Grazing Management in the Spotlight

In the UK, dairy systems are broadly moving to two extremes: Low input, extensively grazed herds and high-input systems with milking cows housed all year-round. There are also a huge number of farmers somewhere in the middle, but every producer is focussing on making better use of grass in a bid to cut costs – after all, it is the cheapest form of feed available.
Text: Olivia Cooper

Nestled on the western edge of Dartmoor, Brinsabach Farm has been in the Batten family since 1559 – but there's nothing old-fashioned about the way Bill and his son John manage their pasture. Milking 60 crossbred cows near South Brentor, Devon, they are constantly striving to make the most of their grassland.

"I wanted to replicate the quality and yield of spring grass all year round, and thought that cutting it regularly might work," says Bill. For the past six years he has been mowing the pasture every day before turning the cows out to graze, and is thrilled with the results. "When grazing, our cows would eat 17kg a day, but after we moved to pre-mowing that increased to 23kg. As a result, peak yields from forage increased by 40%, to 35 litres a day."

"Get up and graze"
Perhaps surprisingly, none of the pasture has been reseeded since the 1960s – but Bill is convinced that the mixed species and thicker sward are more beneficial than short-term ryegrass leys. He and John measure grass growth by eye, and graze the cows rotationally, shutting up any paddocks for silage if the grass gets ahead of them. "We try and cut the grass when it reaches 3000kg/ha of dry matter, leaving 1700kg/ha residual for rapid regrowth," says John.

He typically cuts the pasture once a day so it is as fresh as possible, and uses electric fencing to strip graze the paddocks, moving it four times a day to encourage the cows to get up and graze again. "The cows get fresh grass after milking in the morning and evening, again at midday and in the late evening," says John. "If we gave them the whole area they would trample the grass and waste it; we want to motivate them to get up and eat again even if they're not hungry – it's like going back for dessert."

Another benefit of mowing the grass is that the cows don't eat selectively as they would when grazing. "They eat both the energy-rich top and the fibre-rich base," says Bill. "Mowing has also wiped out nettles and thistles, although docks are always a problem."

Geared to maximum intake
The cows are housed over the winter, fed on grass silage plus rolled maize, distillers' grains or soya hulls to boost quality if necessary, and 0.5kg of a mineral blend. "We use feeders so there's no need to push it up, but we keep them clean and fresh; our whole system is geared to maximising forage intake, which is what everyone does over the winter but very few seem to focus on in the summer."

Before the family started mowing they were feeding 1t of concentrates per cow a year – that has now dropped to an average of about 200kg – a saving of around £160/cow. "The milk quality hasn't changed, and we don't get any displaced abomasums or other concentrate-related problems," explains Bill. Milk yields average 6,461 litres per lactation at 4.24% fat and 3.48% protein, and the calving index is 380 days.

Previously, Bill would add concentrate feed for cows milking over 25 litres a day in the summer if it was dry, or above 15-20 litres if it was wet. That is now reserved for cows milking over 35 litres – although cows will get rolled maize whenever grass is in short supply. "However, the 2016 spring was very cold so we had to feed more concentrates than usual because of the lack of grass." It also meant all the grass, when it grew, came at once. "It made it more difficult to plan our grazing – we had to take more for silage than normal to stop it going to seed," he adds. "We're constantly adding to the silage pit; as we're spring calving the cows are usually in late lactation by the time they're eating it."

Although he will cut the grass in any weather, John doesn't usually start mowing until after the first or second grazing in the spring, as there isn't enough grass to warrant it. "But you can cope with grass that's grown a bit too far – something you wouldn't really graze." Each paddock gets 35 units of urea/acre after every grazing, topped up with potash and phosphate in the autumn if necessary. Sea sand from the cubicle housing is also spread on the land, which keeps the pH high, mitigating the need for lime.

In a trial carried out by Mole Valley Farmers on a field not reseeded since WW2, grass yields in May totalled 3500kg DM/ha, dropping to just over 2000kg/month over the summer months and 1760kg in September. "If we add in 1500kg for the shoulders of the year it brings the total to a very respectable 13,900kg," says Bill. Protein content ranged from 11.4% to 22.4%, with metabolisable energy at 11.3-11.5MJ.

Low input system
The very low milk prices in 2016 illustrated the benefit of having such a low input system: Although the Batten's profits halved, they remained in profit, unlike many other of the UK's producers. "Our variable costs in 2014 – the most recent audited figures we have – averaged £362 per cow compared to a UK average of £928 for mainly Friesian / Holstein herds," explains Bill. "That put our gross margin at £1427/cow compared to an average of £1170." In 2015 his variable costs fell to £354, with the low milk price eroding the margin to £930/cow.

Expert advice from Charlie Morgan, director at grassland consultant Grassmaster

Perfect grassland management will of course depend on the geographical and climatic conditions. But while one system will never fit all circumstances, there are a number of broad themes which apply.

Nutrient Management
For optimum grass growth, it's essential that the soil contains sufficient nutrients in available form. Phosphate levels should be at least 16-25mg/l on the Olsen scale, while Potash should be at least 120-180mg/l. The soil pH should ideally be 6-6.5, especially if legumes are to be grown. Once this balance is right, the plant is better able to take up nitrogen.

Once these basic building blocks are in place, growers can then look at micronutrient levels for even greater efficiencies.

If using inorganic fertiliser, farmers should apply phosphate for maintenance in the spring for best uptake, with potash to go on later in the season to avoid hyper-magnesaemia (staggers) in the livestock. Nitrogen response is highest in the spring and early summer (1kgN to grow 30kgDM) but it's best to adopt a little and often approach to meet crop demand, which means applying fertiliser after each grazing or silage cut – although growing legumes will fix nitrogen from the atmosphere and therefore decrease the amount of inorganic nitrogen required.

Organic fertiliser choices include anaerobic digestate, farmyard manure and slurry. If injecting cattle slurry the pasture can be grazed within 24 hours, whereas fields

receiving broadcast application will not be grazed cleanly by stock for up to 12 weeks.

Soil conditions
Good soil structure and organic matter content are vital elements for any crop growth, enabling roots to grow down through the soil and access water and nutrients. Organic matter improves the water holding capacity of the soil so is vital in dry climates. It also stores carbon and helps prevent erosion – but organic matter, soil fauna, moisture and nutrients are all lost every time the soil is worked. There is therefore a move towards more minimum tillage systems, which is good for the soil but less ideal for grass establishment.

In my opinion, shallow ploughing is still the best way to establish a new ley, as it gets rid of competitive plants and weeds. If min-tilling, other vegetation must be sprayed off first, and the future of glyphosate is extremely uncertain. In some cases, undersowing or stitching in new seed may be a better option, providing the existing grass is very open; with a lush, thick pasture the competition will be too great.

Species/ variety choice
Species choice is an important part of maximising grass yields and quality throughout the year, and the right selection will depend on the local climate. In wetter regions ryegrass remains King, whereas Timothy, dwarf cocksfoot and fescues are more suited to drier areas. New breeding means there are now hybrids available that are better rooting, drought tolerant, and winter hardy, making them more suitable for a changing climate. Legumes and deeper rooting herbs are becoming increasingly important components of mixtures.

Choosing a mixture of species and varieties is vital to spread the growing season and maximise yields and quality: A straight ryegrass ley in the UK will yield about 10t/ha of dry matter a year, whereas a mixed ley can produce 16-18t/ha
When it comes to reseeding, a silage ley should typically be replaced every five years, with grazing pasture lasting around 10+ years. Variety choice should be tailored to pasture use, as some varieties perform highly for a short period of time, while others are bred to last. If carefully managed to avoid overgrazing, poaching, compaction and nutrient depletion grassland can last 20-30 years without being resown; in these cases the only argument for reseeding is to introduce newer grass genetics with new traits for the future.

Grass management
The key to good grassland management is to understand how the plant actually grows. Then you can cut or graze it at the optimum growth stage, and leave it with sufficient leaf area to regrow rapidly afterwards. To get the absolute best from grass it should be grazed or cut in a rotation, minimising plant and soil damage; in this way yields can be increased by 20-50%.

Currently the most common accurate way to measure grass growth is a rising plate meter. In the UK farmers should aim to turn out cows to graze at 2000-2200kgDM/ha, grazing down to 1500-1700kgDM/ha. Any pasture that exceeds 2700kg/ha should be considered for shutting up for silage, and producers should keep a plan of grass growth around the farm so they can design the rotation, cut

surplus grass, or introduce buffer feed if growth is insufficient. In milder climates a winter wedge of grass can be accumulated to about 3000kgDM/ha for first paddocks grazed to assist with early turnout.

In a British dairy system, cows should be allocated the exact acreage of pasture to supply their dry matter intake demand, and moved to fresh pasture every 12 or 24 hours – so flexible fencing, water troughs and access roads are essential. In wet conditions cows will easily consume 5kg of dry matter in the first three hours of grazing, so don't have to be grazed all day until conditions allow.

When cutting grass for fresh feed or ensiling, there is always a trade-off between quality and yield. In the UK, most farmers take two or three silage cuts, but for those units housing cows all year-round taking up to five or six regular cuts over the growing season will maintain metabolisable energy at around 12MJ/kg dry matter. In hotter, drier climates, the principle of rotation still stands, although it will be spread over a longer timescale with greater yields on offer due to slower grass growth.

Having managed grass to maximise yield and quality, it's vital that farmers don't then waste it through poor silage clamp management or feeding practices. Measure grass and silage quality on a regular basis, and adapt your ration accordingly.

Grazing grass is the cheapest way of producing milk, but no two farms are the same. The key is to focus on what suits the environment of the farm and you do best: Are you high input, high output, or low input, low output? Both extremes can use grass extremely efficiently, but too many farmers adopt the middle ground and thereby lose focus. In dairy farming, attention to detail and making little improvements can be the difference between profit and loss.