



'Stabilising' straw ekes out forage stocks and maintains butterfat

'Fire-fighting' fibre source

Changing how fibre is added to the herd ration has helped one North Yorkshire-based producer to calm 'fiery' forages and optimise rumen function.

text **Jess Patterson**

Straw is proving to be key to boosting milk from forage and maintaining rumen health for Chris Stockdale's 170-cow herd. He and his family run the herd, as part of the diversified business, at Allerston near Pickering in North Yorkshire. Other enterprises on the 190-hectare unit include combinable crops and a 250-bay caravan site. So Chris has limited amounts of land available to him

for growing forage. The Carrvale pedigree Holstein herd is currently averaging 9,700kg per cow, at 4.17% butterfat, with 3,800kg of milk from forage. But as part of his effort to keep costs down, Chris is keen to reach 4,000kg of milk from forage rather than push for total yield.

"If the cows creep up to 10,000kg without trying then that's fine, but how we do it is more important," he explains. "Getting

that extra milk from forage, rather than concentrate, is cheaper. We also can't afford to sacrifice butterfat on our Arla standard contract."

Calving all year round, the herd is housed during the winter and the higher yielding cows also stay in during the summer. The rest are grazed on a carefully-managed paddock system, from April to early November, and topped up with a TMR buffer.

Starch supply

The main forages he uses are grass silage, which forms up to two-thirds of the ration, maize silage and some wholecrop wheat or barley, taken opportunistically depending on the arable cropping regime and the quality of the crops in any year.

The rest of the ration typically comprises chopped hay, home-grown cereals, sugar beet pulp, soya, distillers' grains and concentrate (fed to yield) in the parlour. With an arable producer's approach, Chris manages the grassland precisely. He cuts it 'young' to leave him with high protein, high sugar and low fibre silage. But this can be hard on the cows' rumens so he aims to balance out the low fibre content of the grass silage with maize silage to add structure and help with the rumen 'mat'. However, growing the right quality and quantity of maize in North Yorkshire is challenging, and this leads to inconsistencies in the ration year after year.

"Between the weather and the pressure on land on the farm, we inevitably harvest less maize silage than we want, and sometimes of poorer quality than we need, to supply the starch needed in the diet," explains Chris.

"So we feed our maize silage strategically, when we can and when we need to, stretching it out with other forages. We've increased the amount of wholecrop we make to partly compensate and have also had unsuccessful attempts to add straw. Chopping it to the length we want in the TMR, around 2cm, means that the rest of the ration ingredients can become over-processed."

Too 'fiery'

So in winter 2015, working with Thompsons of York's nutritionist Chris Lyth, Chris Stockdale found a way to add more fibre into the diet by using nutritionally improved straw (NIS) – alkali-treated and pelleted chopped straw. "At the beginning of housing we hit a problem when we ran out of maize. So we started feeding first cut, taken early in mid-May when the grass was short, lush, very high in sugars and low in NDF. It proved a little too 'fiery' for the cows and they struggled to keep it inside them. Dung was very loose and we couldn't get the cows to settle.

"At this point we would normally have increased maize silage in the diet but we had none left. And with the maize harvest in 2015 ending up as late as grass was early, we weren't going to be able to feed that year's crop until nearer Christmas. We tried chopping and adding a



Chris Stockdale: "NIS allows us to feed a more consistent ration and eke out forage supplies"

kilogramme of straw alongside the kilogramme of hay we already had in the ration, and increasing sugarbeet pulp, but a month went by and things hadn't really improved," says Chris.

At this point Chris Lyth secured five tonnes of NIS on a trial basis, and the duo initially mixed it into TMR at a rate of 1.5kg per cow, later increasing this to 2kg. Chris Lyth picks up the story: "Pretty quickly, the cows started 'calming down'," he says. "Digestion seemed to stabilise and dung became firmer. We carried on using NIS in the ration to balance the grass silage until the maize silage was ready to feed, at which point we cut it back to 1.5kg in the high-yielding group.

"Then, at turnout this year and mindful of Arla's component-based contract, we decided Chris should cut back on maize to preserve stocks and reintroduce NIS in the buffer-fed TMR at 2kg per head as a precautionary step to stabilise butterfat." He reports that, with cows averaging 29kg at 4.11% butterfat before turnout, he was pleased to see average yields move up to between 31kg and 32kg with butterfat levels holding at more than 4%. Throughout April, May and June the lowest butterfat dipped to was 3.95% but yields were maintained and the cows came back to averaging between 32kg and 33kg of milk per day at 4% butterfat. However, with one problem solved, he says that the other challenge was maintaining the high yielders at an average yield of around 45kg daily. "With the arable operations Chris and his family run, it makes sense to feed as much home-grown cereal as possible. But this,

too, has an impact on rumen health despite the grain being ammonia-treated," he explains.

Rumen stability

Again, NIS proved to be a really useful tool. The high yielders have been maintaining yield and condition on 1.5kg of NIS plus 15kg maize silage (fresh weight) mixed into the TMR. With stocks running low again, maize silage will soon have to be scaled back to conserve stocks, but there is the option of increasing NIS to maintain rumen stability and butterfat. The impact on rumen health has been the big driver to use straw in the form of NIS, and that has had an impact on yield per cow per day that, in turn, drives kilogrammes of butterfat sold.

Chris Stockdale agrees. "Using NIS to keep butterfat yields consistent and balance the ration, as we switch between forages, is certainly a better option than either chopped straw, which has no feed value and ends up 'dumbing down' the ration, or C16 fat, which at £800 per tonne costs us more than 30p per cow per day to feed compared with NIS at 13.6p/kg."

The other development is that, since turnout, the low yielders have been buffer-fed TMR as a supplement to the base diet rather than a replacement, with the aim of increasing grass intakes. Issues with getting enough fibre into the diet have been solved by including NIS in the buffer TMR as well.

"Inconsistency in intake becomes a more significant problem as grazing forms an ever-larger part of the diet," adds nutritionist Chris. "We can't control temperature, daylight hours and rainfall, and all these affect sugar and fibre levels. So NIS is an easy way of balancing this out. I have begun using it mixed into the parlour cake for other herds, at a ratio of five parts cake to one part NIS, and it's worked really well in terms of rumen health and production." |

Table 1: Stockdale herd's ration costs with and without nutritionally improve straw (NIS)

	before including NIS	after including NIS
ration cost (ppl)	8.53	9.1
butterfat (%)	3.92	4.00
high group (kg milk/day)	45	46.5