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Lowering The Cost Of Replacement Dairy Heifers

There has been more emphasis placed on rearing replacement females in the dairy industry in recent years. This has led to an increase in the number of professional heifer growers all over the United States, and more mega dairies are starting their own heifer replacement programs. The goals of the heifer-feeding programs are to reach 1,250 pounds postcalving body weights by 23 to 24 months of age, increase feed efficiency, and lower the feed costs while allowing the heifer to express her maximum genetic potential without lowering first lactation milk production.

Feed cost is the largest expense in the raising of dairy heifers; therefore, feeding lower cost ingredients such as byproducts that do not sacrifice production will increase net income. A balanced ration is a must to be sure that all the needs of the heifer are being met without overfeeding or wasting nutrients.

The rearing of dairy heifers can be broken into three stages in the heifer's life. They are from birth to 75 days, from 75 days to breeding weight (approximately 800-850 pounds for Holstein heifers and approximately 60% of the mature weight for other breeds), and from conception to freshening. This discussion will be limited to the feeding period between 75 days of age and the age of the Holstein heifer at her breeding weight.

During this time in the heifer's growth, the average daily gain (ADG) must be approximately 1.9 pounds for the heifer to freshen at 23 to 24 months and weigh her target of 1,250 pounds postcalving. Excessive weight gains of more than 1.9 pounds ADG will result in fat being deposited in the udder. This will potentially reduce the amount of milk produced in the first lactation and will increase the potential for calving difficulty and metabolic disorders. Heifers with an ADG less than 1.7 pounds will most likely not reach the 1,250 pound target freshening weight by 24 months of age. It will cost the producer a minimum of $60 in additional feed cost and lost milk production for each month of delayed freshening over the age of 24 months.

Excess energy in relation to protein has the greatest impact on the heifer's body condition. A heifer doesn't have to have an ADG over 1.9 pounds before excessive fat deposition happens in the mammary system. If the heifer is fed a level of energy for an ADG of 1.7 pounds but only receives a level of protein in the small intestine for an ADG of 1.5 pounds, fat deposition in the udder will probably occur. Also, the animal will develop a compact, overconditioned body stature that is irreversible, and she will not be able to express her full genetic potential in body scale and milk producing ability.

Monitoring growth is very important in developing a feeding program for replacement heifers. Body weight, wither height, hip height, body length, and body condition score should be monitored and recorded at least every quarter and preferably every 45 days so ration changes can be made for the heifer to grow to her maximum potential without wasting feed or becoming overconditioned (Table 1).

South Dakota State University researchers have shown that dried distillers grains (DDG) are a good source of protein and highly palatable when incorporated in growing heifer rations. Blending some porcine blood meal with the DDG can help the amino acid balance in the small intestine of the animal and has shown improved feed efficiency when feeding rations containing net

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energy for gain of 0.47 to 0.49. The 300 to 400 pound heifer will benefit the most from rumen undegradable protein (RUP) as their requirements are the greatest for RUP. The requirement decreases as the heifer grows becomes closer to breeding weight.

Monensin (Rumensin®) fed at the rate of 45 mg per 100 pounds of body weight up to a maximum of 200 mg per head per day will increase feed efficiency and help control coccidiosis. The response seems to be the best when it is force fed as compared to free choice feeding.

Pasture can be a good, low cost source of feed for the growing heifer. The quality of the pasture needs to be monitored so supplementation can be adjusted to account for the shortages of nutrients in the pasture. A big problem with pasture is some types of grasses can change in quality in a short period of time. Intensive grazing will produce the highest quality of pasture and the most nutrients per acre of land. It gives the grass plenty of rest and allows the animal to be grazing a high quality forage, thus lowering the supplementation cost.

There are a number of management steps a producer must take to lower the cost of raising replacement dairy heifers. Having a good nutritionist to formulate a balanced ration and using byproducts can help lower the ingredient cost of the ration. Maintaining a good vaccination program and monitoring the growth of the animal are also very important. It is important to maintain an ADG between 1.8 to 1.9 pounds so the target postfreshening body weight of 1,250 pounds can be reached by or before the age of 24 months.

TABLE 1. Recommendations For Growth Characteristics Of Large-Sized Holstein Heifers

Age	Body Weight (lbs)	Wither Height (inches)	Hip Height (calculated)	Body Length (inches)	Condition Score
0	93	30.0	31.6	32	2.0
1	139	32.0	33.7	34	2.1
2	185	34.0	35.8	37	2.1
3	242	36.5	38.4	39	2.2
4	298	39.0	41.1	41	2.3
5	355	40.0	42.1	43	2.3
6	410	41.5	43.7	46	2.4
7	467	43.0	45.3	48	2.4
8	522	44.0	46.3	50	2.5
9	580	45.0	47.4	52	2.6
10	635	46.0	48.4	53	2.6
11	692	46.5	49.0	55	2.7
12	747	47.0	49.5	56	2.8
13	804	48.0	50.6	58	2.8
14	860	49.0	51.6	59	2.9
15	917	50.0	52.7	61	2.9
16	972	50.5	53.2	62	3.0
17	1,029	51.0	53.7	63	3.1
18	1,084	52.0	54.8	64	3.1
19	1,142	52.5	55.3	65	3.2
20	1,197	53.0	55.8	65	3.3
21	1,254	54.0	56.9	66	3.3
22	1,309	54.5	57.4	67	3.4
23	1,366	55.0	57.9	67	3.4
24	1,422	56.0	59.0	68	3.5

Source: P.C. Hoffman, 1997.