

Channel Island Jersey producers benefit from carbon emission analysis

Footprint focus improves efficiency

As the squeeze on milk price continues, producers could be forgiven for placing their herd's carbon footprint low on their list of priorities. But assessing herd emissions can also identify where financial savings can be made.

text **David Butler**

The Jersey cow's ability to turn grass into high quality milk – up to 20% higher in protein and calcium than that produced by other breeds – certainly contributes to its status as the second most popular dairy breed in the world, after the Holstein.

But for the focused group of Jersey dairy producers on the Channel Island, which gave the cow its name more than 400 years ago, the challenge of producing milk as efficiently as possible is exactly the same as for any other producer.

"The island herd is able to maintain an outstandingly high health status – Jersey is officially free from bovine TB, brucellosis and EBL, BVD, IBR and leptospirosis," says Andrew le Gallais, one of the island's producers and chairman of Jersey Dairy, the farmer-owned processor co-operative.

"But our costs of production is high relative to herds on the mainland and to be able to continue to milk Jerseys profitably and sustainably we must manage our units as efficiently as possible."

Jersey Dairy processes more than 250,000 litres of milk every week and produces a range of luxury dairy products, including long-life milk, cream, butter, cheese, ice cream and yoghurt. These are supplied both locally and exported to high-value developing world markets, such as China.

"All our products have a unique and very clear provenance and a strong brand image, but like any other producers we must continually strive to keep our production costs as low as possible," adds Andrew.

Carbon-footprint assessments

To help its producers identify opportunities to improve efficiency, Jersey Dairy recently commissioned Alltech E-CO₂ to undertake carbon footprint assessments for each of its 21 producer suppliers. Industry research shows that the most efficient dairy herds are those with the lowest carbon footprint.



Channel-Island breed: Jersey Dairy commissioned carbon-footprint assessments for each of its producer suppliers

"The Swift-EA environmental assessments consistently highlight areas where producers can often make significant financial savings," says Alltech E-CO₂'s Victoria Roberts.

"With 80% of the carbon emissions associated with the production of a litre of milk coming from the dairy unit, there's plenty to work with. However, many producers assume that any move to reduce their carbon footprint is bound to add cost. But, actually, the opposite is true."

Ms Roberts explains that a unit's carbon footprint is the total volume of greenhouse gas (GHG) emissions caused directly or indirectly by that farm divided by the output generated in the same period.

"The dairy unit's carbon footprint quantifies the emissions of the three major GHGs relating to the unit's output before it leaves the farm gate."

The gasses produced are carbon dioxide (CO₂), from fossil fuel combustion for example; nitrous oxide (N₂O), from the degradation of crop residue and nutrients in the soil; and methane (CH₄), from rumen fermentation and waste and manure management.

The 21 unit assessments revealed a significant variation in the carbon emissions of the Jersey dairy herds on the island. The carbon footprints ranged from 2.32kg CO₂ emitted per litre of milk produced to 1.105kg CO₂ emitted per litre, with the weighted average carbon footprint for the whole group equating to 1.183kg CO₂ emitted per litre (FPCM).

"And, interestingly, the herd with the largest carbon footprint had a very low milk yield, which means the farm inputs and cow enteric emissions – which represent around 40% of total dairy farm GHG emissions – are being offset against much fewer litres of milk than the average farm, which was producing 5,432 litres per cow."

Financial benefits

Once in possession of the basic carbon footprint analysis, using Alltech E-CO₂'s Dairy 'What If?' Tool allows the Jersey Dairy suppliers to examine the effects and potential financial benefits of different management decisions. Following the input of basic data including herd size and average cow liveweight and milk price received, the tool then asks for yield, culling, fertility, calving interval, feed regime and crop/resource use information.

It incorporates a dashboard-style presentation of current carbon emissions per litre of milk produced and the potential 'what if' implications – and the financial impact – of different management changes.

Land spread and island-production challenges

For Rob Perchard, who runs 260 cows plus followers at La Ferme in St Martin and supplies milk to Jersey Dairy, it's absolutely crucial that he manages his fragmented land block as efficiently and sustainably as possible.

"We own around 40 hectares with only 25 hectares based around the unit, but because of a beneficial historical association with the Jersey Royal potato company we do have access to additional ground after their crop has been lifted in May," he explains. "This allows us to sow maize on this ground and even the occasional crop of grass. But it does mean that our fields are spread around the island and that there are always going to be restrictions on our ability of being efficient."

Fortunately, producers on Jersey have been able to import international pure Jersey bull semen since 2008 and this means the Perchards have been able to

produce more milk from fewer cows. "During the past few years we have been able to increase output thanks to the use of better genetics. Previously we had been hitting a 5,000-litre annual herd average ceiling, but now the herd is yielding 6,300 litres and production is still rising. So as long as we have the quota available we are more efficient than we were."

With both government and consumer support that values the Jersey cow heritage on the island – and therefore relative acceptance of a premium price for the high value milk he produces – Mr Perchard recognises he is in a stronger position than many mainland UK producers. However, in common with other producers on Jersey, his cost of production is high.

"It's more than 40ppl and this is largely due to our fragmented land base, as well as competition from the potato



Rob Perchard: "Production costs are high"

and horticultural sectors that drives up rents. Most inputs have to be brought onto the island, which is also costly.

"Our fields are also small and, invariably, a few miles apart and we have to cart water and slurry to pastures that are a significant distance away. So any initiative that helps us to identify opportunities to be more efficient has to be welcomed," Mr Perchard adds.

"For example, we know that by improving the health of the rumen and the cow, more milk will be produced while at the same time lowering methane emissions. And healthy cows live longer, lowering culling and replacement rates," says Ms Roberts.

"Emissions spread across a short milking life are very inefficient, whereas if they can be spread across more lactations you help to offset the emissions produced during the unproductive rearing period.

Cost savings

All these factors boost your on-farm efficiency and potential profitability, while at the same time reducing your environmental impact."

The tool shows that increasing the average milk yield to that achieved by the top 20% of units on the island would

save £440 per cow per year. In addition, more significant savings could be achieved by reducing average cow culling and feed rates.

"For example, cutting the average culling rate of 19% to 17% would save a herd £3,393. And by reducing the average herd feeding rate of 0.33kg per litre to a target of 0.3kg per litre – well within reach of this group of suppliers – an extra £7,402 per million litres of milk could be found," says Ms Roberts.

She adds that if the herd with the highest calving interval (455 days) could reduce it to that of the farm with the lowest interval (365 days), this unit could save £15,477.

Alltech E-CO₂ is also able to advise the group on a raft of additional savings, identifying more efficient fuel, electricity and fertiliser use as key targets.

"Diesel fuel use for the group is actually

good at 75 litres per herd, but a 10-litre reduction could unlock another £1,000 per cow. More regular maintenance of farm machinery, changing oil frequently, removing unnecessary weight and keeping tyres well inflated and balanced will help kit to last longer and reduce fuel consumption."

On the other hand, the average electricity use within the group was high at 0.106kWh per litre. Cleaning light fittings, bulbs and fans so that they perform at optimum levels, can make a significant difference and further reduce a unit's carbon footprint.

And the average nitrogen applied for the group was 120kg/ha. "The top 20% carbon performing units are around half that meaning that another £3,000 could be saved here through precision fertiliser application or the use of natural alternatives," adds Ms Roberts. |

