

Replacement heifers: Nutritional perspectives

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Once the commitment has been made to purchase or retain a heifer to be a replacement in the herd, it is important to give her the best chance at having a long and productive life in the herd. Early development and her early reproductive performance are among the best indicators of how she will perform later in life. The ultimate goal for that heifer is to wean a calf every 365 days that weighs approximately $\frac{1}{2}$ of her body weight, and that heifer is expected to wean her first calf, while still growing herself, and rebreed in time to join the rest of the herd for her second calf. This can be a daunting task, and it is very important that we provide that heifer with proper nutrition to meet these goals.

When determining the nutritional needs for developing a replacement heifer, it is best to divide the program into 4 stages. The first stage consists of a growth period from weaning to breeding (approximately 240 days), stage 2 consists of the breeding season (approximately 60 days), the third stage consists of the gestation period (from breeding to calving, and the fourth stage consists of the time from calving to rebreeding. It is generally recommended to breed heifers to calve 30 days before the rest of the cowherd, and the development plan should be determined accordingly.

In discussing an example for nutritional needs for developing replacement heifers, it is best to refer to this standard scenario. For a heifer with an expected mature weight of 1,100 lbs, she needs to reach 67% of her mature weight at breeding, and 80% of her mature weight at calving. For this particular heifer we need her to reach target weights of 737 lbs at breeding time, and 935 lbs at calving. If heifers are weaned at 6 months of age at 450 lbs, she then has 240 days to reach her breeding weight, and would need to gain 1.2 lbs per day.

During the growth phase of heifer development, that heifer requires 1.3 lb of crude protein per day, and 15.6 Mcal of energy per day. If in our example heifers are weaned in the fall (spring calving herd), the forage available would typically be mature or processed winter forage. If we sent our hay to be tested, and discovered it was 8% crude protein and had 0.9 Mcal of energy. If she eats 2.2% of her body weight on average of forage, she would eat 11.1 lbs of that hay per day, and it would provide her with 0.88 lbs of protein, and 10.0 Mcal of energy. If we compare that back to her requirements, we can see that the forage alone did not provide enough energy or protein to meet her needs to grow at 1.2 lbs per day, so we would need to provide her with a supplement.

The same calculations can be performed at each stage of development for these heifers. It is important to remember not to forget one of the most important of these phases, the time from calving to breeding. It is often a neglected time in that first calf heifer's development, but it is important to remember, not only is that young cow in her peak lactation and preparing to breed back for a second calf, but she is also still growing. At this point, that cow has not yet reached her mature size.

Another good practice for the entire herd is the separation of females into management groups. It is important to remember that the nutritional needs of a female will vary greatly depending on her stage of production, and phase of life. If supplemental feed is provided to the entire herd as

one large group, some cows or heifers may be underfed, while some will be overfed, which leads to a not very efficient use of expensive feed resources. If the herd is able to be maintained in separate groups when supplemental feed is provided, it is easier to more closely meet the needs of each group.

A point to remember that cannot be emphasized enough is the importance of knowing the nutritional value of the forage available for the heifers. In the example above, supplement needs were determined based on the deficit left from the forage. If the forage was high quality, and provided more nutrients, supplementation of replacement heifers may not be necessary. However, the only way to know if a forage provides enough of a nutrient to meet a developing heifer's needs is through testing, as forage quality varies greatly.

Lastly, remember that the development phase for replacement heifers can lay the foundation for a productive cowherd, with females who will stay in the herd for a long period of time, and remain productive throughout their lifetime. Therefore, it is important to do your homework and determine what those heifers require during each phase of development, and closely match your forage resources to meet those needs.

For more information about beef cattle production, contact an office of the Mississippi State University Extension Service, and visit <http://msucare.com/livestock/beef/heifer.html> to learn more about the Miss Premium Heifer Development Program.