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Analysis indicates that first-cut silage quality has improved this year

# Earlier cuts pay dividends

The results of first-cut grass silage analyses are coming through. The figures look promising and could spell a productive winter on many UK dairy units, if rations are balanced well. We spoke to two nutritionists to find out how to maximise performance from the forage available.

text **Phil Eades**

With more than 2,000 first-cut grass silage samples analysed so far at its Derbyshire-based laboratory, Trouw Nutrition GB believes that many producers are seeing the benefits of following advice to cut earlier to improve forage quality.

Technical director John Allen says that despite starting with a raw material with an ME content of more than 12MJ/kg DM, typical first-cut grass silage had stubbornly remained around 10.8ME. "But this year a different – and encouraging – picture is emerging.

"Our initial results show that, on average, grass silage quality has improved and this is principally as a result of cutting dates being brought forward," he says. "Grass growth was also slower this spring, which meant that crops were less mature at harvest. Producers have some superior quality forage in the clamp."

All the traditional measures of quality have improved compared to 2016. Dry matter content is higher, at 33.4%, while crude protein has risen from 14.5% to 15.0%. D value is 69.61%, up from 67.6% in 2016 and helping ME to rise from 10.8MJ to 11.1MJ. "And intake potential has also risen to 102.75, which suggests that cows can be expected to eat reasonable quantities and that first-cut grass silage will provide an excellent foundation for diets," adds Dr Allen.

## Real potential

"A cow consuming 10kg DM of this year's average silage could be expected to produce maintenance plus 6.2 litres per day – a figure that's up from 5.6 litres per day in 2016.

"Across a 200-day winter this would be an extra 120 litres from forage per cow. Although this is great news, it actually under-estimates the real potential in the forage."

Dr Allen explains that while traditional

*John Allen: "Producers have some superior quality silage in the clamp"*

*Bruce Forshaw: "Better quality silage could have a significant impact on margins"*

terms such as dry matter, crude protein and even ME may describe the silage in the clamp, they do not describe how it will behave once the cow has eaten it.

"It is important to understand that the energy and protein actually used by the cow is not the same as the feed they eat, but what that feed becomes after it has been broken down into the end products of digestion."

Using new parameters, produced as part of the NutriOpt Dairy system, he says that producers can now ensure that their cows get the most from their grass silage. Dynamic energy (DyNE) is the new term used to describe energy. It is the sum of the end products of digestion and gives the most accurate assessment of the energy actually available for use by the cow.

Using DyNE, a cow eating 10kg DM of the average first-cut silage will be expected to cover maintenance and produce 7.7 litres per day – that's an additional 300 litres per cow from forage during a 200-day winter, compared to the ME prediction. Rationing based on silage ME could result in unnecessarily higher production costs, according to Dr Allen.

In addition to better defining nutrient supply, the new analysis parameters will help to improve rumen pH and rumen health by more precisely predicting the rate and extent of fermentation in the rumen. He explains that this year's silages have less NDF. This is reflected in a lower level of slowly fermentable carbohydrate, although the level of rapidly fermentable carbohydrate has increased.

## Digestive efficiency

"At the same time the levels of rumen fermentable proteins have changed with more rapidly and total fermented protein. This is good news. For optimum digestive efficiency, the supply of carbohydrate and protein in the rumen must be in balance. It will pay to consider the types of supplementary feeds used."

Harpers Feeds' nutritionist Bruce Forshaw says that better quality silage could have a significant impact on margins.

*Table 1: Comparison of initial first cut analysis 2016 and 2017*

| | 2016 first-cut average | 2017 first-cut average |
|---|---|---|
| dry matter (%) | 31.2 | 33.4 |
| crude protein (%) | 14.5 | 215.0 |
| D value (%) | 67.6 | 69.1 |
| ME (MJ/kg DM) | 10.8 | 11.1 |
| pH | 4.1 | 4.3 |
| sugar (%) | 2.7 | 2.9 |
| NDF (%) | 50.0 | 45.1 |
| intake potential (g/kg ML) | 98.5 | 102.7 |

*Table 2: NutriOpt analysis parameters*

| | 2017 first-cut average |
|---|---|
| dynamic energy (MJ/kg DM) | 6.1 |
| rapidly fermentable carbohydrate (g/kg) | 198.9 |
| total fermentable carbohydrate (g/kg) | 441.5 |
| rapidly fermentable protein (g/kg) | 92.9 |
| total fermentable protein (g/kg) | 108.3 |
| acid load | 49.8 |
| fibre index | 182.2 |

"Many first cuts may be lighter. This should be made up for by heavier and better quality second cuts. The overall energy in conserved forage should be higher. The extra 300 litres per cow produced during the winter months, which should be possible when the Dynamic Energy levels are considered, will be worth £84 per cow at 28ppl, or £8,400 per 100 cows. But to achieve this, diets will need to be carefully balanced to exploit the potential of the forage.

## Rumen balance

"The key will be ensuring that the rumen is well balanced. This winter it looks like we will be looking for more slowly fermentable carbohydrate sources, as there is plenty of rapidly fermentable carbohydrate in the forage.

"With strong prices for wheat off the combine, many producers who usually feed wheat are taking the opportunity to boost their cash position by selling it and replacing it in dairy rations with energy sources that are trading for less, such as barley, soya hulls and sugar beet. This is a good move, because they will supply the necessary slowly fermentable carbohydrate, unlike wheat."

Mr Forshaw adds that the combination of a high acid load and low fibre index suggest that rumen health may be an issue. "This reflects the higher levels of rapidly fermentable carbohydrate and lower level of digestible fibre. Again sugar beet or soya hulls will help to supply digestible fibre, which will support rumen health and the protein:energy balance."

He says that the metabolisable protein used by the cow is also increased, due to the higher microbial protein yield resulting from the balanced rumen nitrogen and carbohydrate supply. "This will give producers the opportunity to save on the use of bypass protein."

Dr Allen believes that carefully balanced first-cut silage will support more cost-effective production. "However, as usual, there is tremendous range around the average analysis, so the starting point must be to get clamps analysed regularly to ensure diets are formulated based on the forage actually being fed.

And there's a note of caution: "While first-cut fermentation quality looks good, the 4.3 pH is above the target of 4.0 for optimum clamp stability. So producers must take extra care with clamp management and, particularly, ensure that face management minimises exposure to air to avoid wastage of this year's high quality first cuts." |

Cover crop can improve soil condition and bolster forage stocks

# Bridging the maize gap

Maize is only in the ground for five or six months, typically leaving the land fallow during the winter. This is neither environmentally friendly or profitable. But sowing a cover crop is good for the soil and can boost forage stocks, as one Staffordshire-based producer found out.

text **Karen Wright**

*Rob Moore: "It is a valuable dry-cow and store-cattle forage"*

With land prices so high, leaving the ground fallow for six months of the year doesn't make sense. So says Staffordshire-based producer Andrew Moore, who farms and runs a contracting business in partnership with his son Rob. "Neither does it help with potential nutrient leaching," he adds.

The Moores are also keen to maximise feed from home-grown forages for their livestock – an autumn-calving suckler herd of 120 Simmental cows, which are crossed with Belgian Blue or Simmental sires, at Benbrook Farm near Rugeley. They were encouraged to grow a cover crop after maize by Limagrain's Brian Copestake. "It seemed like a good idea," says Rob. "And other producers in the area were keen too – either opting for forage rye or an early growing Italian ryegrass.

## Good germination

"It meant that we had to drill the crop as soon as the maize was harvested to ensure good germination. And we grew the early maturing maize varieties Glory and Ambition, which also helped."

Maize was harvested on October 20 and, keeping to tight time schedules, the land was ploughed, harrowed and drilled with Humbolt forage rye at a rate of 185kg/ha within three days, before being Cambridge rolled. Germination was good and a warm spring prompted early growth, helped along by a 125kg/ha dressing of nitrogen fertiliser in early March.

Rob harvested the forage rye in May. "It had headed by then and the crop was thick, and really consistent. We

*Extra cut: mowing forage rye in May, which was sown immediately after maize in October*

could see yields were good and it had the potential to boost our feed stocks for the following winter.

"I could have grazed this variety of forage rye, or cut it, a lot earlier – in late March or April. This would have given us a bigger window, if we'd needed it, before drilling this year's maize crop."

Growing costs, after the maize, worked out about £425/ha, made up of £178 for seed and fertiliser, £100 to plough and drill, and £147 to harvest and clamp. "And there are some hidden savings too," adds Rob. "These come from less soil run off and reduced nutrient leaching."

## Hefty crop

The Moores sell home-bred stores at between 15 and 18 months old from this closed herd, through Bakewell Market. They aim to get steers to 420kg and heifers to 380kg. And they rely, as much as possible, on home-grown forage. They feed maize and grass silage, wholecrop, and they are now incorporating the forage rye silage in the ration.

And they will reap the benefit of a hefty forage rye crop. Harvesting it relatively late has yielded 40t/ha fresh weight and fermentation was good. Crude protein content was 92g/kg.

"The ME in this crop was only 7.2 – a little low because we cut it too late. But next year we will cut the crop before it heads and we would then expect an energy value far closer to 10," says Rob. Despite having lower energy and crude protein levels than grass silage, typically around 10 ME/kg DM and between 11% and 12% CP, forage rye is an ideal feed for young stock and dry cows.

"For us, it will be a perfect dry-cow and store-cattle forage. Our store cattle are put on to a TMR from eight months old and we don't feed any cereals, so this will be a really valuable extra forage."

*Store cattle: the forage rye silage forms part of their TMR*

Looking at the costs verses yield, Brian Copestake estimates that a value of £20/t fresh weight can be attached to Humbolt forage rye, so yields above 22t/ha would represent a profit.

## Cost benefits

"With a yield of 40t/ha, the value of the forage rye crop in feed value is £800/ha – nearly double Rob's growing and harvesting costs of £425/ha," says Brian. "And if the crop was grazed – forage rye is ideal for early turnout grazing in the spring – the growing costs would drop to £278/ha on the Moore's farm, making it even more attractive.

"The environmental advantages are an additional benefit," he adds. "It makes real financial sense. There are 170,000 hectares of maize grown in the UK each year, and so potentially there is wasted opportunity.

"It's also interesting that in other countries, including Denmark, legislation means that growers have to have 'green fields' with catch crops before a spring crop to avoid nutrient leaching and to support soil structure."

Brian is seeing a growing trend among producers who are sowing cover crops that sit neatly between maize crops. "I've seen good crops of forage rye, and of the high yielding annual ryegrass Westerwold, in these situations. The choice of cover crop depends on the site, its soil type and the micro climate.

"Forage rye is robust," he adds. "It will grow on a wide variety of soils and tends to resist pests and diseases. Humbolt has been bred for its winter hardiness and for producing an early bite, which can be up to three weeks earlier than Italian ryegrass. I think this is why we saw such high yields on the Moore's unit."

## Mixture option

Another option for producers looking at cover crops is the mixture of forage rye and vetch, which is used in Lift 'n Fix seeds mixture. This mixture meets the EFA greening scheme requirements and the higher protein value of the vetch increases its feed value.

Based on his success in growing forage rye, the Moores are set to follow this year's maize harvest with another crop of Humbolt. "It makes sense to put our maize in a rotation and grow three crops in 18 months. We're making the land pay and we're also putting something back in to help the soil. But the icing on the cake is the additional quality forage for the cattle." |