



## White paper

### **Early feed intake unlocks genetic potential of calves**

*By Jeroen Krijnen, product manager cattle at Nuscience*



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*There has been a huge evolution in the genetic potential of ruminants. The dairy cow of today has a much higher potential for milk production compared to 20 years ago. Average as well as individual milk productions have increased. However, why can there be huge differences in milk production amongst dairy cows even if they have the same genetics and eat the same type of ration?*

*The answer lies in young animal nutrition: the growth rate of the young calf determines up to 20% of the milk production during the first lactation. Thus, only by supporting the calf before and around weaning, it can achieve good growth performances in later life. That's truly unlocking their genetic potential. Nuscience is specialized in producing calf prestarter diets and -concentrates that make a difference in the field.*



### Eating before weaning!

Unlocking genetic potential of calves comes down to maximizing growth in the first weeks of life: only during this period the number of udder secretory cells (parenchym) can be influenced in order to increase milk production potential. Moreover, the basis for rumen development is already made in the first weeks of life. The calf after weaning – as well as the adult ruminant – relies for over 70% on rumen fermentation for its energy supply.

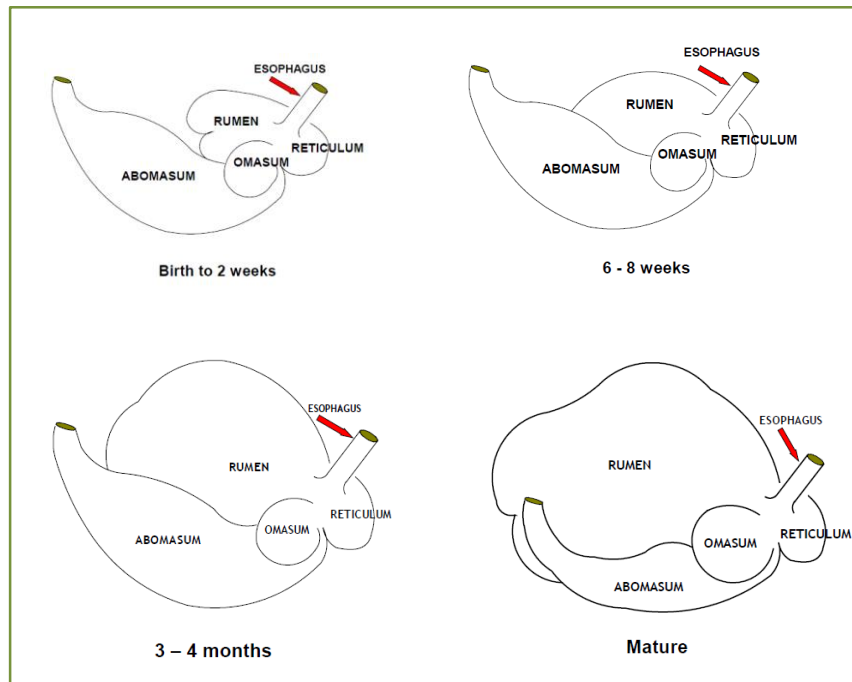
This makes the first solid feed intake extremely important. Concentrates contain starch which is fermented to propionic- and some acetic and butyric acid. These volatile fatty acids trigger the development of the rumen wall: rumen papillae are formed and the absorption capacity is formed and increased day by day.

Did you know that:

- Cellulolytic bacteria are already present in the rumen at three days of age.
- Growth after weaning shows a linear increase with feed intake before weaning.
- Each 100 gram higher weaning weight will result in 1 kg extra milk per day during the first lactation.

## Improving lifetime performances

The better the rumen is developed, the more capacity the cow has for absorbing nutrients for milk production. The figure below shows that the rumen is still very small at birth, but accounts for 80% of the forestomach complex in mature animals.



At the moment of weaning, the calf immediately becomes completely dependent on the rumen. Rumen development is promoted by an early intake of solid feed before weaning. As early as the 2nd day, calves can be started on a prestarter. Calves are curious and a good composition of the calf starter promotes intake. The use of texturized prestarters may help to improve feed intake because of better taste and texture. Moreover, specifically steam flaked grains promote the development of the rumen papillae and rumen wall thickness. The heat treatment improves digestibility as well, offering possibilities for improving the feed conversion. The total effect of better taste, rumen wall development and digestibility may result in 11% better daily gains during the first 7 weeks of life.

When the calves are started early on a daily amount of prestarter, the calves will take in remarkably more concentrate and roughage from the 3rd week of life. Good roughage needs to promote the intake of prestarter and may be either hay or straw cut short. Concentrate and roughage together promote rumen development. Roughage ensures good development of the rumen volume, while the concentrate is needed for the development of the rumen papillae. Next to the supply of solid feed to the calves, water is indispensable to the calf. The concentrate intake of a calf is directly proportional to the water intake. So, between milk feedings, the calf always needs to have good-quality fresh water at its disposal.

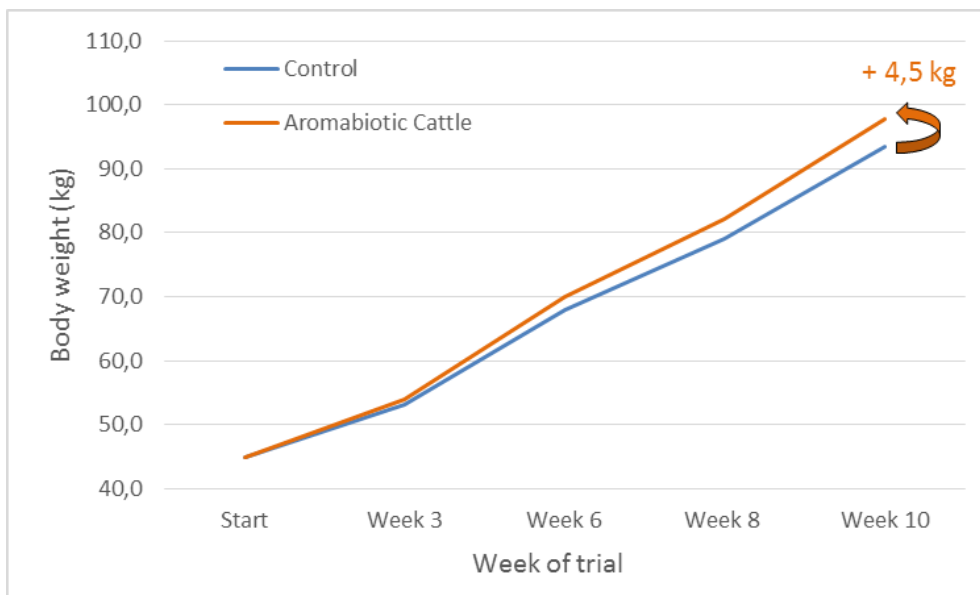
### Rumito Start is key

Research has shown that calves grow faster after weaning when the feed intake before weaning is higher. One kilo extra feed intake before weaning results in about 800 grams extra growth after weaning. For this reason, Nuscience has developed **Rumito Start, a very tasty and easily digestible calf muesli**. This feed was especially designed to meet the expectations of young calves and increase their early feed intake. Rumito Start contains heat treated grains and a pelleted concentrate.



### Feed intake and health

Nuscience has a long-lasting experience with creep feeds and prestarter feeds like Rumito Start. These feeds are characterised by their exceptional taste and attractiveness for calves. Creating a tasteful calf starter can only be achieved by a profound selection on raw material quality and digestibility, and the experience of searching and combining synergistic raw materials and feed additives. Next to this the Nuscience calf products also contain innovative feed ingredients like Aromabiotic Cattle®, a patented mixture of medium chain fatty acids. As shown in Figure 1, the addition of Aromabiotic Cattle results in 4.5 kg extra body weight at the moment of weaning. These medium chain fatty acids are well known to impact intestinal health and immunity. In multiple trials the effect of this early and high feed intake and immune stimulation on post-weaning performances has been shown.



**Figure 1.** Effect of Aromabiotic Cattle on weight evolution in calves

**With Rumito Start the complete genetic potential of the calves becomes unlocked**

*References available on request*