

Calving Ease

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Hay: Limited or Free-Choice?

How does our choice of hay feeding method affect the gains of weaned dairy calves? The authors of a recently reported study (Hill, et al., "Roughage for Diets Fed to Weaned Dairy Calves") claim that our decisions about hay feeding have a substantial effect.

The First Trial

This research used Holstein calves with initial weaned weights of around 175 pounds (79kg). Their first four-week long trial with 96 calves looked like this (four rations):

Ration #1: Free-choice grain/hay blend at 13.5% c.p. (hay = 4.5%). Grass hay was coarsely chopped mixed thoroughly with the grain.

Ration #2: Free-choice grain/hay blend at 16.5% c.p. (hay = 4.5%). Grass hay was coarsely chopped mixed thoroughly with the grain.

Ration #3: Five pounds grain daily at 13.5% c.p. with free-choice grass hay.

Ration #4: Five pounds grain daily at 16.5% c.p. with free-choice grass hay.

What was the outcome? The rations are listed in descending order of rate of gain:

Ration #2: 2.0 pounds a day gain - Free-choice grain/hay blend, 16.5% protein

Ration #1: 1.7 pounds a day gain - Free-choice grain/hay blend, 13.5% protein

Ration #4: 1.4 pounds a day gain - Five pounds grain with free-choice hay, 16.5% protein

Ration #3: 1.2 pounds a day gain - Five pounds grain with free-choice hay, 13.5% protein

Compare rations 2 and 1 – 16.5 percent crude protein (c.p.) ration had higher gains than 13.5 percent c.p. Compare rations 4 and 3 – same finding. In both cases the calves with the 16.5 percent protein rations out gained those with the lower protein levels. As the authors point out the ratio of crude protein to metabolizable energy was too low; it was considerably less than the protein to energy ratio which optimizes average daily gain in 8 to 20 week old calves.

Now, compare the best ration, #2, with the ration I see most often on dairy farms, #3:

#2 Free-choice grain/hay blend, 16.5% = 2.0 pounds a day gain

#3 Five pounds grain with free-choice hay, 13.5% protein = 1.2 pounds a day gain

Difference? 67 percent more gain when we feed a free-choice high protein grain ration and LIMIT THE HAY.

Bottom Line: Free choice forage may do a good job of filling up young calves but it does not drive growth!

The Second Trial

Their second four-week long trial with 96 calves looked like this (four rations all with 16.5% protein):

Ration #1: Free-choice grain/hay blend at 5 percent chopped grass hay

Ration #2: Free-choice grain/hay blend at 15 percent chopped grass hay

Ration #3: Free choice grain/cotton seed hulls, 5 percent hulls

Ration #4: Free choice grain/cotton seed hulls, 15 percent hulls

Outcomes were measured in rate of gain and feed efficiency. No significant differences were found in efficiency of feed conversion. Both lower fiber rations resulted in higher rates of weight gain than those with higher fiber.

Nevertheless, the heifers on all four rations had acceptable average daily gains – low of 1.9 and high of 2.3 pounds.

What do we conclude about feeding weaned heifers?

1. A limited amount of forage works well. Remember that too much forage depresses dry matter intake in these animals with small rumen capacities.
2. Feed enough protein to take advantage of young heifers' ability to grow rapidly. Blend high-protein pellets with hay to get no less than 16.5 percent crude protein mix.
3. When feeding free-choice hay/grain mix, the range of 5 to 15 percent hay may be predicted to give satisfactory gains (1.9 – 2.3 pounds per day).

Reference: T.M. Hill, H.G. BatemanII, J.M. Aldrich, R.L. Schlotterbeck, "Roughage for Diets Fed to Weaned Dairy Calves." The Professional Animal Scientist 25 (2009):283-288

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