Accelerated Feeding Program: Concentrate Feeding

The topics covered in this description of my experiences with accelerated feeding are:

- Choice of calf concentrate
- Fluid intake and weaning
- Reducing milk to promote concentrate intake

CHOICE OF CALF CONCENTRATE

While rearing calves using an accelerated feeding program I tried feeding a pelleted calf starter concentrate rather than a textured feed with calves on an accelerated growth program. At very high milk replacer feeding levels it was a flop! For the calves eating nearly 1.4kg/day of milk replacer powder pelleted concentrate intake was nearly 0.0kg/day even at seven weeks of age.

For the same feeding program with textured concentrate, calves began eating substantial amounts at around four weeks of age. What do I conclude? We may force rationed calves (0.45kg of powder or less daily) to consume pelleted feed in order to survive. Our experience with calves fed milk replacer at 0.9 to 1.4kg/day levels clearly indicated better consumption with textured starter. But, remember, not all pelleted feed is the same so maybe you can find one that will work.

What makes the difference in rumen development is not the form of the starter fed but the amount of starter consumed. Thus, palatability seems to be the crucial factor for intensive feeding program calves.

FLUID INTAKE AND WEANING

All of us like to wean calves without any break in their liveweight gain. Also, we would like to limit the stress so that none of them get sick. So, how do we reduce the amount of milk fed in order to encourage greater consumption of concentrates?

One method of weaning high fluid intake calves is to reduce the dry matter content of the mix by one-half at weaning time while continuing to feed the same volume of fluid. For example, for calves receiving a total of 0.9kg of powder daily in AM and PM 3-litre feedings preweaning, we would continue two 3-litre feedings but reduce the total powder per day to only 0.45kg.

To evaluate this idea, I compared the average age at weaning for 2 groups of 50 calves (calves received no more milk replacer when over 35 days old and eating 0.9kg of concentrate for 3 days in a row).

For the first 35 days both groups were fed approximately 0.45kg of powder twice daily in 3 litres of mix. Starting at 35 days one group received only the morning milk replacer feeding (0.45kg of powder) and ad lib water along with concentrates. This was the one-time-a-day protocol.
The other group of 50 calves at 35 days continued to receive both AM and PM milk feedings. But, the milk replacer was mixed at half strength. Thus, we fed 0.22kg powder AM and PM or a total of 0.45kg daily – a constant volume of liquid fed daily. This was the twice-a-day protocol.

Calves were assigned to their group randomly. Each group ate the same amount of milk replacer powder each day.

I stopped feeding milk replacer to the "twice-a-day" group an average of ten days later than the "one-time-a-day" group. Recall that the decision to stop feeding milk replacer was based on calves consuming 0.9kg of concentrate 3 days in a row.

I only weighed 10 calves out of each group so it's hard to be certain of our growth results. But, we did not observe any significant differences in average daily liveweight gain. Researchers reported that; "Weaning the calves by gradually diluting the milk with water reduced lying during weaning and reduced the concentrate intake during and after weaning." (Nielson, p 2423)

REDUCING MILK TO PROMOTE CONCENTRATE INTAKE

It is a pretty well established general rule that, given a choice, calves will drink milk rather than eat concentrates. If cost was not a factor, we could pour ad lib milk into calves and get great gains. Then, at 3 months or so, we could work on getting rumen development. But, cost is a factor.

My accelerated feeding program's goal was to get optimum gains in the preruminant phase of growth. Then, when calves were roughly 4 weeks of age I shifted my emphasis to focus more on rumen development.

Abrupt weaning of calves which have an under-developed rumen results in weight losses even as high as 1kg/day as well as serious sickness problems until rumen competence is achieved. Clearly, most producers want to achieve rumen competence prior to weaning.

Some calf rearers feed enough energy and protein from milk replacer to meet most newborn calves' maintenance needs and genetically-determined needs for growth. As calves grow these combined needs exceed the nutrients provided by milk/milk replacer.

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The calves will then begin to eat concentrates as an alternative source of energy and protein. This assumes that calves have discovered that concentrates are food!

If a calf rearer feeds a limited amount of milk, most calves by 2 or 3 weeks of age will discover concentrates. They will begin to eat substantial amounts of it. These calves do okay.

However, when feeding only 3.5 to 4 litres daily (may be as little as 400g of powder) the calves that lag behind in beginning to eat concentrates get stressed out. This is particularly true in cold weather. And, frequently they are treated for pneumonia.

Alternatively, if a calf rearer feeds a large amount of milk replacer (0.9 to 1.4kg/day); most calves by 3 or 5 weeks of age will discover concentrates anyway and begin to eat small amounts of it. The expected differences in concentrate consumption between feeding programs are both in the amount eaten and when they start eating concentrates.

During a follow-up feeding trial I fed some calves 1.3kg.day of milk replacer. As you might have predicted, larger calves with higher maintenance requirements started digging into the concentrates sooner than smaller calves.

Among the larger calves (45kg at birth and larger) significant concentrate intake (greater than 0.1kg/day) began at an average of 18 days. These same calves began regularly eating 0.9kg/day of concentrates at an average of 39 days.

The smallest calves took proportionately longer both to begin eating concentrates and to get up to 0.9kg/day. Through the process of trial-and-error, I eventually worked out a feeding program that balanced:

- High dry matter intake from milk replacer early in life
- With the need to encourage early rumen development.

I started reducing the amount of milk replacer fed around the fourth or fifth week depending on the level of milk replacer powder fed. I already had a lot of experience with calves fed 0.9kg/day of powder.

At 35 days nearly all my calves were eating at least 0.45kg of concentrate daily. At this time I cut out the PM milk feeding – remember they had ad lib water. Nielsen and Others reported that weaning through volume reduction is a more effective method to stimulate concentrate intake compared to abrupt weaning.

After this milk replacer reduction, concentrate consumption usually at least doubled with 3 to 5 days. Most of these calves were ready to wean between 44 and 48 days. They

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averaged approximately 0.82kg/day liveweight gain from birth through 56 days of age. Their pneumonia treatment rate was under 5%.

At rates higher than 0.9kg/day of milk replacer powder, I saw a wider spread among calves in rate of liveweight gain. It was pretty much related to birth weight.

With the higher feeding rates I had to use a two-step reduction in milk feeding, starting at 4 weeks. Weaning was done based on concentrate intake rates. The largest calves weaned at around 45 days. The smallest ones weaned about 55-60 days.

Another resource "Improving Weaning Results: Keeping Weaned Calves Growing and Healthy" paste this URL into your browser:
http://www.atticacows.com/library/newsletters/CEMay2017.pdf

References: P.P. Nelson, M.B. Jensen and L. Lidfors, "The effect of teat bar design and weaning method on behavior, intake, and gain in dairy calves." Journal of Dairy Science 91:2423-2432 2008. P.P. Nielsen, M.B. Jensen and L. Lidfors, "Milk allowance and weaning method affect the use of a computer controlled milk feeder and the development of cross-sucking in dairy calves." Appl.Anim.Behav.Sci. 109:222-236.

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