GORDON STEPHENSON STUDY TOUR REPORT
FLEMINGTON FARM – JOCELYN AND PHILLIP EVEREST
JULY-AUGUST 2024

Acknowledgement
Thank you to our sponsors, the Ministry of Primary Industries and NZ Farm Environment Trust for providing such an opportunity. We would also wish to thank our hosts in the various countries who were so willing to share their experiences and knowledge.

Study Tour Visited
Our whistle stop tour took us to farms, universities, research institutions, processors and policy makers through the United States of America, Ireland, Netherlands, Germany and Denmark, with a focus on nitrate loss reduction and greenhouse gas mitigations and management.

Key Findings

1. Celebrate what we are good at and reduce the negative comments between ourselves, which is immediately seen by customers worldwide (social media moves fast).

2. The world that we saw, are facing similar challenges in the environmental space (nitrate and greenhouse gasses) as we are, and often with similar tools/solutions.

3. Key words overseas are Sustainability and Biodiversity, which includes Regenerative production systems.

4. New Zealand agriculture needs to adopt a Regenerative definition that is specific to our conditions and be able to be audited. We need to be able to stand up and celebrate that

many farms in New Zealand already meet the Regenerative Agriculture principles in many other countries. We are missing an opportunity.

5. Greenhouse gas targets and calculations, as provided by the IPCC, with the best of intentions, have been challenged by other countries and overturned for their specific situations.

What did we Learn?

1. Celebrate what we are good at and reduce negative interaction.

1.1 We were overseas when the very public debate between Eady et al. and the Plantain Potency and Practice Program broke.

Researchers we were with at the time of the news breaking asking "what is your team in NZ up to?"

This very public debate does little to instill confidence in the industry (or the world) in relation to mitigation options for nitrate and greenhouse gases.

Whilst both sides of this story may be right (Plantain does reduce nitrate and maybe Greenhouse gas loss – BUT there may be other species that could achieve similar outcomes), this 'spat' does little to improve confidence to all who could use these potential mitigations.

Not only does it undermine confidence of New Zealand farmers to implement mitigation tools, but it also places doubt on our research by other researchers worldwide.

1.2 Perception in the media is critical. The Plantain challenge in NZ wasn't the only thing that we were asked about.

Other matters like 'NZ Agriculture has pulled out of GHG reduction limits', 'Denmark is taxing their farmers for GHG', reduction in Agricultural GHG in Ireland was headline news.

While all of these matters seem small, let's explore what really happened from our perspective.

- Plantain – a public debate was hardly necessary when many of the issues could have been sorted by the parties communicating with each other to understand the difference.
- NZ Agriculture has pulled out of GHG reduction limits – well no, there is a pause but that it not how overseas media picked it up.
- Denmark's farmers are being taxed on GHG – well yes, but provided they utilize the mitigations currently available and with the 60% discount on liability, the net cost to the farmers is **nil**!
- Irelands Agriculture GHG output dropped by 4.6% from the previous 12 months – this was headline TV and written media news.

2.0 Challenges in agriculture are similar the world over.

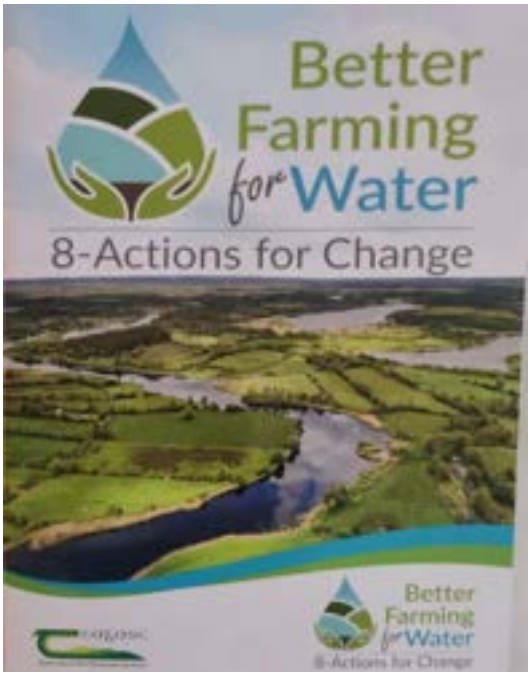
2.1 There is a strong push on improving water quality, reducing GHG, enhancing biodiversity, considering soil carbon as a sink, sustainable farms systems and practices.

The world has similar Environmental Challenges.

- USA they were grappling with nitrate losses to water ways and irrigation security
- Ireland was about reducing nitrate loss and GHG reductions
- Netherlands previously large focus on nitrate reduction and currently extreme pressure on Greenhouse gasses.
- Germany farmers and dairy companies are trying to stay ahead of the regulations both in N reduction and GHG.
- Denmark has negotiated an incentive scheme to encourage farmers to take up mitigations and in so doing may not have a taxation liability on GHG.

2.2 'Better Farm for Water – 8 Actions for Change' is an Irish program but could easily have been a New Zealand program when you consider action areas being –

1. Reduce purchased nitrogen and phosphorus surplus/ha.
2. Ensure soil fertility is optimal.
3. Ensure application of fertilizer and organic manure at appropriate times and conditions
4. Have sufficient slurry and effluent storage.
5. Manage and minimize nutrient loss from farmyards and roadways.
6. Fence off watercourse.
7. Promote targeted use of mitigation actions such as riparian margins, buffer strips and sediment traps to mitigate nutrient and sediment loss to water.
8. Maintain our winter green cover to reduce leaching rom tillage soils.



2.3 Driving for economic greenhouse gas reductions is frantic through feed additives, gut biome changes, breeding and bolus treatments.

The research at Davis UC (just out of San Francisco) into GHG reductions was wide ranging, from changing the gut flora from birth, looking into genetic variation, feed additives (3NOP and Asparagopsis amongst others) to reduce GHG output/unit of production. Much of the work was completed in fully self-contained “tunnel houses” where groups of animals could be fully housed and measurements recorded of feed ingested, water consumed, animal performance and gas production.

Eight controlled air feed chambers for evaluation of up to 40 animals per chamber at Davis UC

2.4 Growing the consumer awareness and confidence of farmers environmental stewardship and reduction of footprint was clearly demonstrated at Tillamook Dairy Factory. Tillamook is the second largest tourist attraction in the state with free entry but large merchandise and product sales to offset the cost.

Displays demonstrated feed sources on farm, feeding a fiberglass calf, putting cups on a model milking cow, watching the cheese making and packaging. Much has been done by the Co-op to grow the understanding of where the milk comes from and the commitment of the farmers to producing a sustainable quality product.

Tillamook Factory and Tourist Attraction with life sized cow for visitors to attach milking cups.

2.5 The Evers family in Warenholz, Germany, an 18th generation family farming on the property, showed commitment to "dairying ahead of regulation". In the current focus of GHG and farmer sustainability, this family shows how they have adapted over centuries with the adoption of new technologies both on farm and off farm.

They are the first to erect a wind turbine to provide electricity for the local settlement, installing a 50Kw and 80Kw waste wood burner on farm to provide hot water and heating to over 300 houses in the settlement, supplying milk and cream to the local bakery and ice cream manufacturer, supporting the local vending machine with milk, yoghurt, cheese, ice cream, eggs and meat from their property. They continue to work with the local university to monitor and enhance the environment in the local streams.

Their approach of being ahead of regulation and using "farmers markets" to actively tell the sustainability story of milk production to the wider community has grown consumer confidence.

The use of virtual 3D movie goggles was a 'game changer' in taking urban folk "to the farm" without having to be in the dairy shed.

Starting at a young age, the local kindergarten walks through the dairy barn, watches the feed wagon being loaded, and looks at newly calved cows.

The proximity of the dairy to town allowed the children and teachers to walk to the farm on a number of occasions during the year – growing the children's understanding of agriculture.

Helmut Evers very proudly milking his 60 cows with his wife every day.

2.6 The Danish Agriculture and Frood Council have developed "overcoming the challenge of feeding the world sustainably – climate plan towards 2030".

How the Danish intend to "produce more climate – efficiently without limiting production" is well detailed.

Actions include withdrawing lowland peat soils from production (42% of expected reduction). Pyrolysis (biochar of waste and residue products) 21% reduction but is dependent on the development of new technology, moving to grass production for part of the protein supply 1.7% reduction, animal breeding advances 0.08% reduction, feed additives (such as Bovear) 13% reduction.

The most significant gain in reducing GHG output/unit of production for the Danish is proposed to be the retirement/reflooding of peat soils.

2.7 Soil carbon accumulation and measurement in Ireland with solar flux meters.

For 20 years the Irish have had a solar flux meter in operation measuring solar radiation in and reflected out, plant growth, animal consumption of plant material and GHG product from the cow and pasture.

Over 20 years, the average accumulation of carbon into soils has bene 1.2t Carbon/ha/yr. The research showed a variation between years with some showing a decrease in carbon and others showing an accumulation. But over 20 years there was a net gain.

To raise the confidence of the science the Irish have now installed the solar flux meters in 28 different sites throughout the country to check for variability.

James explaining the functioning and outputs of the solar flux meter to measure soil carbon sequestration

3. Sustainability and Biodiversity includes regenerative farming.

3.1 Often the words sustainable, biodiversity and regenerative agriculture are intertwined. Countries seemed to have developed their own strategies and definitions.

As a general comment New Zealand agriculture already meets or exceeds many of the definitions for regenerative agriculture used overseas. Diverse pastures outdoor, grazing systems, carbon accumulation and auditable farm plans.

Some of the range of products produced from Alexandre Family Farms

Alexandre Farms, Farming at Crescent City, California. Produce A2, Organic and Regenerative milk from their 7500 cows. The market premium for their regenerative milk is 32-40% above their organic milk.

Their market research into why people purchase their product rated taste (fat content) 1st, health attributes 2nd, quality attributes 3rd and nutrition attributes 4th. Price didn't even hit the top four!

3.2 In Ireland all trees are accounted for in greenhouse gas monitoring via satellite photos. This includes scattered trees in rock fence lines which are also adding to their biodiversity.

Nitrogen loss which is directly monitored in streams and from nitrogen surplus calculations, is a strong driver for sustainability. Catch crops between arable crops is given considerable encouragement through their sustainability farm programmes.

Real time water sensing, including nitrate and phosphate, on streams in Ireland

3.3 In Germany catch crops following crops to reduce winter losses was widespread.

"Renaturation" alongside rivers and streams where long-term pastures of mixed species swards are encouraged to reduce surface runoff and leachate. Much of this 'nature reserve land' is used for cut and carry.

The Evers family had a quote 'we are a museum and a zoo' for the local community to clearly demonstrate sustainable biodiversity.

Catch crop paddock direct drilled after cereals in Germany

3.4 The minimum requirement for organic milk production in the USA is a pasture fed diet of 30% for 120 days of lactation.

100% grass fed production is 60% pasture diet for 150 days of lactation.

Clearly these are different to the standards which we and others, hold us to in NZ.

4.0 The IPCC calculations and targets are often challenged through science from other countries.

4.1 The Irish recalculated their greenhouse gas loss from natural wetlands which resulted in a 6MT CO2 eq reduction (drop from 9.5MT to 3.5MT) as their scientists recalculated their areas and the actual carbon losses from those wetlands

4.2 USA was challenging the method of calculation for the GHG warming effect from methane.

As they see it: "Our cows are part of the solution rather than the problem with their carbon cycling".

4.3 In New Zealand I feel at times when international scientists and regulators provide information, we tend to adopt it without question (e.g. GHG target calculations) but there are other times when we want to reinvent the science ourselves (agricultural chemical registration, human health drugs)

There are times when we need to check, challenge and update as new science is provided to us.

5.0 The other issues that we noted were:

i) Our regulatory processes in NZ often slowing or stopping 'good stuff' being developed and enabled.
ii) We need to bring young minds into research to bring fresh ideas, enthusiasm and provide succession.
iii) New Zealand's silo approach to 'our own industry' or 'our company' needs to change.

Agriculture is so important to NZ for our foreign exchange that we cannot afford to waste energy, with limited personnel infighting between sectors, and even between companies, (noted competitive advantage issues still apply).

Attachments:
Ashburton Guardian Live Feed
Rural Life
Ashburton Courier
A full travel log is available on request

Phil and Jos Everest
February 2025

Canterbury
Rural Life

WEDNESDAY, DECEMBER 11, 2024

www.odt.co.nz/rural-life

Crop manager wears many hats

• PAGES 8-11

Arable growth strategy launched

• PAGE 18

Expanding horizons

The Ashburton family of Phillip and Jocelyn Everest, right, with son Paul Everest and partner Sarah Hayman won the Ballance Farm Environment Awards in 2022. Two of the nation's top environmental farmers, Phillip and Jocelyn know there's more work to do after an overseas study tour, writes **Tim Cronshaw**. **Pages 2-6**.

Mid Canterbury farmers back

Eye-opener . . . On their overseas study tour, Mid Canterbury farmers Phill and Jocelyn Everest visited the Seymour family who supply milk to the Tillamook Creamery run by an Oregon farmer co-op.

Wow . . . A small herd on the roadside seen by Mid Canterbury farmers Phill and Jocelyn Everest during their travels on a study tour.

Value adding . . . This dairy range was among the organic and regenerative products sold by the Alexandre Family Farm near Crescent City in northern California which Mid Canterbury farmers Phill and Jocelyn Everest visited.

TIM CRONSHAW
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Ashburton dairy farmers Phill and Jocelyn Everest have come back from an overseas trip brimming with innovative and environmental ideas for New Zealand farmers.

A cheese factory owned by farmers which has become an Oregon tourism hot spot, an 18th-generation small dairy farm in Germany and an incentivised greenhouse gas tax in Denmark were among eye-opening insights to impress them.

The couple won the Gordon Stephenson Trophy with their son and daughter-in-law, Paul and Sarah, after finishing top nationally in the Ballance Farm Environment Awards in 2022.

With a lot on their plate, it wasn't until June the couple could travel to the United States and then Europe, returning last September.

In Oregon they visited Rob and Amy Seymour, with the latter attending Lincoln University with the couple before settling in the United States.

At their dairy company they learned it took them four hours to milk 240 cows and do this twice daily.

The Seymours supply milk to the Tillamook Creamery run by a farmer co-op.

Mr Everest said the dairy outlet had become the second-largest tourist attraction in the state and showed the potential for farmers to add value in New Zealand.

"We arrived there 10 minutes before opening and there would have been 50 people standing outside waiting to go in. It's a walk-through cheese factory with a mezzanine floor so you can see the cheese being made on one side and being packaged on the other.

"The bit they had done very well was that they actually talk about the production of the milk to start with. Then there is a fibreglass calf the kids can feed and a true scale cow with cups to put on so it was a great promotion of dairying showing the whole process. So there's no entrance fee, but they sell merchandise and ice cream and cheese. For the year before they reckon every man, woman and child that walked in spent $US16 a head."

> "I feel like we still look down on dairying for the environment and it was just such a cool story for people to see where their food comes from. It was more about the life cycle of the animal and where it lives and what it eats and how they get the milk out."

In the front is an ice cream shop and on the other side burgers made from local beef are available with wedges of Tillamook cheese, selling for $US20-$30 among a wine selection and Tillamook branded cups, T-shirts and other merchandise.

"It shows opportunity we can do in New Zealand that we don't do very well."

Mrs Everest said it was good to see dairying being seen in such a positive light.

"I feel like we still look down on dairying for the environment and it was just such a cool story for people to see where their food comes from. It was more about the life cycle of the animal and where it lives and what it eats and how they get the milk out."

She said the marketing was on another level, with a bright orange Kombi can in Tillamook branding catching the eyes of visitors at the main airport.

Mr Everest said New Zealand may not have the population or the scale of the US, but had many tourists and it would be good to see dairy attractions opening up to them.

Their next stop for three days near Crescent City in northern California was the Alexandre Family Farm, with two sisters, former exchange university students who had worked at the Everest farm.

from study trip full of ideas

The family runs 7300 cows over five farms and has progressed from organic milk farming to an organic all milk and regenerative system.

Mr Everest said the family had marketed their milk and farming system well.

"Their father Blake was struggling to get a regenerative definition out of the American system and after getting frustrated just got on with it and set up realistic audited rules. They had seen a need, but the key thing is they are getting a 32% to 40% premium for their milk.

"We are fluffing around in New Zealand still trying to argue what a definition might be and they have done it, audited it and certified it on their bottles."

The family sells a fresh and flavoured milk range as well as cheese and yoghurt and also have laying hens. Their regenerative system of multi-species pastures has rotational grazing so the ground can regenerate.

"We have done this in New Zealand, but it's a big change for Americans who predominantly do milk through barns from grain fed systems," he said.

The mother Stephanie's passion is bio-health and a range in this direction included bottled eggnog.

Mrs Everest said the innovative family had worked hard over 30 years to grow scale store opening a farm shop now supplying organic eggs and dairy products as well as caps, shirts and mugs. They process the milk themselves and sell $US1 million's worth a week through 1000 supermarkets.

"Getting this regen thing off the ground after his frustration with the regulation was inspiring. What I took out of it was that it's a huge change for Americans, but my Dad used to do this 40 years ago and put the green water through the irrigator in the middle of Waikato, had rotations, grew silage on the farm and he was doing all that stuff," Mrs Everest said.

"Why do New Zealanders keep beating ourselves up when our farm has got more carbon in the soil than the average New Zealand arm and the average New Zealand farm has got about four times the carbon in the soil America has?"

There was huge demand for the regen products world wide and farmers needed to stop knocking it and "join the head", Mr Everest said.

"How many farms in New Zealand don't already have four or five species already included in their pasture mix? It's not about growing sunflowers, because that's just for looks. This is about mixed species and there's lots of different options.

"We already tick those boxes already and we should be celebrating it and taking that market advantage. The Alexander family have just shown what can be done on a small scale, but that's quite a large scale when you are selling $US30m of milk products."

The couple noted, without criticism, that US farmers could meet the definition of producing 100% grass fed milk if 60% of their cows' diet is grass for 150 days, while the definition for organic milk is 30% grazed diet for 120 days.

Artificial cow ... During a study tour Mid Canterbury farmers Phill and Jocelyn Everest visited Tillamook Creamery, which is a major tourist attraction in Oregon and teaches visitors where their food comes from.

Continued Page 4

Mid Canterbury farmers bring

From Page 1

They wonder if the New Zealand industry is being too tough on itself after facing criticism for paua farmed being fed in a mainly pasture diet.

At the University of California Davis they were impressed by research progress being made in mitigating greenhouse gases.

"The interesting thing I found was their work looking at what we can do to change gut flora to reduce the methane production," Mr Everest said.

"So that's the bacteria themselves and they are doing some exciting work on that. What I hadn't appreciated is that I thought the little calf came with no bacteria in its rumen and just picked it up in the grass and all the rest. In actual fact the calves are getting some of that bacteria across the placenta membrane from mum."

Research was also being carried out on the Asparagopsis species of red seaweed to reduce methane and while it was working there were challenges of intake limitations with scientists looking at ways to change the flavour.

Mr Everest said it was good to see large-scale applied science working on a tool farmers could use as a natural remedy if they could get cows to eat more seaweed.

In Ireland they spent four and a-half days at the state agri-research agency, Teagasc. On the first day scientists took them through seven research projects.

The lack of mixed messages on plantain research — one of the tools they are working on — was an eye-opener for them.

Teagasc's research included nitrogen fixation from different strains of clover, different pasture mixes, catch cropping, reducing nitrogen use and a "well constructed" action plan for better farming water with eight actions for change which were almost exactly the same as New Zealand.

The Irish had a major soil carbon project with solar flux meters measuring solar radiation into the ground, reflected off the ground, pasture growth as well as gas from 100 metres away and the animals' output. Over 20 years they had found their soils were accumulating an average of 1.3 tonnes of carbon per hectare per year.

"If you look at it in terms of New Zealand, then that's a huge amount of carbon we could be sequestering and in the past we've just said it's very hard to measure," Mr Everest said.

"But the Irish have gone about and said we will measure it and now they have put 28 of those meters at $800,000 each throughout the country to try and look at different farming systems and various locations to see if there's any difference."

Since then they have learned several meters are in New Zealand.

Mr Everest said the Irish had challenged climate change rules including calculations their wetland losses were the equivalent of nine million tonnes of carbon dioxide. After going over the numbers they found this was reduced to three million tonnes which was far more manageable for meeting a reduction target of 10%.

He said New Zealand needed to check to see if the same 1.3t carbon/hayr sequestration was occurring as it had a similar climate to Ireland.

A highlight was seeing the agency take on 12 to 20 young, aspiring researchers each year as research assistants who help write up papers.

This was followed by a visit to the Blarney Woollen Mills. After it went broke a staff member developed it into a thriving business selling Irish gifts, wool and Aran sweaters, Irish crystal, Celtic jewellery and other goods.

Mrs Everest said the thriving business where strong wool was in decline was another example of creative "enablers" finding ways to get around roadblocks.

In the Netherlands they learned about the Nature 2000 programme's target to have fewer farms and produce the same amount of milk by 2030 and visited Wageningen University to see its greenhouse gas research.

Mr Everest said the Dutch called the target an "extensification" and it would be interesting to see how they navigated the challenges of controlling greenhouse gases with more pasture farming, rampant wild hares, and a major manure policy.

From there they travelled to Germany and stopped at an emerging science museum in Berlin where they saw exhibits,

Lasting impression .... The Evers family milk 60 cows on the doorstep of Germany's Wahrenholz. The 18th-generation dairy farm started in 1489.

ideas home from study trip

including a battery made out of algae, a jacket designed from orange peel, hemp fibre reinforced with mycelium fungi and the high energy costs of growing rice (in vertical) farming.

At Wahrenholz, they visited an 18th generation dairy farm owned by the [illegible] family whose daughter, Sophie, had stayed with them about 10 years ago.

On the farm, started in [illegible], the family continues to milk 60 cows on the doorstep of the town where there were once 13 dairy farms, now reduced to three.

On the back fence of the dairy shed is the supermarket and the effluent from the one-hectare farm has to be shipped out at night to keep any odour down, with feed grown on small blocks held by families and brought in from outside.

The family makes yoghurt, ice cream and cheese themselves and sell this at a farmers' market, with some of the cream going to the local bakery and eggs to an outdoors stand.

"While we were there the kindy kids came holding hands together with an orange vests and hats and walked through the middle of the barn to look at the cows and watch the tractor load the feed wagon," he said.

"Then they walk back to kindy after [illegible]

That sort of thing just doesn't happen in New Zealand. We've made it hard and you go there and that's how they learn."

Opposite them, the council has built a bus shelter with a vending machine selling local produce and the Everests saw $12,000 of product there a month. An app lets them know when food needs replacing from 10m across the road.

In another German corner they have 500 kilowatt and 900kw wood burners — fuelled by slash and waste wood felled from sustainable forestry — at the back of the farm which provides all the hot water for the village.

On another German farm they drove past a 4km-long stretch of solar panels over 10ha with sheep [illegible].

Catching their interest in the Netherlands, Germany and Scandinavia were ultra high temperature waste furnaces in cities. The burned waste providing hot water is carried out in the middle of built up areas and they never saw smoke coming out of the chimneys, monitored every minute of the day for emissions.

A burner with an angled roof in Copenhagen Square in Denmark also acts as an artificial ski slope in the winter.

"It seems like an obvious step for here when you consider we are putting a dump in Waipara and having to deal with that for years," Mr Everest said.

"You don't have to deal with [illegible] It's a source of energy in the middle of the city."

Revealing research . . . Mid Canterbury farmer Jocelyn Everest (left) gets the rundown on a solar flux meter used in Ireland by the Teagasc agri research agency to [illegible] measure soil carbon in the soil. The Irish have put in 28 solar flux meters at [illegible] each around the country in a project by the Teagasc agri research agency. Over 20 years they had found their soils were accumulating an average of [illegible] of carbon per hectare per year [illegible].

In Denmark they got to see the inner workings of its [illegible] tax on farmers.

Mr Everest said it was an enlightening system after eight government ministers got together with fish and game, forest and bird, environment protection, manufacturers and farming agencies to shape a solution.

He said they came to an impressive incentivised tax system at a time when protesting urban people and farmers were both about to take to the streets.

"They were locked in a room to sort this out and the really smart farming president knew there was no way they were going to get away with a low price being acceptable to the urban population. He went for a reasonable price at a higher end at a tax level, but negotiated so farmers get a 60% discount on that tax with what they can do with their mitigation tools currently available.

"If all the farmers do the mitigations, and it will change, the net cost to the farmer is zero. Suddenly there's no tractors blocking the roadways and everybody in town thinks they are getting a good deal because the farmers are being taxed at a high price. You look at that and think there's some good messages here and everybody's ticking along and they start to meet their targets."

New Zealand could follow some of their lead to build a working model, he said.

Back home, they are digesting all of the information accumulated during their travels to complete a report and a presentation in Wellington on the opportunities available for the wider farming community.

They are extremely grateful for the New Zealand Farm Environment Trust which helped fund the trip and the Ministry for Primary Industries for opening numerous doors which would have been otherwise closed to them.

The initial plan was to work for three or four days each week and holiday for the rest over the course of the tour, but that was extended to five days because of the valuable insights they were gaining.

Bringing everything up, they feel the trip could be boiled down to a handful main points: farming challenges are similar across the world, but the solutions are different; farmers aren't hearing about amazing research and answers to environmental challenges, which need to be shared; and the ability to challenge is being kicked out of farmers and needs to be recharged.

The Everests only wish they did the study tour 20 years ago to carry out some of the opportunities themselves.

No slowing down, page 6

Future science . . . At a visit to an emerging science museum in Germany's Berlin Mid Canterbury farmers Phil and Jocelyn Everest were struck by its innovative exhibits including an algae battery running a clock.

No lessening of environmental aims

TIM CRONSHAW

There has been no slowing down since the Everest family won the nation's top silverware for the Ballance Farm Environment Awards in 2022.

Mid Canterbury's Phill and Jocelyn Everest, with their son Paul and daughter-in-law Sarah, have been hard at work continuing to making environmental improvements at Flemington Farm.

The family farm of 270ha including 236ha of effective dairying land, just south of Lake Hood, is the base for a herd of 720 to 730 cows supplying a2 milk to Synlait.

The next generation run the farm, while Phill and Jocelyn live nearby. A Carex support block is run in partnership with four other properties for winter grazing and raising heifers.

They breed all their replacements in a closed herd with pastures irrigated by three centre pivots on the fully irrigated property.

Total milk production is 380,000kg of milk solids at about 500kg a cow and 1400kg-1500kg a hectare. The cows are milked twice daily in a 54-bale rotary shed with 42kW of solar panels on the roof providing its energy and an ice bank to chill milk.

Mr Everest said the ice bank was uncommon among dairy farmers, but was becoming more common.

"I think Paul said our power bill for the shed last month was just over $200. One of the guys he was talking with had just spent $2300 for the month."

The pasture mix has 15% plantain and they have already met their 30% reduction in nitrogen losses for the catchment due in 2035.

Initially, they cut their nitrogen use by reducing nitrogen fertiliser from 240kg a hectare to 190kg a year before they had to.

A 15% plantain content gives close to a 15% reduction in nitrate losses and is topped up every year in pastures. Protein content in their autumn feed has been reduced by using fodder beet and this results in less autumn nitrogen reaching the ground via urine when leaching is at risk.

Italian-based hybrid ryegrass in their pasture mix remains active in cooler months and helps to soak up nitrogen in lower soil temperatures and hold soil nitrates.

Only 70% to 80% of their soils' capacity is topped up with irrigation so there is still room for rain water, and stored effluent irrigated on to paddocks via the pivots is treated as a fertiliser. This is measured with one millimetre of effluent equal to five kilograms of nitrogen and because it runs through a weeping wall the concentration is doubled.

A high-sugar grass being developed by researchers, a coming nitrification inhibitor and a breeding programme to try to get low-methane animals is in their sights to make further cuts to nitrogen losses.

Mr Everest said they had met international regenerative targets with at least five species in their pasture mix including plantain, clover, chicory, Italian ryegrass, hybrid ryegrass.

They get a premium from Synlait for a2 milk and meeting its quality assurance programme.

An unintended bonus of putting solar panels on the dairy shed roof is that it has become cooler for the cows and workers. Surplus energy goes to ice production with a small amount going into the main grid.

They are continuing to do their homework on covering the effluent solids or greenwaste ponds to capture methane or treat it with polyferric sulphate. Their hope is to put the methane through a generator for powering irrigators and they are also looking at putting in a solar bank along a feedline to carry this out.

The couple planted out a 90m trial area in carex which shades stream water, stifles weeds and reduces nitrates between 2% to 3%.

Impressed by the results, they applied for consent to plant another 650m stretch for a 24% reduction and have plans to extend this further. Nitrate levels will continue to be measured at the top and bottom of the creek.

"So if we can reduce the nitrates by 24% in the water over 650m with another 900m to go then we are cleaning our water as it goes through our drain for the cost of our time planting and a bit of weed control," Mrs Everest said.

"They are three years old now and just doing what they do."

They would recommend the low-cost nitrate mitigation to any farmer with drains running through their properties.

All up, they have planted 24km of shelter plantings on the farm.

A frustration is the paperwork cost of carrying out environmental work.

The couple has been involved with the local catchment group to determine the effectiveness of wetlands in reducing nitrate levels in drains. A small area of 0.064ha has been developed that meets ECan's requirements to shape it into a type of wetland with restrictions on the amount of soil shifted and a non-consumptive take of 1.3 litres a second from a stream to feed this into the area and back into the stream.

"We are 12 months on and it's working really well with recent results now running at a 28% reduction in nitrates since we started there," Mr Everest said.

"Currently, it's running at about 90% so the plants are really starting to grow. The point we want to make is this is a real economic mitigation that is not enabled under ECan rules. It cost us $21,000 to build it and do everything which is less than the consent was going to cost us to build it."

Mrs Everest said there needed to be a closer connection between regulators and farming the environmental work.

"When Phill and I talk sustainably we are talking fourth generation and the children of our children's children. When the regional councils talk sustainably they talk three years and that's what they have for a licence to operate.

"That's my frustration as a farmer and I'm an eighth generation farmer in my family since they came to the boat in Auckland and went farming. That's our idea of sustainability. I know you have to be sustainable and mindful of farming and we are because we want our great-grandchildren to be farming and supplying food."

Land guardian . . . Canterbury farmer Phill Everest and his family have made a range of on-farm changes to meet nitrogen loss regulations.

No slowing down for award winners

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There has been no slowing down since the Everest family won the nation's top silverware for the Ballance Farm Environment Awards in 2022.

Mid Canterbury's Phill and Jocelyn Everest, with their son Paul and daughter-in-law Sarah, have been hard at work continuing to making environmental improvements at Flemington Farm.

The family farm of 270ha, including 256ha of effective dairying land, just south of Lake Hood, is the base for a herd of 730 to 750 cows supplying a2 milk to Synlait.

The next generation run the farm, while Phill and Jocelyn live nearby.

A Carew support block is run in partnership with four other properties for winter grazing and raising heifers.

They breed all their replacements in a closed herd with pastures irrigated by three centre pivots on the fully irrigated property.

Total milk production is 360,000kg of milk solids at about 500kg a cow and 1450kg-1500kg a hectare.

The cows are milked twice daily in a 54-bale rotary shed with 42kW of solar panels on the roof providing its energy and an ice bank to chill milk.

Phill Everest said the ice bank was uncommon among dairy farmers, but was becoming more common.

"I think Paul said our power bill for the shed last month was just over $200. One of the guys he was talking with had just spent $2300 for the month."

The pasture mix has 15 per cent plantain and they have already met their 36 per cent reduction in nitrogen losses for the catchment due in 2035.

Initially, they cut their nitrogen use by reducing nitrogen fertiliser from 240kg a hectare to 190kg a year before they had to.

A 15 per cent plantain content gives close to a 15 per cent reduction in nitrate losses and

Phill Everest

was topped up every year in pastures.

Protein content in their autumn feed has been reduced by using fodder beet and this results in less autumn nitrogen reaching the ground via urine when leaching is at risk.

Italian-based hybrid ryegrass in their pasture mix remains active in cooler months and helped soak up nitrogen in lower soil temperatures and hold soil nitrates.

Only 70 per cent to 80 per cent of their soils' capacity was topped up with irrigation so there is still room for rain water, and stored effluent irrigated on to paddocks via the pivots is treated as a fertiliser.

This is measured with one millimetre of effluent equal to five kilograms of nitrogen and because it runs through a weeping wall the concentration is doubled.

A high-sugar grass being developed by researchers, a coming nitrification inhibitor and a breeding programme to try to get low-methane animals is in their sights to make further cuts to nitrogen losses.

Everest said they had met international regenerative targets with at least five species in their pasture mix including plantain, clover, chicory, Italian ryegrass, hybrid ryegrass.

They get a premium from Synlait for a2 milk and meeting its quality assurance programme.

An unintended bonus of putting solar panels on the dairy shed roof is that it has become cooler for the cows and workers. Surplus energy goes to ice production with a small amount going into the main grid.

They are continuing to do their homework on covering the effluent solids or greenwaste ponds to capture methane or treat it with polyferric sulphate.

Their hope is to put the methane through a generator for powering irrigators and they are also looking at putting in a solar bank along a fenceline to carry this out.

The couple planted out a 90m trial area in carex which shades stream water, stifles weeds and reduces nitrates between two per cent to three per cent.

Impressed by the results, they applied for consent to plant another 650m stretch for a 24 per cent reduction and planned to extend this further.

Nitrate levels will continue to be measured at the top and bottom of the creek.

– CRL