

PIRSA AgTech Growth Fund

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DAIRY
INDUSTRY



Beston Global Food Company SA dairy farm methane abatement verification using distributed ledger technology



Climate change and impact is the most significant issue facing food production around the world.

The agriculture sector – including farmers themselves – is under increasing pressure from governments, financial institutions, and consumers to prove its sustainability credentials.

With the help of the Department of Primary Industries and Regions (PIRSA) AgTech Growth Fund, dairy processor Beston Global Food Company (BGFC) set about using emerging feed supplements and measuring the reduction in methane output in a commercial dairy herd on the Fleurieu Peninsula.

Here, BGFC General Manager – Asset Development Alistair McFarlane explains the trials conducted and where to from here.



Industry challenge

The Australian Government has committed to a 43 per cent reduction in greenhouse gas (GHG) emissions by 2030 and net zero emissions by 2050. Australian agriculture contributes approximately 13 per cent of the country's GHG emissions and within that, 80 per cent of emissions come from cattle. The gas emitted by cattle – methane – is up to 25 per cent as potent as carbon dioxide at trapping heat in the atmosphere.

“The challenge is increasingly clear,” Alistair says.

“BGFC sources milk from 50 dairy farms which collectively milk about 25,000 dairy cows, so we know our milk catchment has a considerable GHG footprint.

“We want to be responsible environmental managers and can support our contract dairy milk suppliers explore various emerging feed supplements that are able to abate methane.

“Most of the work in *Asparagopsis Aramata* – a type of natural red seaweed – has taken place in laboratories where the methane output is recorded using cows in a respiratory chamber or similar.

However, through the AgTech Growth Fund, we were able to assess how it could work in a more practical manner on a commercial dairy farm.”

Approach

BGFC worked with one of its innovative dairy farmer suppliers on the Fleurieu Peninsula to establish the trial. The farm operates most of the year on a total mixed ration (TMR) system, meaning the cattle do not graze pasture and are instead fed a protein-balanced ration throughout the day. This meant the methane-inhibiting bio-factor extracted from *asparagopsis*, called bromoform, could be mixed into commonly used canola oil and the oil blended in during the animal feed mixing process.

Novel methane measuring meters – some of the first of their kind to be trialled in Australia – were individually installed in the dairy shed feed bins with measurements taken at both morning and afternoon milkings. Data from these meters were captured and stored in a digitised form in the developed OZIRIS blockchain and cloud server.

The blockchain component formed another part of the project.

“Beston's OZIRIS platform uses blockchain, which is the type of technology required in the marketplace to accelerate adoption of practices that can produce genuine carbon credits from agribusinesses activities. The platform is aimed at countering ‘carbon washing’ – false statements of reductions in GHG emissions – by demonstrating what is happening real time in the end-to-end supply chain and then after issue, provide continuous auditing from automated metered measurements.

“Where common database systems can be changed and fudged, a genuine blockchain cannot. More regulators are adopting or insisting on this practice. That means it can become an important tool in creating trust with consumers, who ultimately, can have reliance on the emission reduction statements on dairy packaging made by processors and retailers.

Outcomes

During the trial, BGFC measured a 21 per cent reduction in methane.

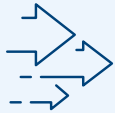
“Energy not going into methane gas production means more potential energy retained for animal health and an effective reduction in the cost of feed input,” Alistair said. Prospects for up to 45 per cent reduction or more are possible from comparable peer trial evidence.

“There was a slight drop in milk production, which tells us that further work is needed in improving the palatability of the feed mix, as knowledge is further gained and improved.

“In the trial, and using individual meters, we were able to measure methane output from four different lactation groups, or cows that were at early to late stages of lactation.

“That information is very valuable from a breeding and genetics perspective, particularly if methane abatement becomes part of overall herd performance going forward.”





Future opportunities

Alistair says the trials have been useful for BGFC to test the effectiveness of one of several emerging methane-abating feed supplements.

In addition to this, he says the importance of capturing emissions data will become increasingly important in an increasingly carbon-conscious global environment.

“Australia’s five major retail banks who lend to agribusinesses (including dairy) source sizable wholesale funds out of Europe, where tighter environmental compliances apply. The Australian financiers are aware that they are obligated to report on how the sourced funds are spent and the environmental impact that it is having,” he says.

“That means farmers borrowing from banks will be progressively more obligated to provide information on the impact of GHG emissions from their properties.

“We are already seeing ASX-listed agricultural companies strongly adopting practices which improve their GHG status to satisfy both bank and shareholder needs, while potentially lifting productivity.”

However, there is also the opportunity in the future of an additional income stream in carbon credits, supplementing annual operating income and capital growth.

“Once methane-abating feed supplements are widely adopted, producers may be eligible to create carbon credits from the introduction of suitable sustainable practices, which they could choose to sell or maintain,” Alistair says.

“If they choose to sell some or all of them, that becomes a natural capital income stream which reflects the effort, time and risk the producer has put into their production system.

“Alternatively, the farmer may want to accumulate those same carbon credits to preserve the one-time recognition of the improved carbon status of their farm. In the absence of buying input credits from outside the supply chain, this approach would be useful for reporting to the bank and supply chain partners.”

Contact

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