

# Calf Notes.com

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## *Calf Note #261 – No, it's Not!*

### **Introduction**

On a recent visit to some dairy farms and calf ranches in the Southeastern and Western parts of the United States, I had the opportunity to talk with several calf specialists and advisors who were helping improve the management of calves. Like many, these farms were feeding “more milk” and the calves looked great – right up to weaning. Thereafter, the struggles began. Calves tended to lose the body condition they previously had gained, and there was evidence of acidosis in all of the weaning pens. We discussed the difficulties associated with transitioning calves from milk to starter and the criterion for weaning. It seemed that every advisor had developed their own criterion for when calves were ready to be weaned... 2 lbs. per day for at least 2 days; 3 lbs. per day; 8 weeks of age; and on and on.

On my way home from the Western U.S. trip, I was searching through some popular press articles for information about weaning for an upcoming episode of “What’s Happening?” (BTW, go to [wh.calfnotes.com](http://wh.calfnotes.com) to see this new Calf Notes initiative!). As I scanned the articles, I also saw different weaning recommendations from the various authors. Few were consistent, and I don’t think that any got it “quite right”.

### **No, it's Not!**

Calves are NOT necessarily ready to be weaned when they reach a specific age – say, 6, 8, or 10 weeks. They’re NOT necessarily ready to be weaned when they consume a given amount of starter on a given day – whether it’s 0.5, 1, or 2 kg. While intake of dry feed is a better indicator of weaning preparedness compared to age, the intake on one day does NOT necessarily reflect how well the rumen is developed and whether it can produce enough energy from VFA and protein from microbial protein to support the calf’s maintenance and growth needs.

Remember – the rumen doesn’t develop in 1 day, so selecting a daily criterion doesn’t necessarily indicate how well the rumen has developed. Let’s look at an example to make a point.

### **A Weaning Example**

Let’s feed a calf from birth an increasing amount of whole milk up to a maximum of 8 liters per day. On day 49 (a week prior to weaning), we reduce the amount of milk to 4 liters per day by eliminating the afternoon feeding (I know this is an extreme case and I don’t recommend it, but I want to make a point here). Then, on day 56, we wean the calf.

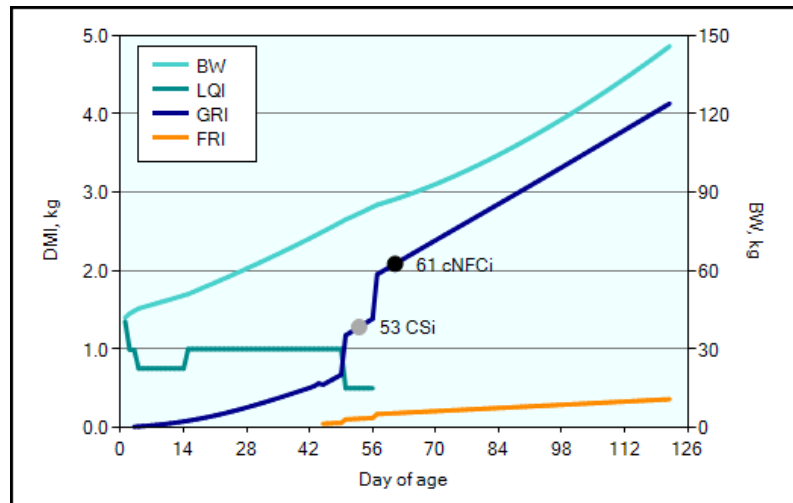
So, what happens? During the first 49 days, the calf gets the vast majority of its nutrition from whole milk. Feeding 8 liters per day allows the calf (assuming a 42-kg Holstein at birth maintained under thermoneutral conditions) to gain about 1 kg of body weight per day. It’s happy, growing well, and is eating a little bit of starter – enough for the calf to “know” that starter is food but not enough to completely develop the rumen. Remember, the fermentation of non-fiber carbohydrates to volatile fatty acids is what drives rumen development and prepares the calf for weaning.

When we reduce milk intake on day 49, suddenly the calf has “lost” 50% of the calories it is accustomed to consume. Starter intake increases dramatically – from 670 g/d to 1,170 g/d which is a 75% increase, as the

calf searches to replace the lost calories. It's quite common for calves to double or triple their starter intake in a few days when milk or milk replacer is reduced, as can be seen in the graph.

In many cases, we may reach the “magic threshold” recommended by various nutritionists and advisors. Let's look at our example to see when some of these values are reached:

- 1 kg/d: 50 days of age
- 1 kg/d for 2 d: 51 d
- 1 kg/d for 3 d: 52 d
- 3 lb/d (1.3 kg): 54 d
- 2 kg/d: 59 d



However, the issue is that the rumen isn't ready for the sudden influx of carbohydrate, so the calf develops acidosis and begins to lose body condition. None of these criteria accurately reflects the age when the calf is “really” ready to be weaned.

### So, What is It?

As I've written in several Calf Notes, including [#209](#), [#224](#), and [#230](#), the rumen is sufficiently developed to allow calves to be weaned when it has consumed a **TOTAL** of 15 kg of **NFC** (non-fiber carbohydrate) from dry feed. This value is based on the change and development of digestion in the rumen. This value was calculated in a series of manuscripts published in the Journal of Dairy Science in 2019.

The graph above shows the age at which the calf is ready to be weaned, which is 61 days of age.

Of course, the specific age when the calves are ready to be weaned will depend on the form of starter (especially the amount of starch), type and amount of liquid fed, and the method of reducing milk feeding in preparation for weaning. Calf Note [#230](#) provides a handy Excel spreadsheet that allows you to calculate the age at which most calves will be ready to be weaned. Also, a nice software tool at the [University of Vermont Costa Lab](#) website provides a similar function.

### Summary

If you hear or read that calves are ready to be weaned when they reach a specific age or some daily feed intake, remember, most likely “No, it's Not”. The appropriate criterion is 15 – no more, no less. While this approach is somewhat more complex, it's more biologically correct and will help your calves transition more easily through their weaning transition. Use the online tools available to help you know when calves reach the “magic 15”.

### References

- Quigley, J. D. 2019. Symposium review: Re-evaluation of National Research Council energy estimates in calf starters. *J. Dairy Sci.* 102:3674-3683. <https://doi.org/10.3168/jds.2018-15367>.
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