

# **Grain Feeding in an Intensive Feeding Program**

## **CHOICE OF STARTER GRAIN**

What makes the difference in rumen development is not the starter fed but starter consumed. Palatability seems to be the crucial factor for intensive feeding program calves.

We may force limit-fed calves (1 pound of powder or less daily) to consume pelleted feed in order to survive. My experience with calves fed milk replacer at 2 or 3-pound levels daily clearly indicated better consumption with textured starter. But, remember, not all pelleted feed is the same so maybe you can find one that will have as good intake rates as in textured format. Again, the key factor is acceptance by the calves.

## **FLUID INTAKE AND WEANING**

All of us like to wean calves without any break in their daily gains. Also, we would like to limit the stress so that none of them get sick. So, without having heifers drop in rate of gain or get sick, how do we decrease the amount of milk fed in order to encourage greater consumption of starter grain?

One method of weaning high-fluid-intake calves is to reduce the dry matter content of the milk replacer mix by one-half at weaning time while continuing to feed the same volume of fluid. For example, for calves receiving 2 pounds of powder daily in AM and PM 3-quart feedings preweaning, we would continue 2 three-quart feedings but reduce the total powder per day to only 1 pound.

In order to evaluate this idea, I compared average age at weaning (calves weaned when over 35 days old and eating 2 or more pounds of starter for 3 days in a row) for 2 groups of 50 calves.

Before weaning began both groups were fed approximately 1 pound of powder twice daily in 3 quarts of mix. That is, the total daily powder intake was 2 pounds.

One group at 35 days received only the morning milk replacer feeding (1 pound of powder) and continuous free choice water along with starter grain. The other group at 35 days continued to receive both AM and PM milk feedings. But, they were half strength – 1/2 pound powder AM and PM for a total of 1 pound daily – the same volume of liquid fed daily as before the weaning process began.

Calves were assigned to their group randomly. Each group ate the same amount of milk replacer powder each day. Weaning was based on the volume of calf starter grain

consumed. Among my calves the constant-volume group weaned an average of 10 days later than the AM-only group. I only weighed 10 calves out of each group so it's hard to be certain of our growth results. But, I did not measure any differences in average daily 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 GRAIN INTAKE**

It is a pretty well established general rule that, given a choice, calves will drink milk rather than eat grain. If cost was not a factor, we could pour free choice milk into calves and get great gains. Then like beef calves at 3 or 4 months, we could work on getting rumen development. But cost is a factor.

My intensive feeding program's goal was to get optimum gains in the preruminant phase of growth. Then, at roughly 4 weeks of age I increased my emphasis on rumen development.

Abrupt weaning of rumen-incompetent calves results in weight losses even as high as 2 or more pounds daily as well as serious sickness problems until competence is achieved. Clearly, most producers want to achieve rumen competence prior to weaning.

Some calf raisers 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 replacer.

The calves will begin to eat starter grain as an alternative source of energy and protein. This assumes calves have discovered that grain is food!

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

However, when feeding only 4 quarts daily the calves that lag behind in beginning to eat starter grain get stressed out. This is particularly true in cold weather. And, frequently they are treated for pneumonia.

Alternatively, if a calf raiser feeds a large amount of milk replacer (2-3 pounds per day); most calves by 3 or 4 weeks of age will discover grain anyway and begin to eat small amounts of it. The differences in grain consumption between feeding programs are both in the amount eaten and when they start eating grain.

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During a follow-up feeding trial I fed some calves that were the same age 2.9 pounds of milk replacer daily. As you might have predicted, larger calves with higher maintenance requirements started digging into the starter grain sooner than smaller calves.

Among the larger calves (ninety-five pounds at birth and larger) significant starter grain intake (greater than one cup daily) began at an average of 18 days. These same calves began regularly eating 2 pounds of starter grain daily at an average of 39 days. The smallest calves took proportionately longer both to begin eating starter grain and to get up to 2 pounds daily.

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
- Need to encourage early rumen development.

I started reducing the amount of milk replacer fed around the 4<sup>th</sup> or 5<sup>th</sup> week depending on the level of milk replacer powder fed. I had a lot of experience with calves fed 2 pounds of powder daily.

At 35 days, nearly all of these calves were eating at least a pound of starter daily. At this time I cut out the PM milk feeding – remember they had continuous free choice water. Nielsen and Others reported that weaning through volume reduction is a more effective method to stimulate grain intake compared to abrupt weaning.

After this milk replacer reduction, starter grain consumption usually at least doubled within 3 to 5 days. Most of these calves were ready to wean between 44 and 48 days. They averaged approximately 1.8 pounds daily gain birth through 56 days. Their pneumonia treatment rate was under 5 percent. At rates higher than 2 pounds of milk replacer powder a day, I saw a wider spread among calves in rate of 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 starter grain intake rates. The largest calves weaned around 45 days. The smallest ones weaned about 55 to 60 days.

I am not aware of any feeding trials with computer feeders where alternative rates of milk reduction have been tried to determine if a long gradual weaning program results in the optimum calf starter grain intake. Perhaps a step-down program using 3 or 4 liter steps would encourage more rapid increases in grain consumption than the popular 1-liter step-down protocol?

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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