Evidence-based farming reaps rich rewards

Somerset farmer, Mary Cook, has combined the benefits of scientific knowledge, independent advice and an open-minded approach to build a successful dairy farming business.

Dairy producer, Mary Cook, has always been one to follow the science. Every decision she makes is based on evidence and all advice sought is carefully weighed up against any commercial interests which she knows could guide her in the wrong direction.

The 280 Holstein Friesians she milks at Smokey Farm - tucked into a hollow south of Somerset's Quantock Hills - are testament to the success of this strategy. Of their 9,534 litres at 4.44% fat and 3.46% protein (12 month rolling average), an impressive 4,235 litres come from forage.

"Our focus has to be on milk from forage because that's where you make your money," says Mary.

Other notable figures include a rolling somatic cell count of 95,000 cells/ml, a bactoscan of 9, age at first calving at bang on 24 months, and a replacement rate of 20%. All of this contributes to an impressive carbon footprint of 866g of carbon dioxide (CO_2) equivalent per kg of fat and protein corrected milk (FPCM).

This figure, calculated as part of her contract with the Tesco Sustainable Dairy Group, stands out at some 377g better than the TSDG average, which was 1,243g CO_2e/kg FPCM in the same 2019/20 period.

Key to this performance is the feed use in this herd, which contributes just 17% to its carbon footprint, compared with 28% for the average in the group. This reflects the 1.94 tonnes of concentrates she feeds per cow per year, together with outstanding quality silage.

Financial margins

Alongside the herd's exceptional milk from forage, are equally impressive financial margins. These include a margin over all feed of £2,397 and a gross margin of £2,089 per cow per year.

Much of this performance depends on forage quality which begins with the basics and the choice of grass seed. This is purchased with both a sceptical eye on potential commercial interests and a consideration of the science.

"We buy all of our grass seed direct from farm consultants, Kingshay, as they have done the performance trials," she says.

▲ *Mary Cook, who switched to Safesil from Kelvin Cave Ltd about 10 years ago.*

Reseeded on average every five years, Mary keeps an eye on performance through weekly plate metering (a task undertaken by her husband, Peter, newly retired from the butchery business) and AgriNet software, and from the look and species composition of the sward.

Rotational grazing is a further contributor to improved grass utilisation, and although this practice was embraced many years ago, protocols have been tightened in the last five years, with the goal of further improving financial performance when milk prices were low.

"It definitely improved our profitability but we have since relaxed the process," she admits. "We now have paddocks divided into 3-4 acres in place of strip grazing, which we have found is less stressful for cows and humans."

Targeting an entry cover of around 3,000kg DM/ha and a residual of as much as 1,800kg DM/ha, she says: "We don't want to scalp our sometimes thin soils, and we find this length of residual achieves a good recovery in our low rainfall area [annual rainfall is 29 inches/74cm]."

Equal consideration is given to silage making practices, and true to form, Mary sought the evidence as soon as she took over the farm from her father in 1989, by visiting the former Liscombe Experimental Husbandry Farm to see the results of silage additive trials.

"I'm from the era when acid was best for silage preservation but it was unsafe to handle and created a lot of effluent," she says.

"We tried bugs for one or two years after the acid, but biological inoculants are tricky because you need the right conditions for the good bugs to grow and you can't always guarantee that environment," she says.

"Because of my background in bacteriology [she studied dairy technology in the 1970s at Seale-Hayne Agricultural College], I knew a preservative was probably the way to go, so as soon as we heard about Safesil, around 10 years ago, we switched to this," she says.

"We know it's safe because its ingredients are suitable for preserving human food and we find it makes good silage – not just in the clamp but also when you have the clamp open in summer, and are not using the silage as fast as perhaps you should.

Far left: *High-quality maize silage forms part of a simple milking ration.*

Left: : *The double calf pens are managed on an all-in, all-out basis and an air tunnel has helped improve respiratory health*

The Smokey herd is content and healthy, thanks to excellent nutrition and management.

"This was the case when fed throughout last summer's drought when the silage face remained cold through the period of extreme heat," she says.

Kelvin Cave's southern area manager, David Warner, backs up Mary's judgement with a description of the company's top-of-the-range preservative.

He says: "Unlike a bacterial inoculant, Safesil actually destroys spoilage bacteria such as clostridia and enterobacteria, and creates the right environment for lactic acid to produce a favourable fermentation.

"This achieves a rapid reduction in pH and enormously reduces the risk of an undesirable butyric fermentation, which would lower the nutritional value and palatability of silage."

Furthermore, with the inclusion of sodium benzoate and potassium sorbate in its formula, Safesil is independently proven to eliminate the activity of yeasts and moulds without compromising fermentation *(Journal of Dairy Science, 94:824-831).*

"All of this helps explain why Mary's bought-in feed use - and in fact her carbon footprint - is lower than on so many farms," says David. "By making the silage so well, she minimises the invisible dry matter losses experienced in the clamp when silage is not adequately preserved."

"It's so important to the business to have the best quality silage you possibly can," adds Mary. "It significantly reduces concentrate use and I've learnt that investing in Safesil is money well spent."

This is backed up by the farm's performance results, not least, its impressive concentrate use of just 0.24kg per litre.

Other silage making practices

But choosing the right preservative is not the only contributor to successful silage and Mary praises the team on the farm, contractors and neighbours as essential cogs in the wheel.

"We use a contractor for foraging and buck-raking and do the mowing and hauling ourselves, sharing some resources with neighbours," she says.

"We have two tractors on the clamp because compaction is absolutely crucial, and we also feed the team, whether it's fish and chips or sausages!" she says.

"The technology of covering has also vastly improved and we use O2 Barrier 2-in-1 for sheeting, followed by weighted netting to also protect from bird damage."

Finally weighting with mats, she says the whole silage-making operation for the 250 acres of first cut grass silage, takes one and a half days today compared with a week in the past, and achieves a vastly superior result.

Achieving superior results is not confined to the silage on Smokey Farm where every aspect of its operation is managed with the utmost care.

This includes the all-in, all-out calf rearing for the spring and autumn block calving herd; the meticulous attention to youngstock rearing which Mary says 'we talk about all the time'; the campaign against pneumonia, including through the use of an air tunnel above calf pens along with a pathogen-specific vaccination programme; the partial DCAB ration, which helps optimise dry cow health and has almost banished metabolic disease; and the milking cattle themselves - calm, content, consistent and in optimal body condition.

The upshot is that - just like those at Kelvin Cave Ltd - many are proud to be involved with the farm.

As summed up by David Warner: "Mary may shrug off her own achievements, but she's unsung, unassuming, and a stalwart of the farming industry and she's made a big impression with us."