

Why do dairy cows need a holiday?



It is quite easy to forget how hard dairy cows work for us. Take, for example, a Jersey cow that produces an average of 30 kilograms of milk a day. For ten months, she consumes around 25 kilograms of feed per day, drinks about 80 litres of water a day, and produces 9 000 litres of milk over that period. Also, keep in mind that she receives an 'unnatural' ration during lactation. Ruminants have evolved to convert fibre sources into energy and protein, but due to genetic advances we now have to supplement roughage with a lot of starch and protein to unlock the production potential of a dairy cow.

by Sjoerd Ten Cate

System overload

A cow's rumen is mainly acidic, or on the borderline with acidosis, which is challenging for an animal that is designed to consume mostly roughage. Furthermore, she has to digest a large volume of feed daily and convert it into the nutrients required for her bodily functions. Apart from the nutrients required for maintenance, she needs nutrients for gestation, to support a growing foetus, and to produce a large quantity of milk. The glands in her udder, therefore, have to work extremely hard. To maintain this high level of production, her hormonal ratios must, consequently, be in production status for 10 months. This means she is in a 'hyper hormonal mode' the whole time.

Considering all the above, it is no wonder that dairy cows need a break during which they can be just normal cows for a while. Research shows that cows must be dry for a minimum of 45 days and a maximum of 60 days. For a variety of reasons, more or fewer dry days lead to lower production levels during the subsequent lactation.

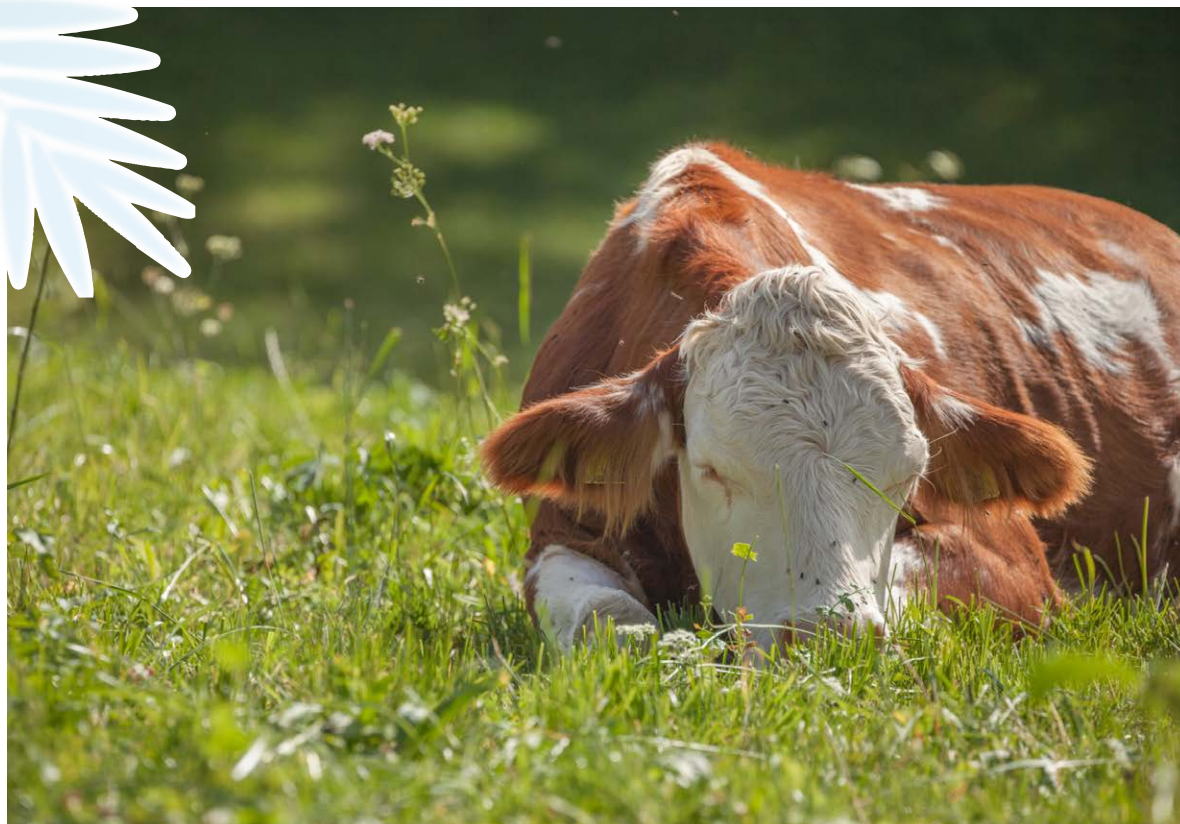
There are various critical aspects that must be managed during the dry period, four of which are discussed below.

Rumen recovery

It is obvious that there will be negative consequences because of the 'unnatural' acidic environments that the rumen is exposed to as a result of the highly energy-dense diet consumed by a cow in milk. In particular, the number and density of rumen papillae are impacted negatively, reducing the absorption area. These are the structures that determine the effectiveness of nutrient absorption in the rumen, making them essential for a lactating cow to perform optimally. A period of rest on a less energy-dense diet, containing a lot of roughage, goes a long way towards helping to prepare the rumen papillae for the next lactation.

Udder recovery

The dry period allows the mammary tissue (milk glands) to recover. Damaged mammary tissue is replaced, resulting in better milk production during the next lactation. If a cow is not dried



up, the mammary tissue sustains continuous damage without being afforded an opportunity to recover. This reduces the amount of mammary tissue capable of producing milk. Cows that do not go through a dry period can produce as little as 75% of the milk they would have produced if they had been allowed a 45–60-day dry period.

Condition

In order to produce up to her genetic potential, a dairy cow must have adequate body reserves to utilise during early lactation. At drying-off, therefore, a cow should have a body condition score of about 3,5. Late lactation is the optimum time to replenish body reserves lost during early lactation and so the dry period should only be used to maintain body condition. If cows are dried off while their body condition is less than desirable, an

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attempt must be made to improve condition during the dry period. However, if cows are dried off in excess condition (4,0 to 5,0), it is better to try to maintain condition in these obese cows rather than to reduce condition during the dry period. Research has shown that when cows lose body condition during the dry period, fatty tissue is mobilised to maintain

their energy balance. This can lead to more fatty livers and ketosis, thus creating the very problems that should be avoided at all costs.

Energy and protein

Where the aim is to maintain body condition during the dry period, the management of energy intake is critical. The rule of thumb is that energy intake should be adequate, but not excessive. Oats silage, for example, is a better roughage source than maize silage for dry cows, unlike cows in lactation. On a dry matter base, the metabolisable energy of oats silage is approximately 8,85 MJ/kg, with a total protein of about 10% (ratio of energy to protein – 1,0 to 1,13). These energy and protein levels are not far off in relation to the nutritional needs of a dry cow. Maize silage, in comparison, slots in at an average of 10,0 MJ/kg of energy and 8,2% total protein. This is more energy than the dry cow needs, but the protein intake (ratio

1,0 to 0,82) is suboptimal. The surplus energy alone will cause fat deposition and that will be exacerbated by the lack of protein, because energy and protein must be balanced to stimulate muscle development and effective energy utilisation. Lucerne hay is the opposite of maize silage. With an energy content of 8,32 MJ/kg and a protein content of 18%, the energy to protein ratio is 1,0 to 2,2. The energy is satisfactory, but lucerne provides a surplus of protein. In ruminants, excess protein in the blood must be converted to urea in the liver, in order to be excreted in the urine. This process ‘steals’ energy from the cow and can even induce an energy shortage when lucerne with a higher protein content is used.

Don’t begrudge dairy cows their rest period; look after them and they will do their best to look after you! They knuckle down for us and deserve their holidays. **TDM**



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