

Core Principals of Pre-Weaned Calf Care: Colostrum and Calories

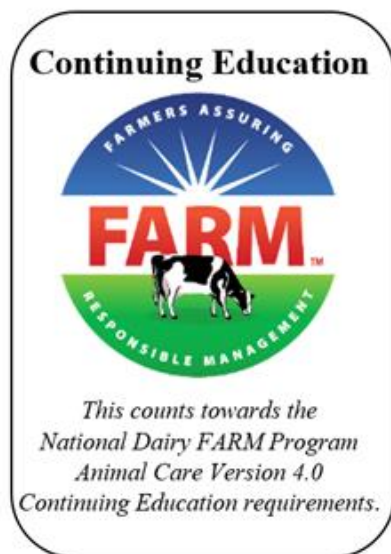
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Addressing pre-weaned calf needs can be an overwhelming and daunting area for dairy producers. There are so many factors that contribute to the success of calf rearing programs, and if any one of those factors fall out of place the calf's future performance can be negatively impacted. Some of the most important components in calf rearing include: colostrum management, calories, bedding, air quality, vaccination, sanitation, behavior, water, and pain management. Over the course of the next several months I'll pick a couple of components to discuss in detail in each of these FARM 4.0 Pre-Weaned Calf Care Continuing Education articles. We'll kick the series off with colostrum management and calorie considerations.

First and foremost, colostrum. It shouldn't come as a surprise that colostrum is always a hot topic when it comes to newborn calf care, and that's because it provides the building blocks for the calf to be successful. Despite decades of research, there is still much more that we can do as researchers, calf feeders/managers, and educators to improve colostrum protocols. It's been well documented that colostrum volume plays a role in future calf performance. Specifically, when fed 2L vs 4L of colostrum, calves fed 4L had higher average daily gain, greater chances of survival through the 2nd lactation, and higher milk yield through their second lactation (Faber et al., 2005). A common response I receive when recommending 4L of colostrum is "the calf just doesn't want to drink it". While I'm not disputing that fact, I do believe there are solutions to the problem. Firstly, recent research concludes that calves absorb the same level of immunoglobulins regardless of whether they were tube fed or bottle fed (Desjardins-Morrisette et al., 2018). If time and/or staff is a challenge on your farm, don't hesitate to tube feed the colostrum if that's how you can get it into the calf the fastest. Secondly, if you are able to manage colostrum well, you could alternatively feed two separate, smaller colostrum feedings within a 12-hour window. Research concluded that total serum protein levels did not differ between calves that were fed 4L all at once, or spread out over two 2L feedings (the first at birth, and the second 12 hours later; Jaster et al., 2005). If you do opt for the second strategy, please note that the research presented above used high quality colostrum for both feedings (not the second milking!!) Additionally, the timing of colostrum delivery is crucial. Colostrum delivered within the first hour of birth resulted in significantly higher levels of blood IgG compared to 6 hour and 12 hour delayed feeding (Fisher et al., 2018). Now, I recognize that cows tend to calve in the dead of the night and it's not always practical to get colostrum to the calf as soon as she hits the ground, but just something to keep in mind if you prefer to go about all your other morning chores before feeding the newborn calf. Lastly, very recent research has demonstrated the benefit of feeding transition milk to calves. Transition milk (milk from the 2nd to 4th milking) have a lot of nutrients that are still extremely beneficial to the calf. If you have a system in place that allows for you to collect this transition milk, I highly recommend feeding it for the first three feedings following the initial colostrum feeding. If you don't have a system in place that allows you to readily collect transition milk, an

alternate strategy is to mix colostrum with milk or milk replacer to try to take advantage of some of these benefits. One of the benefits is greater intestinal development, which was reported in recent research where calves fed a mixture of colostrum and milk starting at 12 hours after birth had greater intestinal development compared to calves fed just milk or milk replacer (Pyo et al., 2020).

Calories... this is another area of importance that I can't stress enough – calves need calories for maintenance AND for growth! The calories that you do provide will first go to maintenance and then any additional calories will go towards growth. Achieving average daily gains of 900g should be a realistic goal on every farm, and the only way to achieve those gains is to provide sufficient energy and protein to the calf. Determining feeding amounts is dependent on how frequently you are able to feed calves, and what type of milk you are feeding. I often get asked "Is it better to feed whole milk or milk replacer?". I wish I had a straight forward answer, but the reality is there are so many components that weigh into this that there really isn't a definite winner in terms of which is better. However, I will say, milk replacer is much more consistent than whole milk and that should be considered if you are feeding whole milk. Day-to-day variation is inevitable, especially if you are using waste milk from a pen that has cows constantly coming and going. On the flip side, there are differences in milk replacer formulation between companies. I highly encourage you to take a good, hard look at the quality of the milk replacer you are purchasing (and not just the dollar sign associated with it). Different protein sources and different concentrations can have a profound impact on digestibility. In regards to how much milk you should feed, it's not always safe to assume you can just feed what it says on the label. Feeding rates can differ depending on feeding frequency, meal size, and goals for growth. Please reach out to me, or your nutritionist, if you need help calculating feeding rates. It's also important to note that despite common belief, calves CAN handle larger meals. In the first few weeks of life, don't hesitate to feed up to 4 L per feeding. In their natural environment, calves would nurse more frequently throughout the day and



consume smaller meals, but if you are only able to feed twice a day providing 4 L won't hurt them – trust me 😊 Lots of research on calf feeding behavior has been done with automated milk feeding systems and, in some cases, older calves prefer to consume 5L per meal, with some calves even consuming up to 9L per meal!! Lastly, if you've read previous articles in this newsletter you've already seen my spiel on the importance of extra energy in the winter months.... But if you haven't already, PLEASE increase energy supply to calves in the winter. Their maintenance requirements increase in cold weather, so very simply put, they need more energy or all the calories they consume will go towards keeping them warm rather than growing. There are so many other factors to consider when it comes to pre-weaned calf nutrition... should

you feed hay? Pelleted calf starter or mash? When should you start weaning? How should you wean? These are all topics I'm happy to consult with you on individually if you have a need! The last thing I will add to this calorie topic is water. While water isn't providing calories to the calf per say, it is a VERY important component of your nutrition program. Water is now required for all calves starting at 3 d of age as per the new FARM 4.0 program. But not only should you provide water at this young age because it is now required, water consumption will drive calves to consume solid feed which will positively impact your ADG and weaning age. Lastly, if you are feeding higher levels of milk replacer in the winter or if you are feeding a high plane of nutrition in general, calves will naturally want to drink more water so making sure they have access to it is very important.