

BIOTALK

Unleashing the value of your forage

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Multi-cut grass systems lessons from 2017

This year a significant number of farmers took the decision to go for more frequent cutting of grass silage with many taking five or six cuts. Lientjie du Plooy from Biotalk looks at the lessons learned and the pointers for success.

If you look at trends in first cut silage analysis, the average energy content had stubbornly stayed around 10.5MJ/kgDM for many years, indicating a lost opportunity to increase production from forage. Other countries who adopt more frequent cutting like Holland consistently produce better quality silage.

2017 was the year when more farmers in the UK looked to cut grass silage more frequently, in part due to the mild winter which meant crops were more advanced. The outcome was that grass silage quality on average improved to 11 MJ/kgDM. For a farm with 150 cows consuming 10kgDM of average silage for a 200 day winter that adds up to 27,000 more litres from forage. Many crops were even better than this, allowing bigger gains to be made.

With benefits such as this, hopefully more farmers will look to adopt this more efficient system of grass silage production with similar total yields and better quality. So what lessons have been learned that will help make it a success next year.

Plan ahead

You can't just decide to go early. You need to plan ahead because you need to work back from the first cut date and all activities are determined by this. Don't make a last minute decision to try and cut sooner.

Manage the risks

Consider where any risks might be e.g. free nitrogen in the plant, and how you can minimise them. Make sure all involved in growing the crop and making silage are aware of the new approach.

Get fertiliser right

While the guideline of 2 units of nitrogen per day still applies, the shorter cutting interval means you must apply less. On a conventional 6-7 week cutting interval you may apply 90 units, but for a multicut system based on 5 week intervals you only need to apply up to 70 units. Put too much on and the free nitrogen will compromise fermentation quality.

The same applies to slurry. Reduce slurry applications per cut to make sure that it has been absorbed into the soil and that the contamination risk is minimised. Some farmers report benefits from slurry inoculants in this regard

Talk to your contractor

Remember you are the customer but make sure the contractor knows your plans and target cutting dates. In many cases they will appreciate the season being extended but you need to make sure they will be there when you want them. Consider negotiating a price based on yield or the total forage harvesting package rather than acreage.

Cutting a shorter crop means it will lie more densely in the swath so you need to discuss tedding to ensure an efficient wilt. This needs to be done in such a way as to minimise soil contamination.

Clamping

Some farmers reported clamps splitting with more frequent cutting but this can be reduced by careful clamping. Make the silage drier, targeting 30% dry matter as this reduces the splitting risk. Grass at 25% dry matter is more likely to move.

Build the clamp in layers not as a progressive wedge. A clamp built in 20cm layers across the entire clamp floor is considerably more stable than a clamp built as a wedge where the structure can actually promote splitting.

Avoid building clamps too high.

A maximum of two metres high is ideal to try and build single cut clamps although this may not be practical on some farms.

Last year has taught us a lot about the potential of multi-cut systems and hopefully more farmers will see the benefits of this approach next year.



Lientjie du Plooy
Technical
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Forage drives feed efficiency

No one can accuse Joe Carter of standing still and not taking on a major challenge. Since returning home in 2009 he has implemented an ambitious development plan with a central focus on improving feed efficiency.

In 2009 the 137ha farm was carrying 155 cows averaging 8,600 litres at a feed efficiency of 1.32 kgmilk/kgDMI. Today the herd which is milked twice a day is 280 cows averaging 10,782 litres at a feed efficiency of around 1.50 kgmilk/kgDMI. Had the farm been producing the current output at the historic feed efficiency, they would have had to feed an extra 980kg dry matter per cow per year. At a cost of £177/tDM, this would have represented an additional £48,440 on the feed bill, £173 per cow or 1.6ppl. To accommodate the expansion and performance improvement



Joe Carter

objectives Joe, who farms with his parents Irving and Carolyne has improved the old buildings and built an additional building. All this work has been undertaken with the aim of increasing feed efficiency and feed intakes. The improvements have been achieved without significant investments in technology but are primarily down to good management and attention to detail. Understanding the importance of providing the optimum environment if cows are to perform, Joe modernised the traditional dairy unit removing walls and refurbishing the cubicles. A silage clamp was converted into a feed area to allow adequate feed space and this unit is used for dry cows and the heifer milking group.

A new building was built three years ago to house the milking cows. The 142 cows are housed as one group. To ensure sufficient trough space cows are fed on three sides of the building. There is a minimum of 60cm trough space per cow which, combined with feeding on three sides, provides maximum feed times while eliminating the risk of bullying. The troughs have a smooth concrete surface to encourage cows to finish the diet while a rounded top to the feed wall reduces the risk of neck abrasions.

A new 18:36 swingover parlour with a capacity of 100 cows per hour means that milking turn time is a maximum of one hour per milking, optimising the time cows have access to feed and water – a key driver to increasing intakes.

Forage quality

The system revolves around the utilisation of high quality forage. The herd grazed until three years ago but is now housed all year to increase feed efficiency and forage use. A strict reseeding policy ensures no grass ley is more than three years old and Joe takes four cuts of grass. Around 140 acres of maize are grown annually with varieties selected for feed quality.

All silage is made by contractor following strict ensiling protocols to maximise quality and minimise waste as forage drives the feeding strategy. This year's maize will be cut higher to improve digestible fibre content.

All crops are ensiled using Biotol crop and condition specific inoculants to improve the quality of fermentation and improve aerobic stability on opening thus helping limit waste. The unit currently has three clamps each with side sheets, and are topped with Silostop.

Silage is removed with a block cutter to keep a tight face with sheeting rolled back regularly to minimise the amount of forage exposed to the air.



The new unit - designed for excellent cow comfort and welfare

The milking cows and heifers are fed a single TMR with no feeding in the parlour. The TMR is put out twice a day and is regularly pushed up during the day. Diets ensure high dry matter intakes with currently 54% of dry matter from forage. The diet is regularly reviewed and is based on maize and grass silage, a blend, processed chopped straw and a Biotol rumen specific live yeast Farm Pack.

The monitoring system on the feeder wagon is used to measure loading accuracy and efficiency of mixing to ensure diet consistency. Cow Signals are used to assess how well the diet is performing with measures such as manure scoring, rumination rate and rumen fill being employed.

Healthy, fertile cows

Joe appreciates the need to keep cows healthy and with good fertility if feed efficiency is to be optimised. Current fertility performance is a 22% pregnancy rate, all eligible cows are served by 80 day and a 382 day calving interval. Health protocols are in place to help minimise the problems with mastitis and lameness. Mastitis is running at 15 cases per 100 cows with a cell count of 130. The latest locomotion score results are 90% green, 8% yellow and 2% red.

Focussing on feed efficiency has allowed Joe to develop a more efficient system with reduced costs of production. His next challenge is to maintain performance while increasing to 300 cows.



The focus is in high quality silage and minimal waste



Feed trough on three sides of the building maximises trough space

Inoculants help reduce waste and deliver a strong return on investment

Why inoculants pay

With pressure to review all production costs on farm, Johnathan Barton, Biotal Regional Business Manager reviews the cost benefit of silage inoculants.

I regularly get asked whether it pays to use a silage inoculant. Can I get away without one? Can I use at reduced rate? Can I only treat part of the crop? My answer to all these questions is that you can do any of them, but why would you want to? If you want to gamble with the quantity and quality of the foundation of your winter feeding and the most cost effective litres you will produce, then go ahead but if you want to make the best feed you can then a proven inoculant will play a significant role.

All the evidence is that Biotal inoculants show an excellent return on investment and are proven to have a significant impact on the quality of feed produced. Since first introduced over 25 years ago, the technology has moved forward significantly with more new developments set to improve their efficiency still further.

It is worth remembering what inoculants are designed to do. Silage fermentation is a biological process where bacteria convert sugars in the crop to a variety of acids, some aids lower the pH of the forage whilst others help to improve long term stability in dryer forages.

All bacteria will ferment sugars and there are plenty of bacteria on all crops. But they will act at different rates, using up more sugars in the process. Some naturally occurring bacteria will only achieve a partial fermentation resulting in waste and poor quality feed. Some will ferment and produce the wrong acids such as butyric acid.

Where forages have a low sugar content specific enzymes make the sugar more readily available and accelerate fermentation.

Biotal inoculants contain specifically selected bacterial strains and enzymes based on forage type and dry matters.



Wetter forages (<30%DM) require a rapid lactic acid fermentation which ensures a complete fermentation and a rapid drop in pH.

Dryer forages also require a rapid fermentation but the emphasis is on long term stability on opening rather than focusing on low pH.

Effective fermentation

By using a crop and condition specific inoculant an effective fermentation can be achieved whatever the crop dry matter, consuming less sugars than an untreated crop. They also ensure a crop that is more stable when the clamp is opened, reducing aerobic spoilage. This means more of the preserved feed is fed as opposed to being removed and ending up on the muck heap.

Biotal inoculants act rapidly to minimise the impact of undesirable bacteria, which produce an inefficient fermentation and lead to feed spoilage.

While poorly fermented silage will have a lower feed value and intakes may be reduced, the most visible sign of poor silage making is waste.

On average, 15% of the dry matter ensiled in a clamp will not be fed to cows due to spoilage while in the clamp or at feedout, both of which can be reduced by using an inoculant.

Think less waste

The value of this waste increases as silage quality, and milk production potential, increases. The table shows the cost of waste in reduced litres produced from a 1000 tonne clamp of 30% dry matter silage at two different ME levels. It compares the average of 15% waste with reducing waste by half which is achievable on most farms.

Reducing waste from 15% to 7.5% would allow an extra 43000 litres to be produced from the 1000 tonne clamp if it contained a 10.5ME silage. This increases to 47000 litres if the silage is 11.0ME.

At 28ppl, this extra milk would be worth about £12,500 compared to the cost of treating the clamp of around £2000. You also need to consider the cost of producing the discarded silage which at £100/t DM would be £7500-15000. And the costs of handling the wasted feed.

While inoculants alone will not reduce wastage by 50% they will play a significant part in achieving reductions of this magnitude. Using the 11.0MJ silage in the table, the benefit of reducing waste by 50% is worth around £12.50 per tonne compared to an inoculant cost of £1.55 per treated tonne. So think about these benefits before deciding whether inoculants are worthwhile on your farm.

Cost in lost litres of different levels of waste and different quality silage

	10.5 MJ/kg DM Silage		11.0 MJ/kg Dry Matter Silage	
	Lost production (l)	Value at 28ppl (£)	Lost production (l)	Value at 28ppl (£)
COST of 15% average waste	85,900	£24,052	87129	£24396
SAVINGS by reducing waste to 7.5%	42,950	£12,026	45000	12560

Calculation based on a 1000t clamp at 30%DM

Yeast crucial to increased forage intakes



Andrew Griffin, Steve Symons and Raymond Griffin

Feeding rumen specific live yeast has helped one Cornish farming family increase forage intakes, exploiting the potential of their milk contract by increasing milk solids.

"While the diet has been changed and refined over the last twelve months to great effect, one constant has been the inclusion of a Biotol SC farm pack," explains Steve Symons, Biotol Regional Business Manager in the South West. *"They have been feeding our yeast farm packs for several years and are convinced of the benefits."*

The Griffin family have farmed at Wheatley Farm, Maxworthy in North Cornwall for over 127 years and Andrew is the fifth generation, farming with his father Raymond. In total they farm 250 acres of heavy land but still manage to produce top quality forage for the 145 strong black and white dairy herd.

The farm is mainly down to grass but every year 20 acres of cereals will be grown for feeding to the cows, either as crimped cereals or fermented wholecrop, depending on other forage stocks.

"In 2016 we made crimp as we had plenty of silage," Andrew Griffin comments. *"However, this year we needed more fibre in the diet to complement the first cut so we made wholecrop wheat in late July, treating the forage with Biotol Wholecrop Gold to ensure it stays cool and stable during feed out."*

"First cut grass silage is usually taken in the first week of May but this year was cut two weeks earlier as the crop was ready and ground conditions were good."

The tonnage was a bit light but this has been made up by second cut which was taken five weeks later and by a good third cut"

All cuts were made using Biotol Axcool to ensure an effective fermentation and improve stability on opening ensuring minimal clamp losses.

Quality is excellent. First cut analysed at 33.3%DM, 11.7ME and 18.5%CP, second cut is 35%DM, 10.7ME and 17.7% CP.

Driving milk quality

The cows calve all year round. In the summer they graze day and night with buffer feeding as required. Concentrate is fed through out of parlour feeders. From late August as grazing quality declines a shedding gate is used to hold high yielders back to maintain dry matter intakes.

In the last twelve months, the diet has been re-engineered by Richard Waters, Ruminant Nutritionist with Harpers Feeds with the objective of achieving high forage intakes and increasing milk quality.

The forage:concentrate ratio in the TMR has increased from 60:40 in January to 68:32 in October with a target of 70:30. The quality of ingredients in the blend has been improved and total fat content of the diet reduced.



The TMR is fed once a day and now contains less fat and more consistent ingredients

At the same time the amount of concentrate fed through the out of parlour feeders has been reduced. Total dry matter intakes are currently 18.8kg/day with 12.8kg from forage.

Higher forage intakes

"To achieve this level of forage intake it is essential to optimise rumen function and digestion of fibre so they have continued to feed the yeast farm pack," Steve Symons continues.

"Live yeast plays a vital role in the rumen. It scavenges oxygen and creates the conditions that favour specific fibre degrading micro-organisms, by increasing the activity of bacteria that utilise lactic acid while reducing the activity of bacteria that produce lactic acid it helps minimise falls in rumen pH."

"In the winter they use Biotol SC toxisorb while in the summer they switch to Biotol SC acidease to help ensure a stable rumen pH on a grass and cake based system. Both yeast farm packs have played a key role in allowing greater forage intakes as they have enabled the cows to process the diet more effectively"

"The impact of the changes has been significant," Andrew Griffin comments. *"Milk quality has never been so high averaging 4.6% fat and 3.5% protein, and peaking at 5.03% fat and 3.65% protein having risen from 4.0% and 3.2% respectively, meaning we have got a better milk price and are making full use of the price available within our contract."*

"We have increased efficiency because we have higher revenue and reduced costs and at the same time have not put more pressure on the cows. Yield per cow is broadly the same at 8500 litres but milk quality and fertility have improved. This is a much better approach for us than chasing expensive marginal litres."



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