AgCenter allowing Mississippi producers to submit feed and forage samples to the LSU AgCenter Forage Quality Laboratory for a minimal fee. A basic analysis includes dry matter (DM), crude protein (CP), acid detergent fiber (ADF), neutral detergent fiber (NDF), and total digestible nutrients (TDN), and for a small extra fee a basic mineral analysis can also be included. This knowledge provides a producer with the tools needed to more accurately match forage and supplement to an animal's needs. More information on forage testing can be found at: <http://msucares.com/livestock/beef/mshay.html>

To determine if supplementation is needed, target weights must first be determined. Often most producers know a beginning weight for calves based on purchase price, but a target end weight may be more subjective. Regardless, it is a good idea to have an end goal weight in mind for each set of cattle depending on anticipated growth. The MSU-ES Cattle Calculator has the ability to assist producers in calculating gain required to reach these end weights using the Required Gain Calculator as shown in the picture below.



These required gains will impact animal requirements which can be determined from Table 1. Step 2 involves determining forage quality which is also described above; more information can also be found in the “Hay Testing an Understanding Forage Quality” publication <http://msucares.com/pubs/publications/p2539.pdf>. Step 3 involves the comparison of forage intake to animal requirements to determine if there is a deficit where supplementation may be beneficial. The final step is comparison of a desired supplement to the deficit to determine how much supplement should be fed.

For example, we have 400 lb steer calves on summer pasture (8% crude protein, 58% TDN) with a desired ADG of 1.5 lb/day to reach a target weight of 625 lbs. in 150 days. Table 1 tells us these calves need 6.7 lbs of TDN and 1.3 lbs of protein per day. On average we expect these calves to eat 2.5% of their body weight in forage per day. These calves should eat 10 lbs per day of summer pasture.

From the pasture they will receive:

$10 \text{ lbs hay} \times .08 \text{ protein} = 0.8 \text{ lbs protein from forage}$
 $10 \text{ lbs of hay} \times .58 \text{ TDN} = 5.8 \text{ lbs of TDN from forage}$

If we compare this back to their requirements, we see:

1.3 lbs protein required – 0.8 lbs protein from forage = 0.5 lbs protein still needed
6.7 lbs TDN required – 5.8 lbs TDN from forage = 2.1 lbs TDN still needed

This tells us that these calves will not reach the target weight on pasture alone. To reach the target weight we must provide more energy and protein. If we have access to a feed that contains 14% protein and 70% TDN, we can match that feed to what the animals still need as shown below.

0.5 lbs protein needed ÷ .14 protein in feed = 3.5 lbs of supplement to meet protein needs
2.1 lbs TDN needed ÷ .70 TDN in feed = 3.8 lbs of supplement to meet TDN needs

For these calves to reach target gains we need to feed only 4 lbs of supplement per animal per day.

Efficient feeding of supplements may seem like a daunting task, although it requires only having a goal in mind and knowledge of what animals are eating. By following these simple steps, and becoming armed with the knowledge of a goal in mind, gains can be improved and cattle are more likely to reach desired goals.

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