

Strategies for Successful Calf Weaning

By Amy Sova

The first part of a calf's life is spent as a mono-gastric, as the rumen is not fully developed at birth. As such, calves rely heavily on nutrients obtained from milk and to a lesser degree on nutrients from solid feed in the first few weeks of life. It is widely understood that solid feed intake drives rumen development and rumen papillae growth, however, the optimum balance between liquid and solid feed intake is much more contested. From an economic and management perspective, producers have motivation to drive solid feed intake at the expense of milk intake as early as possible. Cost of calf raising and increased incidence of diarrhea and scouring are commonly cited as reasons for limit feeding calves milk, usually at 10% of body weight (BW). However, limiting milk intake in early calf life may reduce growth (especially in cold weather), increase susceptibility to disease and pose welfare concerns as calves may exhibit signs of hunger, stress and may compensate with cross suckling behaviour.

In recent years, elevated nutrition through feeding high levels of milk or milk replacer has become popular as a means of maximizing pre-weaning growth, health, efficiency and future milk production. Research from Cornell University and others have estimated that first lactation milk yield may be 850 – 1100 kg greater for heifers with high growth rates in the pre-weaning phase as a result of higher milk and starter intake. Pre-weaned calves are very efficient at depositing protein in the first few weeks of life and it is advantageous to take advantage of this early growth potential. Providing milk replacer at 20% of BW instead of 10% will increase ADG and capture this early efficient growth and help calves stay healthier. However, we need to employ management strategies to balance intake of nutrients from milk and solid feed to promote adequate rumen development by time of weaning. Otherwise, calves may slump in growth after weaning, negating some of the additional growth achieved earlier by feeding more milk.

The ultimate goal of a successful calf rearing program is to produce healthy and efficient heifers that will calve before 24 months of age and produce high levels of milk during lactation. The transition period from a predominantly liquid diet to a solid diet is a stressful period for the calf, especially when high levels of milk are supplied, and success is partially dependent on the weaning strategy implemented. In natural settings, calves drink 10 – 12 L of milk per day and are gradually weaned over many weeks. This can be drastically different from our conventional systems where weaning can occur abruptly, leading to frustration and stress for the animal. The post-weaning period is just as important as the pre-weaning phase as we want growth to continue, not lag due to improper weaning strategies. So, how do we minimize post-weaning lag and ensure a profitable calf raising program? Research suggests it is dependent on the housing system adopted by the producer. Let's explore different considerations based on individually housed and group housed calves.

Individually housed calves: In individual housed systems, calf starter intake can be easily monitored to determine readiness to wean. The rough guideline for weaning is when the calf is consistently consuming 1kg of starter per day for 3 consecutive days. In this scenario, milk meals or total volume

should be gradually reduced over the course of 5 – 7 days. Alternatively, it is often easier to simply reduce milk volume by 50% until calves are eating adequate calf starter.

Group-housed calves: In group housed systems, it is impossible to monitor individual calf intakes and as such, more difficult to assess when to wean calves. Taking this into account, a longer weaning period (10 days) is recommended to allow all calves in the group sufficient time to increase their starter intake as milk provision gradually decreases. A longer period is recommended as calves within a group will vary in size and intake; thus it is beneficial to allow calves more time to adjust in a competitive feeding situation. In automatic feeding systems, the milk level can gradually be reduced over the course of 10 days.

As recent research from the University of Guelph shows, most calves will not be ready for weaning at 6 weeks of age. This study concluded that calves weaned at 8 weeks compared to 6 weeks were better able to adapt as they maintained significantly higher ADG pre-weaning, during and postweaning. Contrary to 6 week calves, the 8 weeks calves were consuming over 1 kg of starter during the 7 day step-down phase and also maintained higher starter intake in the post weaning phase. Furthermore, the 8 weeks calves experienced less stress during weaning as exhibited by less non-nutritive oral behaviours, and more time ruminating and lying down.

You can't truly evaluate your weaning program unless you measure and monitor calf growth rates. A good idea is to follow a group of calves from birth to weaning and track weight with a growth tape at regular intervals. This will allow you to find gaps or opportunities for increased ADG during the pre-weaning stage. Measuring calves after weaning will also allow you to assess how well your strategy is working. Calves should double their birth weight at weaning which means you need to maintain at least 0.7 kg ADG (assuming a 40 kg calf and 56 day period). This can easily be achieved by feeding a high quality milk replacer of 26% crude protein content to support lean tissue growth and a palatable solid feed.

The physical form of the calf starter is not nearly as important as the palatability and nutrient content. Research shows that calves will perform equally on a pelleted or whole grain calf starter with 18 – 20% CP. Calf starter with additives, such as yeast products and plant extracts, will promote efficient nutrient digestion and support higher growth rates. Additionally, consider feeding an acidified milk product. Acidification of the milk will limit any bacterial growth which has the potential to hinder ADG; any means of limiting challenges for the calf will prove beneficial. Our research shows significant increases in ADG and structural growth of calves with modest acidification (5.2 – 5.5 pH).

Water is often a neglected nutrient in the calf barn. Fresh clean water should always be available as there is a positive correlation between starter intake and water intake. Water intake helps to develop the rumen, digest solid feed and promotes successful weaning.

Evaluating your calf-raising program and developing your own growth targets will help you to pinpoint any weaknesses or opportunities for improvement. Doubling calf birth weight by weaning is easily achievable with proper nutrition and management of calves during the transition from liquid to solid

feed. Feed high volumes of milk or milk replacer during the first 4 – 6 weeks of age followed by a gradual weaning strategy to promote starter intake. Calves should be weaned only when they are consuming adequate solid feed to support similar or higher gains than the pre-weaning period.