Bennie Nijhuis

This Danish producer has embraced 'compact' feeding, a TMR that reduces sorting, and has seen an increase in milk production and improved herd health.

Herd size:	**415 cows**
Average yield:	**11,029kg**
Unit size:	**450 hectares**
Feed efficiency:	**1.5**

Milk production per cow has increased by 1,800kg with compact feeding

For more milk – just add water

Compact feeding is proving popular on some Danish dairy units and little wonder when you look at the results. We spoke to a producer who is mixing as much as 10kg of water per cow into his herd's ration, to reduce sorting and boost milk production.

text **Tijmen van Zessen**

Adding water while mixing a TMR ration and mixing the ration so intensively that 'sorting' is simply not possible. That's the definition of 'compact' feeding. It's something that few UK producers will have heard of – let alone seen – but there are quite a few producers in Denmark who swear by the technique and the results

Bennie Nijhuis is one of them. He emigrated to Denmark from The Netherlands 22 years ago. He runs a 415-cow herd and on arriving in Denmark he was absolutely amazed. "I saw the strangest rations here, with lots of beet and straw. Grass was generally found to be too expensive. There were too many costs per feed unit, particularly as a result of the high processing costs. And I also saw that many producers were taking first cut far too late."

Bennie takes four cuts of silage a year and only the chopping is carried out by a contractor. "Thanks to cooperation with my business partner – who is an arable producer – the rest can be done relatively economically. And I skip tedding the crop anyway, so that saves more time and money.

"It's not common practice to aerate grass in Denmark. I used to do it when I farmed in The Netherlands, but we don't do it here. It's a waste of time and it doesn't affect the feed value. The wind here in Jutland dries the grass sufficiently," he explains.

So why is tedding not necessary with compact feeding? "Compact feeding is a form of TMR whereby selection is impossible. That means that you make the ration wetter," he adds.

Less straw

Bennie learnt about compact feeding via another dairy producer in his discussion group. He saw milk production increase by 2.5 litres per cow while feeding the same ration components, purely by also the availability of feed at the feeding fence. "There must be food available 24 hours a day, seven days a week. Otherwise there will be an increase in unrest in the stall and the cows will not lie down for so long."

Niels Bastian Kristensen: "'Open up' the ration and help the cow"

The 'founder' of compact feeding, Niels Bastian Kristensen, recognises the comments that come from producers using the system. The lack of adequate rumen stimulation is disastrous. Displaced abomasum and rumen acidosis can result. But the Danish researcher says that he knows better. "There is no relationship between structure and rumination. On the farms that I am following in my pilot study, the saliva production has not decreased since the introduction of compact feeding. Don't forget that a cow needs a lot of energy to break down grass. There is a limit to being able to ruminate a meal."

He says that by mixing the feed more intensively it is easier for a cow to break down the ration. "You help the cow by 'opening up' the feed. She uses less energy to make milk from the ration. But, in my experience, producers are usually too afraid to mix."

The essence of compact feeding is to avoid selection. If cows select the concentrate feed then rumen acidosis occurs as the ratio of concentrated feed to forage is then out of balance then. "We see that the system stops cows getting too fat because older cows can no longer sort the concentrate feed. I believe that compact feeding ensures that those cows produce milk instead of laying down body fat."

The effect is that, after calving, fewer cows suffer from metabolic diseases. According to Niels, one success factor is

Phase 1: loading concentrated feed components and water

Phase 2: loading grass silage

Phase 3: loading maize silage

mixing the ration for longer and adding water. "And this herd already had high milk production, averaging around 10,000kg per cow," Bennie recalls.

So he copied the method on his own unit. For several years his herd's milk production average was around 9,200kg but, since the change to compact feeding in January 2013, it's increased to 11,029kg of fat-and-protein-corrected milk per cow per year.

And the manure is also more consistent. Too good to be true? "As a nutritionist, I always believed that straw, alfalfa and grass hay were all essential structural components of the ration. But sometimes I had two kilogrammes of straw per cow in the ration and the manure was still not uniform.

"There is also no proof that structure

Precise mixing during phase 2: Bennie adds minerals

Consistent ration: every bite is the same

increases the rumination activity. We even took out the straw and found that the cows ruminate more than before. In my view, straw brings down the feeding value of the ration."

He points out that a cow is a master in selecting its feed. And the longer she stands at the feeding fence, the more detrimental it is for her feet. "Hoof health is improved with this feeding system. They fill themselves up and then quickly go to lie down.'

Soak overnight

The herd ration comprises grass silage, maize silage, rapeseed meal, soya, chalk, urea, palm fat, salt and minerals and vitamins. Bennie adds around 10kg of water to this ration per cow. The dry cow ration has straw added and, to prevent heating, he also adds formic acid to the mix. Bennie prefers to cut maize at 30% dry matter because a drier product requires more water.

The load order is an important part in the feeding system. Bennie says that there are three phases in the mixing process. "During phase one I load the rapeseed meal and the soya. I then add the water to this and sometimes I just let it stand overnight to be sure that the concentrated feed components are well soaked."

Phase two starts with loading the grass silage that, depending on the chop length (for Bennie this is 10mm), is mixed for between eight and 10 minutes. "We cut the grass silage so short to minimise the risk of sorting," Bennie explains.

The smaller the difference in the particle length of the various forage types of feed the lower the risk of sorting. During the mixing of phase two he adds the minerals then again mixes it – this time for eight minutes. Phase three sees the addition of the maize silage and this is mixed for another 15 minutes.

Feed availability

The increase in milk production at Bennie's unit goes hand in hand with an increase in feed efficiency. "At the moment the feed efficiency is 1.5kg of milk per kilogramme of dry matter. In the past it was 1.4."

He says that the success of compact feeding is also linked to the availability of the ration at the feed fence. "The cows know that there is always feed there and that every mouthful is the same. There is no reason for them to rush to the feed fence when the mixer wagon comes along. So the cows remain lying down for longer in their cubicles."

On squeezing a handful of the feed, the moisture seeps out from your hand. Is this really healthy for a cow?

"If a cow grazes day and night she eats a ration with only 14% dry matter. Grazed grass is also mainly water and a cow stays just as healthy with that," says Bennie. That said, on other farms that operate the compact feeding system, Bennie's vet says he sees an increase in the number of cases of displaced abomasum.

And what about the cost of the extra fuel used for all that additional mixing? "I use about 40% more diesel – that's 20 litres of diesel a day. In Denmark that costs around £5,500 a year. But I know that these costs are small compared with the value of the extra milk production and the benefits to hoof health." |

Feed efficiency: the herd is currently producing 1.5kg of milk per kilogramme of dry matter