

Let calves gradually begin forage consumption

THERE are several questions about feeding forages to calves. First, when or whether to feed forages to calves before weaning; and next, when or what kind of forages to feed calves after weaning.



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Data from the 2014 NAHMS are shown in the figure by herd sizes for when calves were first fed water, starter, and hay. It shows dairy farms delayed first feeding of water and starter compared to recommendations but could not wait to begin feeding hay. Larger dairies had a more favorable picture on these feeding practices. (See figure.)

Feed textured starters

Readers know I recommend feeding a well-textured calf starter because the particle size results in chewing and rumination that allow for a more favorable rumen environment. This is the case because, like cows, calves need to reduce dietary particle size to create more surface area for microbes to digest/ferment feed in the rumen. As cows do, calves bring up larger particles from the rumen in the form of a bolus into their mouth. There, the chewing process produces saliva, which when swallowed buffers volatile fatty acids (VFA) produced in the rumen. This reduces the acidity of VFA production that can otherwise cause marginal ruminal acidosis.

Rumination and saliva buffering also provide the most favorable pattern for VFA production resulting in rumen papillae formation. This most favorable pattern is butyric first, propionic next, and acetic last. However, when forage is fermented in the rumen, the opposite, an unfavorable pattern of VFA production results.

In addition, forage compared to starter has lower digestibility, a slower rumen fermentation rate, and tends to increase gut fill and reduce intake. But, if an all pelleted starter is fed, there is no particle size effect and benefit. In that case, feed some forage to avoid marginal rumen acidosis.

Let's look at a Canadian study that illustrates what can occur. In this study, a starter claiming to be "textured" was fed. But it clearly was not well textured because all of the coarse grains were unduly processed, and that fraction was only 37 percent of the total starter formulation.

Evidence that texturization was poor could be seen in rumen pH measured at 10 weeks of age at only 5.06 versus 5.49 when chopped orchard-grass hay was also made available with the "textured" starter. Total

intake was greater from the hay and starter treatment versus only starter treatment, but daily gain was similar between the two treatments.

However, the rumen-reticulum weight with digesta was 10.4 pounds more when the hay was also fed. Thus, these calves had less total body weight gain versus the starter only treatment, due to gut fill from the hay consumed. The best solution would have been a well-textured starter fed without any hay.

Include forages after weaning

Now, what about forage feeding after weaning? In another Canadian study, calves were fed up to about 12 quarts of milk replacer daily until they entered a step-down weaning process that took place during the 12 days before full weaning at 50 days. Four feeding treatments were begun at that time: A TMR with 71 percent forage (corn and red clover silage); a texturized starter mixed with 15 percent chopped grass hay; a texturized starter with 15 percent chopped hay fed separately; and texturized starter alone. Amounts fed were free-choice to result in 15 percent weigh back.

After eight weeks following weaning at 50 days, the 15 percent hay treatment fed separately was fed as a mix, and so only three treatments remained through 12 weeks.

After full weaning, calves struggled on the TMR treatment with considerably lower intake and daily gain compared to the other three treatments. This was a reflection of its 71 percent forage content, which caused lower digestibility and lower intake than other treatments. The latter is due to longer residence time in the rumen, its slower rate of rumen fermentation, more gut fill, and slower rate of passage.

But there was a major caveat with this trial in that the starter was textured. Consequently, there was no advantage to including hay among the three non-TMR treatments. Results of this study, then, only apply to use of a textured starter. Therefore, it is not surprising that

the treatment with textured starter alone did well without hay being fed.

Once I was on a large dairy in the western U.S. that was feeding a well-textured calf starter without any hay. I was astonished (and do not recommend this) to find out that they were not feeding any hay to calves through at least 4 months of age with daily intake of the textured starter as high as 8 to 12 pounds! But that indicates the beneficial particle size effect of a well-textured starter.

So, where does all of this net out?

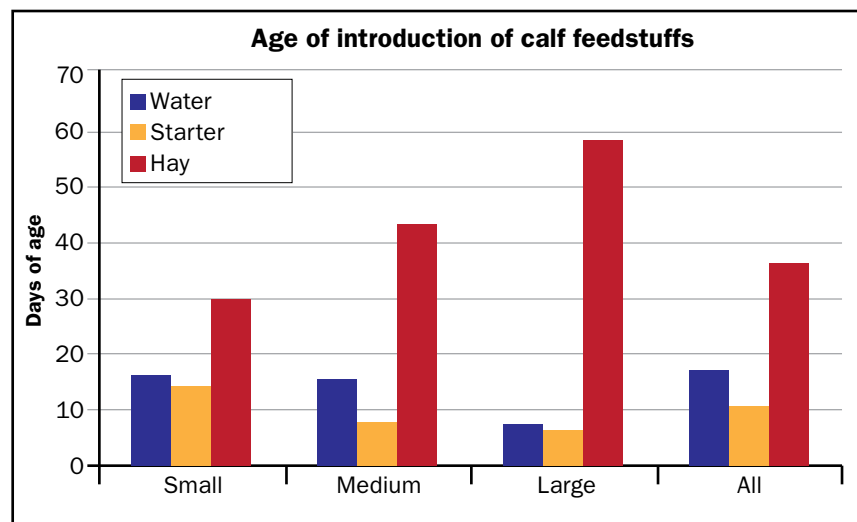
I recommended beginning to feed a pound daily of alfalfa hay during the third month and doubling that in the fourth month while limiting the textured starter intake to 6 to 8 pounds daily during the third month. A pelleted grower can be fed after the third month, and a lower forage TMR can begin to be fed during the fifth month.

An overall concern is that calves need transitions. The first major one is during the weaning transition program — the two weeks before and two weeks after full weaning. If there is not a progressive expansion in starter intake (it should approximately double every week before weaning and be at 1 pound daily for a full week before beginning the weaning process), then there will be inadequate rumen papillae development and function.

Full tummy, slow growth

At that stage, calves will not be able to begin utilizing forage very well. And forage will then also more likely result in gut fill and distort true body growth. We know from studies with cows, particularly before and after calving, that it can take from two to three weeks for rumen papillae to change due to dietary modification. Plus, it takes that time for microbial populations to more fully adjust to newer diets, also.

We know that calves are more sensitive to change on all levels than cows. So why not give them the benefit of the doubt and not force forage and TMR feeding on them too soon to be processed and handled well? 🐄



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