



The more animals eat, the lower e.g. the fibre content of the ration can be. It depends on the ingested fibre amount.

FOCUS ON FEED INTAKE

Ensuring that feed rations are suitable for ruminants is critical

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Just as we know that cows without metabolic disorders consume more feed than cows with metabolic disorders, the reverse is equally true: A high feed intake reduces the risk of metabolic problems. So feed intake is critical in dairy cows, and this is where we should focus our attention. There is a close correlation between feed intake and the physical (structure, digestibility) and physiological (production of volatile fatty acids) filling of the digestive tract.

Animal-related factors – notably milk yield, age, lactation stage and weight of the animal – account for approximately 60% of the amount of feed intake in dairy cows. The remaining 40% is influenced by the feed itself and the feed management. Critical factors in this respect are the overall digestibility, the hygienic condition of all feed components, the fermentation quality and the palatability of the forage.

Digestibility is key

A basic requirement for a high feed intake is ultimately a high degree of digestibility and thus

the highest possible energy concentration in the feed. The more digestible the fodder, the faster and more effectively the nutrients are broken down in the rumen. This increases the rate of passage through the intestines, which encourages the animal to eat more.

However, the problem is that it is not possible to simply raise the energy concentration in the feed rations by adding extremely high levels of concentrates. This is because ruminants require a minimum quantity of roughage (in the form of crude fibre, especially

physically-effective fibre or NDF – i.e. cell wall components).

And the effective fibre content of a forage ration does not correlate with its energy content. In fact, the opposite is true. This makes it all the more important to find an optimum balance between the two parameters, especially when feeding very high-yielding dairy cows.

The maximum achievable energy concentration, however, is generally 7.4 MJ NEL/kg DM in the total ration for ruminants, depending of course



Energy-rich, palatable silage is key to ensuring high feed intake.

on the quality of the forage. This often equates to a crude fibre content of 15 to 16% in the dry matter and an effective fibre content of 10 to maximum 10.5% in the dry matter.

Various recommendations often propose a minimum crude fibre content of 16 to 17% in the dry matter and an effective fibre content of 11% in the dry matter.



To correctly adjust the nutrient concentration in the feed rations, the stockman must be aware of the cows' feed intake.

Table: Concentrations of protein and effective fibre in a dairy cow ration as a function of feed intake

(Example: Dairy cow 650kg live weight (LW), 30kg milk, 4% fat, 3.4% protein)

Forage intake, kg DM/per cow and day	Protein supply: Requirement 3050g XP, 3000g nXP		Crude fibre supply: > 320–350g physically effective fibre/100kg LW → 2080–2275g
	Crude protein (XP), g/kg DM	usable crude protein in the small intestine (nXP), g/kg DM	physically effective fibre (str. XF), g/kg DM
18	169	167	116–126
19	160	158	109–120
20	153	150	104–114
21	145	143	99–108
22	139	136	95–103
23	133	130	90–99

But does this really hold true? Do we put too much emphasis on certain stated nutrient concentrations? Or is it rather the case that although our animals have a clearly defined nutrient and energy requirement, this is based on consumption levels determined by their weight and performance? In this case, these consumption levels represent fixed quantities. Conversely however, the animals do not need specific nutrient concentrations in their ration. Specified nutrient concentrations are not fixed but variable quantities that are dictated by the level of feed intake. This is illustrated in the table which shows the protein and fibre supply.

For example, if very good forage quality, a palatable feed ration, optimum husbandry and feed conditions (adequate space to lie down, eat and drink) and good animal health (especially hoof health) create the conditions for a dairy herd to consume 22kg DM instead of only 19kg DM/cow and day, the concentration of essential effective fibre in the feed can be reduced from an original level of at least 10.9% to 9.5% in the dry matter without adversely affecting the feed's suitability for ruminants. So it's clear that feed intake plays a key role. This is the most interesting, as well as the most variable aspect of feed management.

It is not only the key to maximising milk yields, but an important indicator of potential health

issues, especially metabolic problems. For this reason, an important aspect of dairy farming is the routine recording of feed intake in addition to observing many other parameters such as the animal's physical condition, milk data and rumination behaviour.

Conclusion

The core message is: The better the forage quality, the higher the feed intake and the higher the amount of more physically effective fibre that reaches the rumen. So, an optimum feed regime for ruminants is predominantly achieved through good husbandry and feed management, especially good forage quality, rather than a high crude fibre content.

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