

# Producing top quality silage to optimise intake and improve performance

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With dairy inputs at an all time high, even those achieving a good milk price are struggling to maintain profitability. Thus the focus has to be on how to reduce input costs. Farms are making better use of slurry to reduce bought-in fertilisers and there is increasing interest in anaerobic digesters as a means of reducing energy costs. That leaves feed.

Feed accounts for nearly half the total cost of production and bought-in feeds have the biggest impact on the cost of the overall ration, yet it is impossible to predict much in advance what winter feed costs will be as so many issues worldwide can affect them, the past winter being a good example. The best way to minimise your exposure is to be less reliant on them.

Anything that increases feed conversion efficiency (FCE), ie litres of milk per kg DMI, will also have a positive impact on the bottom line as production increases without any extra feed cost, ie as FCE increases, cost per litre decreases.

FCE has been used for many years by the US dairy industry as a measure of how well feed is being utilised but has only recently been taken on board in the UK. It is affected by the nutritional and physical characteristics of a ration as well as other factors such as the stage of lactation.

In the US the aim is for an average FCE of 1.4-1.6 and there is no reason why similar figures should not be achieved in the UK, yet currently our average is only around 1.2 so there is some way to go.

Increasing FCE is more to do with getting more out of each mouthful. This is a better route to increasing margins than simply increasing intake. Although marginal litres are generally more profitable in that maintenance



energy requirements have already been accounted for, it must be remembered that pushing cows to maximise yield can result in all sorts of other health and fertility problems that may more than eliminate that extra milk benefit.

## Make better use of forage

To reduce bought-in feed and optimise intake you need to make better use of your home-grown forages, but you can only do this if your silage is top quality. Every year when silage analyses are reported the mean figures may look okay but they can represent a very wide range. If you want to cut your feed costs you need to be in the top band. In Table 1 the difference between the average for the top and bottom 10% of silages could mean an extra four litres of milk.

The basis of high quality silage is always

going to be a good starting crop as ensiling will not make it any better. With crops like grass and lucerne (alfalfa), where digestibility falls rapidly after peaking, your harvest date is critical. Unfortunately the harvest date will always be a compromise between quantity and quality since you cannot maximise both (Fig. 1).

The choice depends on your priority. With grass the ME falls by about 0.1 MJ/kg DM per day after heading. This is less of an issue with maize (corn) as you do not see the same rapid drop in nutritive value as the crop matures.

In the Netherlands they have traditionally gone for more cuts of grass, taking them younger when leafier and more nutritious. Although the dry matter yield per cut is reduced due to the extra cuts, the overall DM yield is not much different. More cuts will, however, increase harvesting costs.

You will always incur some losses in DM and energy during ensiling but good management and the use of a suitable additive will keep these to a minimum. The type of fermentation that occurs will also have a big impact on palatability and intake as well as aerobic stability.

There are many silage additives on the market with inoculants predominating in most countries. Inoculation preserves more

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**Table 1. Average 09/10 grass silage analyses by Frank Wright Trouw Nutrition Intl.**

	Average	Top 10%	Bottom 10%
DM (%)	31.8	32.4	33.1
CP (% DM)	12.8	14.0	11.7
ME (MJ/kgDM)	10.5	11.6	9.5
pH	4.1	4.0	4.3

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nutrients by improving the speed and efficiency of fermentation and most will have data to show this but an improved fermentation does not necessarily translate into improved animal performance.

Only full scale dairy trials can show this and, as with anything, you need to see this in several trials in order to have confidence an additive will work consistently – few inoculants have sufficient trials.

Some inoculants have also been shown to improve performance when the untreated silage was good and there appears to be no improvement in fermentation (Table 2), which just proves how important animal trials are.

Some inoculants have been shown to result in silage with a significantly higher digestibility. This allows more nutrients to be accessed in the rumen, increasing FCE and helping explain increased production with such inoculants.

Chemical-based additives can also improve the silage quality but there is little, if any, evidence for improved animal performance, except when the untreated silage would have been poor without anything.

Inoculants are not so robust as chemicals in very challenging circumstances but improvements in ensiling technique and machinery mean these are not common nowadays.

In the EU, silage additives are now

	Untreated	Inoculant
pH	3.7	3.7
Lactic acid (% DM)	11.4	10.9
Acetic acid (% DM)	2.2	1.4
Ammonia-N (% TN)	6.4	5.1
Milk yield (kg/d)	22.1	24.2

**Table 2. Animal performance improvements can be obtained without any improvement in fermentation (Gordon et al, 1989 – grass silage).**

embraced by the feed additive regulations and this is likely to lead to a number of additives being withdrawn from the market and others changing some of their ingredients but selling under the same name.

Something farmers should be aware of is that if the ingredients change it is no longer the same additive so previous efficacy trials are no longer valid.

You will only be able to maximise forage use in the diet if you have enough of it so it is important to minimise DM losses, especially aerobic spoilage losses at feedout.

Good management is key to this – short chopping, fast filling, good compaction and effective sealing. If past experience indicates there are still likely to be issues, use an additive designed to deal with this issue. There are a number of additives that can give you both improved animal performance and improved aerobic stability. ■

**Fig. 1. Changes in yield and quality of early perennial ryegrass.**

