

## Do Not Feed Hay to Baby Calves

Over the last few years there has been renewed debate in the US on whether or not one should feed hay to baby calves. In Europe, this is not debated much since most people feed hay, while the predominant US recommendation is to not feed hay.

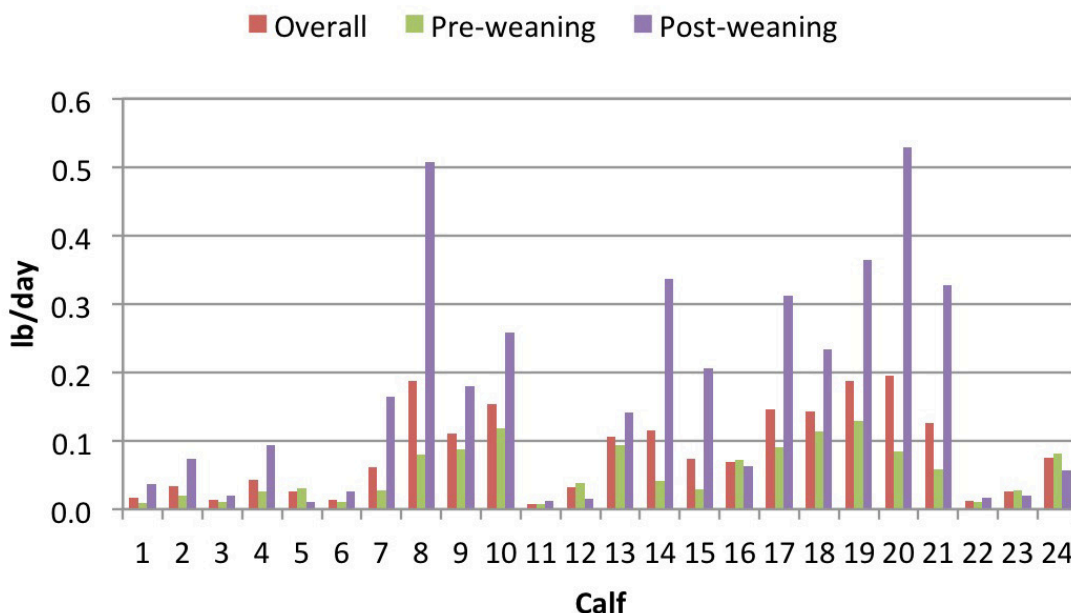
### So, what does the research say?

Old and new research reflects that the fermentation of starchy feed results in the most fatty acids for the development of the rumen. Hay is not digested well in the baby calf, contributes to very small amounts of fatty acids produced, and produces a proportion of fatty acids less suited to develop the rumen compared to starch in grains. Also hay is digested slow and poorly compared to grains. Intermediate to hay (forage) and grains are feeds high in fiber like soybean hulls and wheat middlings which require significant microbial fermentation time to digest and cannot be efficiently digested by intestinal and pancreatic enzymes.

Recent research regarding feeding hay vs. starch to calves shows that ADG in calves is either not improved or reduced with feeding hay. Feeding hay has been shown to increase the amount of gastrointestinal tract tissue and undigested feed residue in the tract (gut tissue and fill). In some trials where tract and feed residue were measured, this weight was significantly altering ADG by 10% or more. In other words, the fiber was growing gut tissue and creating gut fill of undigested feed residue and not building muscle, bone, or fat. The gut tissue and fill distorts measurements of live body weight used to calculate the ADG of calves.

In research measuring forage intake in calves, free-choice intake of hay has ranged from 3 to over 20% of total (starter plus hay) intake. In most trials, free-choice intake was closer to 5% of dry feed intake. There does appear to be greater intake of hay with lush alfalfa hay vs. other types of hay. Recently, European researchers have recommended feeding hay much more fibrous than alfalfa to reduce the free-choice intake of hay. We measured a highly variable intake of hay by individual calves (see Figure 1) both pre- and post-weaning. This variable feed intake increases variability in ADG among calves which is not desired.

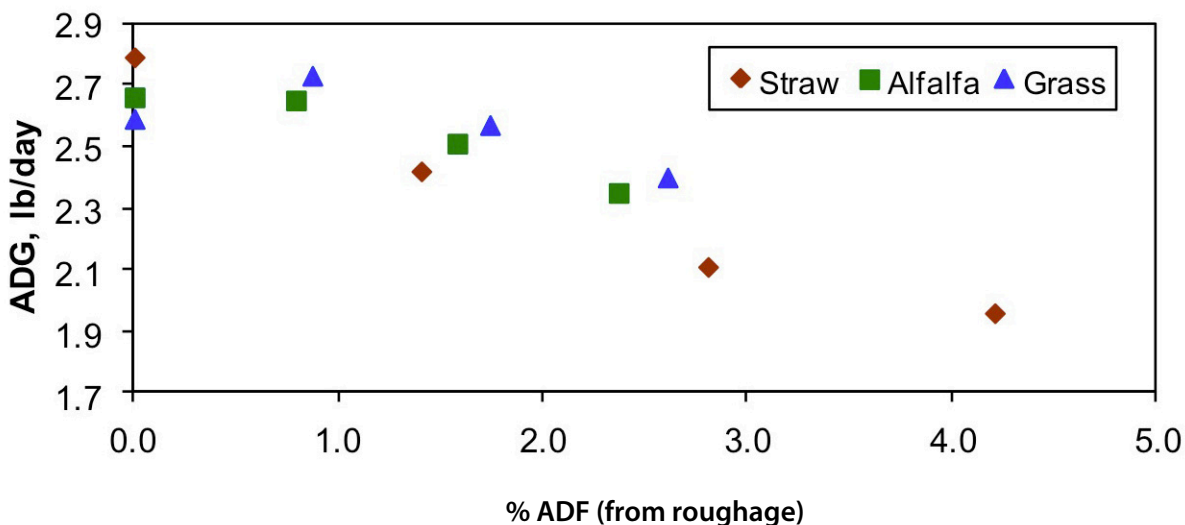
**Figure 1. Variability of free-choice intake of hay among 24 individual calves up to 2 months of age.**



Hay or roughage is needed in the diet of weaned calves. Our published research and recent research in Spain has shown the benefit of calves consuming 5 to 15% hay, depending upon hay quality, post-weaning. If the hay is low in fiber, more hay intake is needed than if the hay is high in fiber. Our data shows that in post-weaned calves up to approximately 4 months of age there is a need for a certain amount of fiber intake from hay (approximately 1.5% ADF from roughage in the diet dry matter; see Figure 2).

So the research shows no to limited benefits in feeding hay to baby calves in some trials and some negative effects in other trials. Hay, in limited amounts based on its ADF concentration, should be fed to the weaned calf.

**Figure 2. Effect of acid detergent fiber (ADF) from roughage in the diet on ADG of 2 to 4 month old**



### References:

J. Dairy Sci. 39:171-179 (1956). J. Agric. Food Chem. 4:788-792 (1956). J. Dairy Sci. 87:2554-2562 (2004), Prof. Anim. Sci. 25:85-92 (2008), J. Dairy Sci. 91:2684-2693 (2008), Prof. Anim. Sci. 26:181-187 (2010), J. Dairy Sci. 94:3547-3552 (2011), J. Dairy Sci. 95:286-293 (2012), J. Dairy Sci. 96:5226-5236 (2013), J. Dairy Sci. 96:5217-5225 (2013).