An Update on Water Feeding to Preweaned Calves

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Water remains vital to the rumen development in the preweaned calf. The work of Kertz and colleagues at the Purina Research Farm in the early 1980s confirmed that rumen development is stimulated by the presence of water in the rumen. Unlike milk or milk replacer, water flows into the rumen whereas the abomasum via the esophageal groove (see https://extension.unh.edu/resource/water-calves). In this review, some new developments in how we can enhance water and starter intake in young calves are presented.

**Flavoring**

In a small study at the University of Guelph, Thomas et al. (2007) evaluated adding orange flavor (50 mL/quart) to water. Water consumption did not increase, but calves fed the orange flavor consumed slightly greater than ½ pound more starter per day than calves consuming unflavored water. The authors stated that the increase in starter consumption could be attributed to the orange flavor typically added to calf starters suggesting that the calves preferred the orange taste. One gallon of orange soda flavor costs approximately $10. This would last approximately four days for a 20-calf nursery.

**Temperature**

In a Finnish study (Huuskonen et al., 2011), water temperature affected water intake with calves fed water with a temperature of 63°F consuming almost 3 quarts/day compared to calves fed water with a temperature of 45°F consuming 2 quarts/day preweaning. Water is essential in establishing the rumen in calves as it is shunted there first and is needed for the rumen bacteria to flourish. After weaning, calves fed the warm water consumed an additional quart per day (16.9 quarts vs 15.9 quarts) resulting in a tendency for more water consumption. An increase in water intake postweaning will result in greater feed intake and likely greater performance. When preweaning and postweaning data were combined calves that drank the warmer water consumed about an additional quart over the study which was statistically significant. In this study, an increase in water intake did not affect performance. A thermostatically controlled stock tank heater costs about $65. This idea would only be practical in calves in group pens not in individual hutches.

**Water Source**

Researchers at South Dakota State University (Seneverinthe et al., 2018, 2021) compared the water preference of preweaned calves provided with either well-water, municipal water, or reverse-osmosis (RO) water. Results indicated that calves drank slightly more RO water than municipal water while well water was the least preferred. In a follow-up study, calves preferred municipal water. However, the authors were concerned that the sulfur content of the municipal water could adversely impact calf performance. Reverse osmosis systems are estimated to cost between $4,000 and $7,000 for a calf facility. Light commercial RO systems can treat 400 gallons of water per day.
Photoperiod

Providing calves with a long-day photoperiod (16 hours of light, 8 hours of darkness) resulted in greater water and starter consumption resulting in greater growth compared to calves with a short-day photoperiod (8 hours of light, 16 hours of darkness). It appears from this study that providing a long-day photoperiod will enhance calf growth (Osborne et al., 2007). This is likely the same mechanism that we see when we submit lactating cows to long-day photoperiod resulting in a 10% increase in milk yield compared to cows subjected to ambient light. Costs for providing photoperiod are fairly inexpensive, in most cases if calves are in a barn, merely adding a light timer can suffice. These are available at most hardware stores. Commercial light timers cost approximately $200.

Conclusions

Free-choice water is critical to rumen development and growth in calves. Producers should consider adding orange flavor to water 50 mL per liter (47 mL/quart). Warming water to room temperature can enhance water intake as well as providing lighting in the barn to mimic the longest day of the year (16 hours of continuous light). It appears that calves do not prefer well water compared to municipal water, however, well water can be extremely variable and may differ in various regions of the country. Remember calves are the future of the herd, greater feed, and water consumption will get them to breeding age sooner anything you can do to stimulate that would be beneficial to your bottom line by getting them into the milking herd on time. To our knowledge, no researcher has combined all of these means of enhancing water and starter intake.

References


About the Authors

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