



Dairy Briefs

The Latest Information on Dairy Cattle Nutrition



Measuring Up Laura Martin, M.Sc

Heifers are the future of any dairy operation. The goal of heifer nutrition and management is to turn these animals into contributing members of the milking herd. The key is to make sure, after all the hard work and money that goes into raising a heifer, she is able to perform to her genetic potential. Cutting back on heifer nutrition and management can end up costing more than was saved.

Every heifer that is born does not need to be raised for the milking herd. Developing selection criteria for keeping replacement heifers can save a lot of trouble and money. Culling animals early on that have poor growth or health issues can help reduce overcrowding in heifer pens and reduce feed costs. Setting up criteria at breeding can also be helpful. Heifers that are problem breeders should be culled from the herd.

Feeding spoiled forages, or leftover milk cow ration to heifers is a common miscalculation of dairy farms. Spoiled forages aren't good for any animal. While feeding leftover milk cow TMR to heifers is convenient the nutritional profile of the feed is a poor match to heifer requirements. Also the amount and quality of the leftovers are highly variable from day to day. Mixing the milk cow ration to reduce leftovers will save money and improve heifer management.

While mixing a separate TMR for the heifers can be time consuming, meeting the nutritional needs of the heifers will optimize growth and performance. Ensuring a diet balanced with the correct trace minerals and vitamins will keep the heifers growth on track and help prevent problems with breeding. Using ionophores in heifer rations can increase feed efficiency and help control coccidiosis. These additives often more than pay for themselves. While protein is an expensive part of the diet, it is an extremely important component of a heifer ration. Dietary protein is what helps "put frame" on a heifer, rather than fat. Underfeeding protein often results in under-sized heifers that aren't ready to breed at 13-15 months. These heifers then require more feed to get them into the milking herd and in the end probably cost more than feeding the correct level of protein to begin with.

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Measuring Up

By: Laura Martin, M. Sc, Nutritionist



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Heifers need to be just the right size. Heifers that are too small will either not get bred as they haven't gone through puberty, or they will be too small at calving. Not getting bred will reduce their lifetime productivity as it will take them longer to reach the milking herd. Heifers that are too small at calving are at risk for poorly developed mammary glands and, of course, are more likely to have problems with calving. Heifers that are too fat before breeding will have problems getting bred and the development of their mammary glands may be stunted.

Most industry people can't tell by sight alone if a heifer's growth is on track. The best way to tell how heifers are doing is to measure them several times a year. Now that may seem like a lot of work, but even measuring them once or twice a year can help producers in setting goals or making changes to the heifer program. Penn State has some very clear targets for heifer growth and development. Table 1 lays out expected weight and height ranges for Holstein heifers until calving. Penn State also has recommendations for the other major dairy breeds and these are available on the Penn State website along with downloadable computer programs that

can help producers manage their heifers better. Table 2 has expected weights and heights for different dairy breeds at breeding.

To measure heifer body weight a scale is not required. A weight tape measuring the heart girth is accurate to within 5-7% of actual body weight. To get a good measurement you want to hold the heifer with her head upright and pull the tape tight just behind her front legs and shoulder blades. Ensuring that this area isn't caked in mud and manure will help increase the accuracy of the measurement. Replacing old weight tapes that have the marks worn off would be a great idea if improving heifer management is the goal.

Measuring heifer height is most often done at the withers. Ensure the heifer is standing on a clean, level surface and that she is standing with her weight equally balanced on all her feet. Using a heifer measuring stick, basically an extra long meter stick with an arm that slides down to rest on the withers is an easy way to measure heifer height. Lower the sliding arm until it rests on the highest point of the withers; record the height using the number indicated on the bottom-side of the arm on the measuring stick. Most heifer measuring sticks have a level built in; make sure that the measuring stick is level when recording the height. Height can also be



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measured at the hip, however most growth charts refer to wither height. Heifer length can also be measured as an indicator of growth. It's a lot like measuring a TV screen, where the measurement is taken from corner, top of the hip, to corner, bottom of the front shoulder.

The tendency of heifers to be forgiving and become contributing members of the milking herd despite low management is one of the reasons this group gets forgotten about in the hustle and bustle of farm life. Improving heifer management, and targeting the proper heights and weights at breeding and calving can save a lot of headaches and money. Taking the time to track heifers ensures that when a heifer joins the milking herd she can meet her genetic potential and start paying back all the money that has gone into her.

Table 1: Penn State Recommended Holstein Growth Targets

Age (Months)	Body Weight (lbs)	Wither Height (in)
2	178-209	33.5-35.2
4	272-319	36.9-38.8
6	368-430	39.8-42.0
8	466-541	42.3-44.5
10	563-652	44.5-46.7
12	659-761	46.3-48.5
14	752-866	47.8-50.0
16	812-966	49.1-51.2
18	926-1061	50.2-52.1
20	1005-1148	51.0-53.0
22	1075-1227	51.7-53.7
24	1137-1296	52.2-54.3

Source: Penn State Monitoring Dairy Heifer Growth

Height Measurement:



Ensure the heifer is standing on a clean, level surface and that she is standing with her weight equally balanced on all her feet. Place the heifer measuring stick in line with the front leg, making sure the bottom of the stick is on the ground.



Lower the sliding arm until it rests on the highest point of the withers; record the height using the number indicated on the bottom-side of the arm on the measuring stick.

Heart Girth Weight Measurement:



Hold the heifer with her head upright and pull the tape tight just behind her front legs and shoulder blades. Ensuring that this area isn't caked in mud and manure will help increase the accuracy of the measurement.

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Table 2: Targets for Breeding-Age Heifers (13-15 Months)

Breed	Body Weight (lbs)	Wither Height (in)	Hip Height (in)
Jersey	525-575	43-45	45-47
Ayrshire	700-750	46-48	48-50
Guernsey	700-750	46-49	48-51
Milking Shorthorn	750-800	46-48	48-50
Holstein	750-800	48-50	50-52
Brown Swiss	750-800	48-51	50-53

Source: Penn State Monitoring Dairy Heifer Growth

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