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## FEEDING

# Even during winter, calves really need water

by A. F. Kertz

**W**HY not feed water to calves? Here are some of the reasons commonly given.

- Calves don't need it.
- It causes scours.
- They get it through their milk or milk replacer.
- It freezes during the winter, and they don't need it then anyway.
- It is a hassle.

From birth until about 2 months, water content of a calf's body ranges from 70 to 85 percent. There is an inverse relationship between body water and body fat content. So, as the young calf begins to grow and deposit body fat, body water content will go down accordingly.

Also, water content of a calf's body turns over rapidly. Thus, water is required by the calf in the greatest amount compared to any other nutrient . . . yes, water is a nutrient! And, if a calf begins to dehydrate or scour, water loss can be rapid and fatal when it reaches about 20 percent.

### **Doesn't cause scours . . .**

Some still believe scouring can be caused by giving calves water. In the early 1980s, I was involved in calf water studies at the then Ralston Purina Research Center. We summarized experimental data on 335 calves. We found just the opposite in regard to scouring. When calves begin to scour, they then begin to drink more water. This is a physiological response to prevent dehydration. Of course, if the scouring is severe enough, you may need to give electrolyte solutions. And, depending on the cause of the scouring, medication also may be needed. But calves drinking water is not a cause of scours. It is in effect a partial solution to scouring.

Sure, calves get water through their milk or milk replacer. And the water content of that is about 85 to 88 percent. So the ratio of water to

The author is the principal in Andhil, LLC, a St. Louis-based consulting firm.

dry matter is about 6 or 7 to 1. But that water largely goes into the abomasum or true stomach through the esophageal groove. It does not get into the rumen in significant amounts.

Now remember that, at this stage of life, we want the calf to begin developing its rumen. The key to that development is dry starter intake which empties into the rumen. But the starter cannot begin to ferment in the rumen unless there is enough water content there, too.

So what happens when water is not available for starter intake? Table 1 below shows that, when water was not available along with milk replacer and starter, calves weaned at 30 days ate 31 percent less free-choice starter and gained nearly 40 percent less weight.

Calves provided water drank nearly 11 gallons. Now, 90 percent of that occurred during Weeks 3 and 4 when nearly two-thirds of starter intake also took place. Calves not fed water also consumed nearly 90 percent of their starter intake during Weeks 3 and 4. However, because of lack of water intake, their starter intake and weight gain was greatly reduced. A previous article on how calves go through a transition at weaning (June 2003 issue, page 463) described how critical the two weeks before and two weeks after weaning are to calf performance . . . the so-called calf weaning transition period.

During Week 3 in the program we used, calves should have averaged 1 pound daily starter intake, and that should double the following week. This did occur for the calves fed free-choice water but not for those provided no water.

It would be expected, but was not measured in this study, that calves not previously fed water before weaning would struggle more after weaning, as well. For after weaning, starter intake should double from the previous week and then go up

**Table 1. Calves given water ate more, gained more, and had less scours**

	Free-choice water	No water
Daily gain, lbs.	0.68	0.40
Starter intake, lbs.	26	18
Scour days per calf	4.5	5.4
Week 3 daily starter intake, lbs.	1.10	0.86
Week 4 daily starter intake, lbs.	2.23	1.40
Projected Week 5 daily intake, lbs.	4.4	2.8
Projected Week 6 daily intake, lbs.	6.1	3.9

**Table 2. Separate starter and water**

	Feed and water containers	
	Divided	Not divided
Daily gain, lbs.	1.86	1.58
Daily feed intake, lbs.	5.03	4.44
Daily water intake, lbs.	18.0	13.6

by another 25 to 50 percent for the week after that. These are the last two weeks of the four-week calf weaning transition period.

Note that there would be a negative carry-over effect for those calves not previously fed water because their starter intake was lower entering the postweaning phase of the calf weaning transition period. Granted, it may not be quite as negative as projected since these calves now will have water available, but their intake cannot rapidly make up the difference with those calves that had been receiving water all along.

#### Not just summer . . .

We all understand that calves need more water during summer. They can drink as much as 5 gallons a day in the summer as measured in one Florida study. But remember, water is the most required nutrient by calves all year-around. In winter, cold air has less moisture-

carrying capacity. So air that calves take in is humidified in their lungs before being exhaled. That is why you see calves, "breath" in cold weather. In addition, calves still have the requirement for water to go along with their starter intake . . . about four times as much water as starter intake.

What to do about water freezing in winter? Feed warm water after each milk or milk replacer feeding, and calves learn to drink it before it freezes. Then provide a third feeding of water one more time during the day at your convenience, usually around midday. If calves drink another two quarts of water, that is enough for another pound or more of starter intake. Not only will that further rumen development, but it also helps meet the calves' additional cold weather energy requirements.

As a bonus, the heat of rumen fermentation of that starter provides

even more energy for calf warmth. That's a benefit that cattle and wild ruminants in northern climates have long exploited.

Now how about the hassle factor? I was astonished once when I heard a calf grower indicate how he saved over \$2,000 a year in labor costs by not feeding calves water. But at what cost to calf performance and returns?

#### Keep starter dry . . .

This raises another issue not commonly recognized. People fail to separate water and feed containers with a divider. If this is not done properly, calves will dribble starter into water and water into starter. Calves do not like wet starter or dirty water.

Again at the Ralston Purina Research Center in 1982, we encountered this problem and studied it. What we found during the second month after calves had been weaned at 1 month of age (see

Table 2 on previous page) was that failure to separate water and feed containers reduced average daily gain by over one-quarter pound. This was due to both reduced daily feed intake of 0.6 pound and reduced water intake of 4.4 pounds . . . about one-half gallon.

With some foresight or modification, you can put a partial divider, or further separate the two buckets which will remedy this situation on most operations. And remember that rain, snow, or ice without covered buckets will limit starter intake as will moldy or stale condition of the starter.

Below are several pictures of how separation of starter and water containers has been done.

Calves are the most vulnerable animals on a dairy. They also respond well to little things done well. One of those little things is how well water is provided. The benefits are measurable and significant. 🐄

### Ways to separate water and starter



**SEPARATE FEED AND WATER** by mounting buckets at different places in hutches or pens. Calves will eat more starter if it's kept dry and fresh.




**HAVE CALVES** pull their heads back before moving from one bucket to another. You need to prevent calves from drooling water onto their starter.



**INSTALL** some sort of divider between feed and water buckets.

# Great... Now everyone's gonna know!




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