

How We Feed Affects How They Walk

Lameness causes losses due to treatment costs and higher cull rates. But the total economic impact of lameness is greater because of the toll it takes through reduced intake, lower milk yield and poor reproduction.

Carbohydrate nutrition probably is the most challenging aspect of feeding cows and is the area most commonly associated with laminitis. Excessive grain or nonstructural carbohydrate (NSC) feeding, slug feeding of grain (feeding grain only twice daily), feeding sources of NSC that are rapidly fermented in the rumen and feeding finely chopped silages are the culprits because these practices cause rumen acidosis. Cows need enough chemical fiber to maintain rumen function, prevent ruminal acidosis and keep themselves on feed. Enough physical fiber is needed to promote rumination activity and saliva flow and maintain adequate rumen fill. Adequate NSC is needed to provide enough energy to support milk production and body condition requirements. Fiber and NSC fractions must be balanced properly, particularly in early-lactation rations.

Watch forage form...

Fineness of chop can alter the effectiveness of forage fiber in maintaining chewing activity. Forage in all hay-crop-silage-based rations should be chopped with the chopper set at a 3/8 inch theoretical length of cut (TLC) to provide 25% (weight basis) of the particles greater than 2 inches long. Forage particle length needs to be evaluated when troubleshooting ration carbohydrates. With TMR's, evaluate the particle size of the mix delivered to the feed bunk. Overmixing can result in a TMR that is too fine.

NSC should not exceed 40% of ration dry matter. By-product feeds tend to be higher in fiber and lower in NSC than shelled corn. These feeds can help reduce the highly digestible carbohydrate load in the cow's rumen, particularly when incorporated into corn-silage-based or high-grain rations.

The neutral detergent fiber (NDF) in soy hulls and beet pulp is highly fermentable in the rumen, and these feeds can be used to supply fermentable fiber as starch replacers. Adding these ingredients in early-lactation TMR's allows formulation of high NDF, moderate NSC diets of high-energy. However, they have limited value as forage replacers. The NDF in whole cottonseed is partially effective in replacing forage NDF.

Starch in barley and wheat is degraded more rapidly in the rumen than starch in corn. Starch in high-moisture grain is more rapidly degraded in the rumen than starch in dry grain. Starch in finely ground grain is degraded more rapidly than the starch in coarsely processed grain.

When rates of starch degradation are too fast, acidosis results. I advise caution when feeding NSC sources with high ruminal degradability, such as barley or wet, finely ground high-moisture corn. I recommend that the NSC content of rations with these highly fermentable grain sources be limited to 35%. Addition of buffers at .75% of total ration dry matter is common with corn-silage-based rations.

Researchers in Europe evaluated the effects of social, environmental and nutritional changes at calving on incidence of laminitis. Herds with a high incidence of laminitis tended to put cows through more abrupt changes at calving. This underscores the need for specific feeding and cow care programs that allow closeup and just-fresh cows to adapt gradually to changes.

Lead feeding concentrates to closeup, dry cows is important. It improves energy intake in cows confronted with precalving depression of intake and adapts cows gradually to the higher starch content of milking herd rations.

European researchers reported that lead feeding concentrates before calving to raise starch intake and thereby increase ruminal volatile fatty acid (VFA) concentration helps the absorptive capacity of the ruminal papillae. They suggested that this was important for reducing rumen acidosis and intake lag in the early fresh cows. Also, lead feeding of concentrates before calving provides an adaptation period for the rumen microbial population as it shifts from a high-fiber dry cow ration to a higher milking herd ration.

Limiting concentrate dry matter intake to less than .75% of body weight in the closeup, dry period should provide reasonable adaptation. This would limit concentrate intake to no more than 50% of ration dry matter or about 10 pounds of dry matter per day for a closeup dry cow. One major advantage of feeding a TMR to closeup, dry cows is that it provides the opportunity to maintain a constant concentrate: forage ratio as intake fluctuates the week before calving.

Give close attention to the environment in which closeup, dry cows are housed and fed. Cow comfort, ventilation and stall, lot and feed bunk management are particularly important for closeup, dry cows

under the stress of calving. Whenever practical, use the closeup, dry period to adapt cows to their early-lactation environment. It appears that cows which undergo abrupt environmental and social changes around calving are more prone to metabolic disorders. First-lactation heifers need special care because they are being introduced to new herd mates and the milking barn for the first time. Precalving care is just as important as precalving nutrition!

Remember that peak milk yield occurs before peak intake in early lactation. Dry matter intake does not peak until about 10 weeks postcalving. For component-fed herds (non-TMR), cows should be brought up on concentrate gradually over the first 6 weeks of lactation with the intake of forages relative to concentrates monitored closely to ensure that concentrate: forage ratio does not exceed 60:40. Cows should be eating about 10 pounds of concentrate matter at calving and be held at that level for three to four days. Then intake of concentrate dry matter can be raised at the rate of .5 pound per day until peak levels of concentrate feeding are achieved after six weeks of lactation.

This feeding schedule will hold concentrate: forage ratios under 60:40, assuming normal forage intakes. Often, rumen acidosis is caused by having cows on full concentrates during the first few weeks after calving, resulting in concentrate: forage ratios at or above 70:30.

Avoid slug feeding grain. Feeding grain at least three to four times per day and offering some forage before grain can improve ruminal fiber digestion. Feeding the protein supplement when the grain is fed may improve rumen digestion.

Computer feeders offer the advantage of being able to deliver small amounts of concentrates (2 to 4 pounds per meal) in frequent meals throughout the day. This metered feeding tends to stabilize rumen digestion. However, improper operation of computer feeders can result in more lameness.

Pushing up concentrate feeding rates too rapidly after calving and failing to calibrate the scales and dispensing rate of concentrate from the feeding routinely can cause rumen acidosis. Over-crowding of feeders (more than 20 to 25 cows per feeding stall) and placing the feeders in high-traffic areas (holding areas or parlor exits) forces cows to stand in line waiting for feeders and adds to negative social interaction which may cause more lameness.

Change ration slowly...

Avoid sudden changes in rations whenever possible to minimize off-feed problems and help stabilize rumen digestion. I recommend that major changes in ration ingredients be made gradually over a two-week period to allow for adaptation.

One of the primary benefits of TMR's is that they allow us to get a better handle on total ration and forage dry matter intake. Since nutrients are contained in the dry matter portion of feedstuffs, routine and accurate measurement of the moisture content of feeds is important so that the necessary ration adjustments can be made to keep recommended nutrient intakes on target. This is particularly important for TMR's. Moisture contents of forages should be monitored on-farm at least weekly as well as each time a change forage moisture content is apparent.