

# Importance of Nutrition for Dairy Heifers Pre-breeding



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Costs associated with raising dairy replacements account for 20 to 25% of total dairy production costs. Feed costs represent about half of the cost to raise replacement heifers thus, maximizing the use of dollars spent on heifer nutrition programs prior to calving is important. Proper feeding and management programs at this stage in life are vital in order for heifers to calve in between 22 to 24 months at the proper size. Calving early allows one to more quickly recoup the costs associated with rearing as they become income-generating versus income-utilizing assets at an earlier age. However, these heifers must grow well such that they are 55% of their mature body weight at breeding and weigh 85% of their mature weight at calving. Approximately 50% of increases in height should occur in the first 6 months of life, 25% in the next six months, and the remaining 25% in the last 12 months before calving. The best way to calve in on-time or even early and allow heifers to milk to their genetic potential is proper nutrition starting at birth and continuing throughout the first two years of life.



## Colostrum intake

Starting directly after birth, feeding adequate amounts of high-quality colostrum is important. Quality colostrum is obtained from a properly prepped dam in a clean milk bucket and contains a high amount of immunoglobulins (IgG) to support the calf acquiring passive immunity. Testing colostrum for IgG's can be completed on farm using a Colostrometer or Brix Refractometer. If quality colostrum is not available, a commercially-available colostrum replacer can be substituted or a colostrum supplement added to farm-produced, lower quality colostrum. Colostrum should be fed within the first 3 to 4 hours after calving as absorption of IgG's decreases rapidly after birth. By 24 hours after birth, the chance of passive immunity being transferred to a calf is slim to none, which can result in increased medical expenses, sub-par performance throughout her life, or even death of the calf. The amount of colostrum at first feeding for Holsteins is 4 quarts followed by a second feeding of 2 quarts 12 hours after calving. The intake of quality colostrum is vital after birth for calf health, development, and future milk production.

## Intensive Liquid Feeding Program

Following birth, the goal before weaning should be to double a calf's body weight. Following an intensive calf liquid feeding program (higher protein (26-28%) milk replacer powder with an increased milk intake and number of feedings) is found to more closely match a suckling calf's intake and composition of a cow's milk. This method, although higher in cost, increases energy and protein intakes which correlate with faster growth, as well as higher milk production after calving. Introducing water and solid feed, specifically calf starter high in starch and sugar, by day 3 of life is important in rumen development. Easily fermentable feeds promote papillae growth and overall rumen development. Forage intake is not recommended until after weaning. On an intensive liquid feeding program, a 2-week period should be used to wean calves from milk around 8 weeks of age. Starter intake should increase rapidly as milk intake decreases.

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### **Post Weaning**

From 3 to 9 months of age, providing adequate protein in the diet is key while avoiding excess energy. Improperly formulated diets can result in sub-optimum skeletal growth. Within the first 6 months of life, over 50% of the skeletal growth occurs and another 25% within the following 6 months. These pre-breeding diets should be formulated with proper protein and energy for lean growth resulting in a daily weight gain between 1.7 to 2 lbs/day for Holsteins and other large breeds.

### **Pre-Breeding to Breeding Age**

From 9 to 12 months of age the major focus should be on achieving proper heifer size. When preparing for breeding ensure heifers are 55% of their mature body weight. Holsteins should be between 700 to 800 lbs and at a body condition score between 2.5 and 3. These standards are important for proper continued growth after breeding. Pre-screening animals prior to breeding will help keep animals on track for a timely service. If heifers are too small, start with increasing feed and change feeds themselves such that average daily gain increases to 2 lbs/day. Review the entire heifer feeding program to detect bottlenecks. Average daily gain is one of the most important factors when aiming for a calving age between 22 to 24 months. Avoid excess fattening which can cause complications when trying to get heifers to conceive. If size is an issue, letting heifers grow first versus breeding early is best or they will not achieve their full growth potential and have lower milk production as a result.

### **Final Tips**

Ensuring feed changes are made gradually especially around weaning and when starting to feed forages are beneficial for optimum rumen adaptation and proper absorption of nutrients. Measure height and weight of calves and heifers often, especially after weaning, pre-breeding, and calving time periods. Consulting a nutritionist and feeding balanced rations based on forage analyses which meet your individual pre-breeding goals can be helpful. Remember there is no perfect nutrition program that fits all operations and finding a program that fits your budget and goals is key.