Water: An Essential Element for Growth

Water is one of the least rewarding things to feed calves from the point of view of the calf care person. Young calves don't drink a lot of it. Older calves drink too much of it. It grows algae in the summer and freezes in the winter. It's heavy to carry. Even with a hose it's slow and heavy work. So, why do it?

What happens if we don't feed water to preweaned calves? Most of the consequences are hidden, not obvious.

Cost of not feeding water - #1 – slower rumen development.

First, the lack of free water (not the liquid in milk and milk replacer) slows down the fermentation process of starter grain in the developing rumen. The growth of the rumen lining depends greatly on the byproducts of grain fermentation. The less fermentation, the slower the lining develops. We cannot see this lining grow – this process is internal and hidden. But, it must mature before we can safely wean the calf.

Cost of not feeding water - #2 – lower feed conversion rates

Second, the lack of water reduces the level of feed conversion. That refers to the number of pounds of dry matter intake required for a calf to add a pound of growth.

It has been estimated that efficient conversion of dry feed (like calf starter grain) into growth for calves requires about four pounds of water for each pound of feed. If we think of this in terms of volume, that's roughly two quarts of water for every quart of calf starter grain.

Accelerated or intensive milk feeding programs provide high levels of both protein and energy. Rapid growth is possible with this high plane of nutrition. However, we have to remember that young calves are about 65 to 70 percent water. As they grow over 2/3's of every pound added is water.

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These impaired feed conversion rates are not readily observable. However, they are real, expensive and preventable.

Expense of feeding water

The extra labor for feeding water will vary depending on how well organized the farm is to handle water. In general, plan on between one-half to one minute per calf in addition to feeding milk and grain in non-freezing weather (cold weather housing). In freezing weather it may take about double that amount of time.

The variation from farm to farm is great. Compare the time needed to load one hundred gallons of water with a half-inch hose from a faucet in the milk house versus a two-inch drop pipe from an elevated tank that is filled automatically with a float device.

Compare feeding time using a one-inch hose for hutches versus carrying pails of water from a hydrant or from the milk house. Or, feeding from a mobile tank and pump can cut time per calf to a small fraction of a minute.

Management tip for youngest calves

Calves less than 10 days old – when first presented with water they may drink a large quantity. This may prevent them from drinking milk at the next regular feeding. This novelty consumption pattern rarely persist more than a day or two as long as water is offered free choice.

Management tip for young calves

Calves less than three weeks old – the smaller the body mass the greater the benefit of feeding water at calf body temperature (102°). Remember that regardless of the temperature of water when it is drunk, within an hour it will be at the same temperature as the calf's body.

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During hot weather conditions the disadvantages of drawing on body reserves to warm water are minimal. In contrast in cold weather housing young calves will be using scarce energy reserves for warming water – end product is compromised growth rates.

Management tip for summer

We know that clean palatable water promotes increased consumption. With clean pails changing water at least every other day is much preferred to a less frequent schedule.

In summer some farms maintain a supply of extra water pails. For example, for fifty calves on milk this might be ten pails. Each day ten clean pails are distributed and ten pails with algae and mold are brought into the wash-up area and scrubbed. Thus, in five weekdays all the pails have been cleaned for the week.

Management tip for calves nearly ready to wean or already weaned

If our weaning procedure is to partially wean calves for four to seven days before full weaning we know that water intake usually increases a lot when we do this. Along with this increase in water consumption there is usually a big jump in starter grain intake. These calves often will drink more than ten quarts of water daily – more in hot weather. This may be a point where larger pails may be added to the individual housing (hutches, pens). Some farms have a collection of 5-gallon buckets that can be clipped to hutches or pen around weaning time. These larger pails permit once-a-day watering.

References: United Kingdom Volac research, accessed February 15, 2016: http://www.volac.com/news/agriculture-news/news189/water-is-essential-for-all-forms-of-life. Kurtz, A.F., L.F. Reutzel, and J.H. Mahoney, "Ad libitum water intake by neonatal calves and its relationship to calf starter intake, weight gain, feces scores and season," American Journal of Dairy Science 67:2964-2969. James Quigley, "Methods of feeding water" Calf Note #77 accessed February 15, 2016 http://www.calfnotes.com/pdffiles/CN077.pdf .

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