



Dairy Newsletter

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Proper Summer Feeding Rates of Milk Replacers

In previous winter research, calves fed 1.0, 1.25 or 1.5 lb of a 20% CP, 20% fat MR powder daily and weaned at 42 days had greater growth pre-weaning as more powder was fed. However, post-weaning growth was the opposite and by 12 weeks of age, calf body weight was greatest for calves fed 1.0 lb of powder. Previous research during cool weather with calves fed 1.0 lb of a 20% CP, 20% fat MR and weaned at 28 or 42 days has reported no differences in ADG by 56 days.

New summer research has revealed different results. When calves are fed more than 1.0 lb of a 20% CP, 20% fat MR powder daily during summer, they have greater pre-weaning growth and similar post-weaning growth, allowing the pre-weaning benefits of feeding more of the MR to be maintained. However, when 1.5 lb of MR was fed, calves weaned at 42 days tended to have greater ADG than calves weaned at 28 days.

The difference in ADG after weaning is the negative impact of heat stress on starter intake and maintenance requirements. Heat reduces starter intake pre- and post-weaning and likely delays rumen development while increasing respiration rates increases maintenance requirements. We need to be feeding 1.25 to 1.5 lb of MR powder during warm weather months. Feeding 1.5 lb of MR resulted in calves weighing 10 lb more at 8 weeks of age compared to calves fed 1.0 lb of MR. Please note that feeding 1.5 lb of a 20% CP, 20% fat MR will not support the weight gain of feeding 1.5 lb of Pinnacle MR which is 26% CP and 17% fat. At 8 weeks of age, research has shown that calves fed 1.5 lb of Pinnacle MR weigh 16+ lb more than calves fed 1.0 lb of a 20% CP, 20% fat MR.



Balancing for amino acids allows for more body weight gain at a lower concentration of CP in the milk replacer. This allows for more efficient use of the protein in the diet. It also lowers the cost of the milk replacer and lowers the cost per unit body weight gain. A key to maximizing the return to a milk replacer program is feeding the right amount of protein, amino acids, and energy together. Despite information from the 1970's in calves, our industry has not focused on nutrient ratios in milk replacers. This is an important concept for calf growth and production costs. If we over-feed energy, we fatten the calf and do not get efficient gains. If we over-feed protein, it is excreted in the urine. Both animal production and cost of production are impacted by the nutrient ratios of the diet. Our company has invested resources and research to address this area on nutrient balance in calf milk replacers. Additionally, we have validated this research through the expert (peer) review process and published in U.S. research journals used by the industry and academia. No other company or university has done this.

This concept of nutrient balance with amino acids is called AmNeo.

Lifetime impact of the first 2 months of life

Dr. Jud Heinrichs from Penn State University just completed the third in a series of expert reviewed journal articles reporting the impact of calf events in its first 2 months of life on lifetime productivity. Numerous calf events in the first 2 months of life including difficult births, colostrum consumption, total liquid and solid feed consumed, sickness,

and treating sickness all had measureable impacts on calf and heifer growth, body weights at calving, and milk production. A summary can be found at the following web address.

<http://www.das.psu.edu/research-extension/dairy/dairy-digest/articles/dd201102-04>

Stocking Density

Rising feed prices leaves little room for management missteps. One management factor that affects performance is stocking density. Some producers have added cows to boost income. Others have extra animals anticipating a herd expansion when the economy improves. Too much of a good thing can hurt. Video surveillance has shown cows have a time budget (Table 1).

Table 1. Time budget in hours for Lactating Cows

Activity	Median	Range
Milking	2.5	0.5 – 6.0
Feeding	4.3	1.1 – 8.1
In Alley inc Drinking	2.1	0.4 – 7.5
Standing in Stall	2.0	1.2 – 10.9
Lying	11.9	10.6 – 17.6

Source: Gomez & Cook JDS 93:5772 December, 2010

This time budget was obtained from 205 cows housed in 16 free stall barns in Wisconsin. Milking time is mainly determined by size of the holding area. If a cow spends more than 4 hours away from feed and water, then the cow compensates by spending less time eating and performance will decline. In one study, every hour lost in resting results in a loss of 3.7 lb of milk per cow per day. Stocking density was found to be a significant predictor of conception rate. For every 1% increase in density, conception rates decreased by 0.10%.

Research has shown that time lying and resting in the stalls affects milk production. Cud chewing and resulting saliva production buffering the rumen occurs while resting. More blood passes through the udder while resting. Cows need to spend 12+ hours lying in the stalls. Research has shown the overstocking (less than 1 stall per cow) reduces time lying and increases stall displacements and cows standing but not eating outside the stalls. Usually, overstocking also

reduces feed bunk space. Huzzey et al (JDS 89:126, 2006) compared cows with 2.5, 2.0, 1.33 and 0.7 feet bunk space per cow with either a post and rail or headlock barriers. Cows were displaced more often with less bunk space and this effect was more pronounced with post and rail barrier and for cows lower in the social hierarchy. Feeding time decreased and inactive standing increased for both barrier designs as stocking density increased.

Overstocking also affects transition cows and growing heifers. Keys et al (JDS 61:448, 1978) reported yearling Holstein heifers given feed bunk allotments of 0.65 to 2.6 feet resulted in lower average daily gain and total eating time with decreasing bunk space. Proudfoot et al (JDS 92:3116, 2009) found that restricting access to feed increases displacement at the bunk and alters feeding and standing behavior. In an earlier report (JDS 91:1115, 2008), these authors found that increased bunk competition promotes feeding behavior patterns that will likely increase the between-cow variation of the TMR consumed. Over-stocking in terms of stalls per cow and feed bunk space adversely affects behavior and lying time especially for close-up and fresh cows.

Table 2. Guidelines for Stocking Density

Group	Feed Bunk Space/Cow	Free Stalls/Cow
Close Up & Fresh	2.5 – 3.0 ft	1.25
High Group	2.0 ft	1.00
Mid to Late Lactation	1.5 ft	0.83
Yearling Heifers	20 inch	1.00

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