

Research project into soils and hedgerows

A small group of First Milk members in Cumbria has been working in partnership with the University of Leeds on a government-funded project called Resilient Dairy Landscapes. This is a wide-ranging, multi-year project with social, economic, natural and veterinary science research being conducted simultaneously. The natural science research team has recently shared some very relevant conclusions on soils and hedgerows and may help inform your choices to support First Milk's regenerative farming goals.

Soil pH

The research found soil pH ranged between 4.8 and 6.8, but only 40% had a pH of 6 - 6.5, the optimal range for ryegrass pasture production.

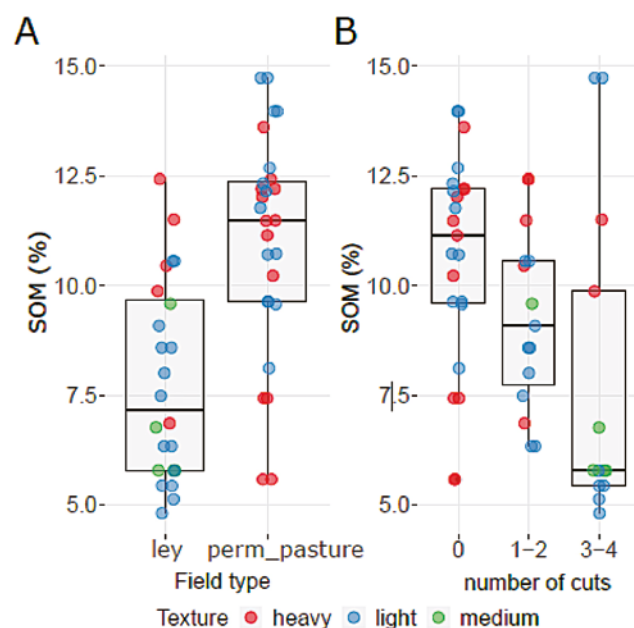
An optimal soil pH has many benefits, including:

- Increases availability of nutrients (NPK) to grass seedlings
- Promotes soil micro-organisms and encourages earthworm activity to break down plant and animal residues to release plant nutrients
- Improves the availability of phosphorous to plants and aids its release from organic matter

At a time of high fertiliser prices, keeping soil at the recommended pH is a good investment and likely to yield environmental benefits.

Soil Organic Matter (SOM)

SOM content was lower in fields classified as grass leys than permanent pastures. The number of silage cuts per year appears to influence the SOM with lower content in fields with more cuts. Both tillage and crop removal reduces SOM content.



SOM content by field type and number of silage cuts

The Resilient Dairy Landscapes research has indicated soil organic carbon sequestration rates in the first 50cm underneath a hedgerow is 226kg/carbon per km.



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From our Farm Business Review data, we estimate there are nearly 6,000kms of hedgerows on our members' farms. This equates to a national First Milk hedgerow carbon sequestration of 1,350 tonnes per year - equivalent to offsetting nearly 5,000 tonnes of CO₂.

The Resilient Dairy Landscapes project is funded by Global Food Security with support from BBSRC, ESRC, NERC and Scottish Government.



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SOM is the product of on-site biological decomposition of plant and animal tissue and is composed mainly of carbon (56%) plus other nutrients. Higher levels of SOM are beneficial for soil health as it affects soil structure and porosity, the water infiltration rate and moisture-holding capacity of soils, the diversity and biological activity of soil organisms, and plant nutrient availability. Maintaining SOM levels is crucial in aiding carbon sequestration and is something we encourage all members to consider. SOM can be increased by allowing grass longer between grazings to develop deeper roots (a benefit of rotational grazing over set-stocking) and with optimal use of fertiliser and manures. Minimising soil disturbance during cultivation also helps maintain SOM and is one of the benefits of direct drilling. With careful management, the preservation and accumulation of SOM can help improve soil productivity and mitigate climate change by sequestering carbon dioxide from the atmosphere and storing the carbon in soil.

Hedgerow Soil Organic Carbon

The results of soil sampling in and around hedges has shown their sequestration potential. Mature hedges were shown to have over 50t/ha more soil organic carbon stock in the top 50cm than neighbouring fields. The estimated annual sequestration rate is equivalent to 5.3 tonnes CO₂/ha.

Current recommendations for hedge management in climate change mitigation are to encourage hedges to become wider and taller to increase above ground carbon stock and plant new hedges along field boundaries to increase soil organic carbon stock over time.

Healthy, strong, diverse hedgerows also provide shade and shelter for stock, prevent nutrient run-off when planted across slopes, act as a habitat for beneficial insects and birds and provide a wildlife corridor for small birds/mammals trying to avoid predation.

DIGITAL INNOVATION IMPROVES CALF HEALTH AND WELFARE

First Milk Next Generation members continue to use vlogs to share their experiences and the improvements they're making on farm. We hear from two members involved in a digital innovation project using automated calf feeding systems to improve youngstock health and welfare as well as seeing financial and labour-saving benefits.



Ewan Kennedy, Perryston Farm, South Ayrshire

Ewan Kennedy milks 250 pedigree Holsteins with his father, John, at Perryston farm on the west coast of South Ayrshire.

"We started expanding our calf-rearing facilities six years ago, having realised as we increased cow numbers, we were short of both calf accommodation and labour to feed the extra heifer calves. We upgraded our calf feeder two years ago at a cost of £13,000. It provides the right amount of milk at the correct temperature exactly when they need it. It also saves at least two hours of labour a day. As a result, we have more time to watch the calves for early signs of disease and attend to the new-born calves being bottle fed colostrum for the first 3 days.

Calf welfare is better as they are in larger social groups from a younger age and fed more frequently. They are also weaned gradually on an individual basis rather than as a group.

The calf milk replacer we use is in the correct ratio to promote optimal skeletal growth in Holstein calves. This increases the chance of calving them at 24 months, our target for herd profitability and sustainability.

The automated system is quicker to spot concerns than we could see by eye. It records daily milk intake, time of feeding and litres drunk, as well as the speed of drinking - an indicator of the calf's health status.

Future innovation plans include linking the calf feeding system to Wi-Fi so I receive reports and alerts on my phone at any time."

Feeding regime

- Six litres/day spread over three meals, every eight hours
- Buttercup Bloom CMR: 24% protein, 20% fat
- Daily milk intake one litre higher than previous, manual method

View Ewan's video: <https://youtu.be/vKrmgzUG84g>

William McJannet, East Enoch Farm, Maybole, Ayrshire

William McJannet farms in partnership with his parents on East Enoch Farm in Ayrshire. They are currently milking 150 cows.

"Following our investment in a fully automated Delaval Fullwood 14 swing-over parlour four years ago, we've invested in our youngstock through an automated Volac calf feeder and improved calf housing.

The calf feeder saves my mother about an hour at the end of each day, representing a £30/day or £210/week saving on labour. The feeding machine provides 6.5-7 litres/day depending on the age of the calf and allows them to feed at any point during the day or night. But it limits intake to 1.8 litres per feed so the calf can't become bloated.

The new technology helps us make quick management decisions through its simple fitness and health scorecard, using a traffic light system. Through this we have improved calf welfare and growth performance. Calf health has also benefited. The feeder has a retractable teat which is disinfected and sterilised after every calf. With this and the improved housing, we have reduced problems with pneumonia and scour.

Benefits seen from implementing automated calf feeding

- Ideal temperature and feed consistency
- Calves not feeding well highlighted quickly
- Increased intakes and better calf performance
- Early growth gains achieve first calving age
- More time for calf management and care
- Labour saving costs of £30/day or £210/week



We feel the expense of this technology is more than justified. Our calves are thriving, with a positive impact on performance and it has eased the burden on my mother who has responsibility for calf management."

Feeding regime

- Ad lib feeding up to 7 litres over 24 hours
- Limit of 1.8 litres/feed to avoid digestive upset

View William's video: <https://youtu.be/8nNhmT9901s>



Plastic use on First Milk farms

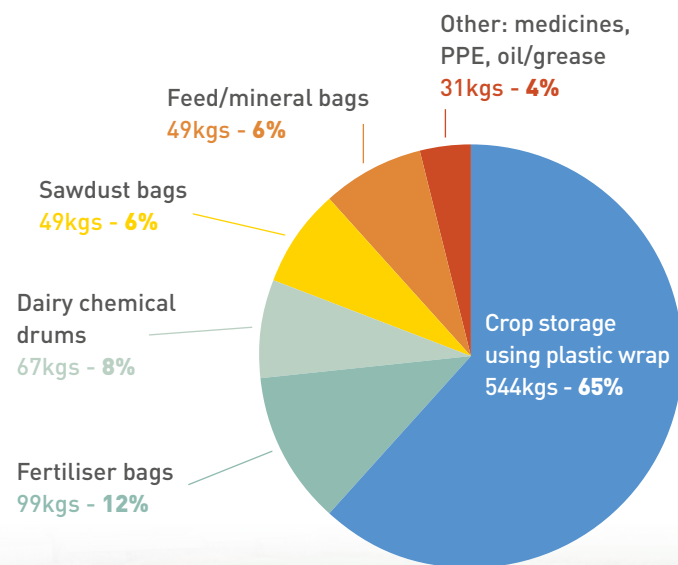
At a time when we are all trying to lessen our impact on the environment, one of the hottest topics is the reduction in use of plastic.

Plastics have changed the way we live and farm dramatically, but with so much plastic waste now in our oceans, it is affecting marine life, birds, the food chain and the ecosystem.

As consumer awareness and expectation around plastic continued to rise, it was only a matter of time before it would enter the dialogue with our customers. We have recently been asked for information about our plastic use by a customer trying to understand the impact of single-use plastic within its supply chain. To try and collate some indicative data, we approached 76 member farms in Cumbria and South West Scotland to take part in an exercise to benchmark the use and disposal of single-use plastic.

Plastic use

The average amount of single-use plastic brought onto members' farms per million litres of milk produced was 839 kgs per year. Looking at this more closely, use is broken into the following major categories as averages per million litres of milk produced:



Plastic disposal

We also looked at the disposal of plastic. Approximately 87% of plastic being used is recycled, but this leaves an average 112kgs per million litres of milk produced being sent to landfill.

Recycled off farm
654kgs - 78%

Landfill
112kgs - 13%

Recycled on farm
73kgs - 9%



This survey gives us useful insight and we encourage all members to benchmark their farm with this data. If we apply similar figures to our entire milk field, it suggests around 80 tonnes of single-use plastic is lost to landfill annually from First Milk farms.

Supply chain solutions required

One of the most common issues members highlighted was that many supplying companies are not willing to take back their empty containers. First Milk intends to contact these companies and discuss how a collaboration on this issue can deliver positive change.

But we can all begin to implement changes now and we urge members to consider how plastic is used on farm, and how it can be reduced, reused and disposed of responsibly.

If you would like to be involved or for further information, please contact your Area Manager.



First Milk is proud to have undertaken this project in partnership with Nestlé UK



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