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If only calves would feed themselves...

Automatic calf feeders and free-access acidified milk offer alternative options to calf feeding

Conventional calf feeding programs can often leave calves hungry and thereby predispose calves to illness. This is most commonly illustrated during the cold winter months. Calves require more energy in colder weather to maintain their body temperature. If we do not increase their feed during the winter we begin to see calves losing weight and becoming sick as they are not consuming enough nutrients to provide for growth as well as to cope with the harsh environmental conditions.

In a conventional feeding program, calves are fed as an anonymous group. While an individual calf may receive her own bucket or bottle, she is not fed according to what she individually needs. Instead, she receives a predetermined volume that often falls short of what she really needs to reach her growth potential.

A recent study illustrated that the way we feed may be significantly limiting our calves. They found that a calf with unlimited access to milk would drink 8-10 liters of milk (20-25% of her body weight) a day, versus conventional feeding of 4-6 liters (8-15% of their body weight). The average meals per day for a calf with free access to milk are 7 per day with about 4 hour intervals between feedings, versus the typical 2 meals a day with a 10-14 hour interval. This corresponds to 48 minutes of nursing time versus 6-8 minutes. Under these conditions calves with free-access to milk gain nearly 0.5 lbs/day versus 0.1-0.2lbs/day.

So why do we feed calves this way? Our conventional calf feeding strategies have been designed around several common misconceptions.

We have all heard that "too much milk will give a calf scours." In a conventional feeding system, this statement may be true, however it is not with free access. When calves only eat 2-3 very large meals a day (slug feeding) they typically have very dramatic changes in the acidity (pH) of their stomach. This dramatic pH change is most likely the reason we see scours in calves "fed too much milk." In contrast, calves in nature (suckling off the dam) or calves with free access to milk will naturally consume multiple smaller meals but with a larger total volume. The free access calves rarely scour because the smaller, more frequent meals help maintain a more stable pH even though they are drinking larger total volumes.

Another misconception is the 10% of body weight rule. As mentioned above, calves will naturally consume 20-25% of their body weight in milk. The 10% rule was originally devised to stimulate grain consumption in calves. It was assumed that calves would make up the needed nutrients they were not receiving from the milk by eating more grain. Unfortunately, this does not actually occur. During the first two weeks of life, there is no difference in grain consumption between calves fed conventionally (10% of body weight) and those with free access to milk. So basically, conventional feeding programs do not provide for the nutritional needs of a newborn calf.

To solve this problem several free-access feeding systems have been developed. A successful free-

access system must provide unrestricted access to quality milk or milk replacer that is offered at an appropriate temperature for consumption by the calf.

One such system is the automatic or robotic calf feeder. Computer controlled automatic calf feeding systems consist of a self-contained unit that heats the water, dispenses a programmed amount of milk replacer, and mixes the milk replacer and water in a container from which the calf can suck it out via a nipple feeding station. These systems involve a financial investment of approximately \$20,000 for a two-nipple station and additional money for the computer and feeding/monitoring programs. However, these systems should cut down on the manual labor costs of feeding calves. Programs for the systems allow the ability to monitor milk intake of individual calves and will provide an alarm list for calves that fall outside set parameters. Additionally, the automatic feeders can monitor the number of visits, number of unrewarded and rewarded visits, as well as the rate of milk consumption. True payback on these calf-feeding systems depends on the number of animals to be fed per year as well as labor costs.

A wide variety of homemade feeders are also in use. The most basic system includes a milk reservoir such as a barrel with gravity fed teats. If milk is going to be stored in a container large enough to comply with the above-mentioned requirements, a preservative is required to prevent spoilage. The two most common preservation methods are acidification and souring with a specific bacterial culture. The milk must also be agitated several times a day to maintain a consistent product. Some precautions must also be taken to prevent freezing or over heating depending on the farm location.

This information is meant as to be an introduction to the free-access feeding concept. For more detailed discussion on feeding rates, acid-treatment rates, design specifics, grain feeding, and growth rate trial results (just to name a few topics) please visit: http://www.omafra.gov.on.ca/english/livestock/dairy/facts/mimick.htm.

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Still interested in learning more?

The Cornell Pro-dairy "Group-Housed Dairy Calf Systems" Symposium will take place on December 1, 2011 at the Doubletree Inn in East Syracuse, New York. The program is targeted to dairy producers and their advisors and structured for relevance to those experienced with these housing schemes, as well as those hungry to learn more about the concept and practices. Farm tours of current feeding systems are also being offered and will take place December 7-9. For full details on the symposium agenda and tour sites please visit their website: <u>www.ansci.cornell.edu/prodairy/calfsystems</u> or call our office if you are interested in registering.

