Working to secure your future

GRASSROOTS

Tommy Heffernan

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We can't eat nostalgia

There's only one constant in life, and that's change. The European green deal heralds a future roadmap around food policy.

Now, as we survey the landscape and our agricultural system, we must begin again to reimagine our food systems, balancing production with a more harmonious relationship with the environment.

The past Before we look at the present or the future, we must look back. The value which our farming and food systems have created over the last 100 years has been immense.

After WW2, farming responded by scaling up and beginning revolutionising efficiency. The innovators came with solutions to feed a growing population.

The task was a mammoth one, to produce more food, safe food, and cheap food. While things were not perfect, farmers saved billions from starvation over the decades. Like many solutions over time, this scale created new challenges.

We created the boom of plenty, and also the birth of ultra-processed food. Over the past decades, we've seen the tremendous metabolic and health challenges that come with an abundance of food and convenience.

There can be no doubt of the value agriculture created in this time.

With scale and efficiency, there can be unforeseen consequences. We've been forced to push land, animals, and people to, at times, biological breaking points. The abundance created has also led to a society where close to 1 billion people are obese. Now one of our most significant global health challenges in developed countries is metabolic.



A broken system?

Many say our current food system is broken. While it's not broken, it may have outgrown its function and must adapt to the new criteria and challenges.

While many chemical solutions have helped us get here, it will be a return to biological methods that may restore the fine balances of biodiversity and soil health.

This will not be done without harnessing the advances in technology and engineering. The biggest obstacle may come from the need to have global thinking around sustainable food systems. A European green deal cannot simply mean reducing production to drive it to less sustainable countries and farming practices.

Most importantly, it will require dialogue, research and leadership.

Change can make us uncomfortable, and it makes us yearn for the ways of old like a deep burning nostalgia. We cannot eat nostalgia, however.

The goalposts in a short period have now substantially moved.

Current challenges

As we work our way through a global pandemic, we now face the most significant challenge for our biome and planet. With climate change, we can't count the bodies like a disease. We have no doubt global warming will slowly strangle the very planet we depend upon unless, as a society, we take massive action.

At this point the blame game begins. Agriculture is regularly laboured with the perception we're plundering mother nature's precious resources for unsustainable growth and greed.

To those who say the food system is broken, we must remember who drove that system. It was not the primary producers but the consumer and the marketplace. After WW2, farming took on a task and delivered more, safer, and cheaper food.

While we can, and will, adapt to more sustainable practices, we must not let the focus drift to agriculture from the real culprits in the climate change story energy and oil.



While in livestock production, we must also look deeply into the type of systems we build in the future. Animal welfare must be close to our focus. Not just for a more discerning consumer, but because good animal welfare is harmonious with better production and performance from our animals.

I firmly believe animal-centred agriculture will deliver this by closely focusing on our farmed animals' biological needs. Building systems that match our cows' needs is a win for the animal, farmers, consumers, and our planet.

It's essentially about value, right along the supply chain. The value we place is both emotional, social, and economical. This type of value structure creates a better sense of the actual true value of something.

It's not how they die but how they live. The concept of a life worth living will be commonly used over the next decade.

Constant criticism

Over the past few years, it feels like farmers face constant criticism as scapegoats for many global problems. Throughout the pandemic, farmers continued to produce safe food, and all areas of our supply chain avoided chaos. Do not underestimate this value in a time of crisis.

This sustained criticism could lead to a demoralised and broken industry. Instead, we must help farmers realise their immense value to society.

New solutions

We have the emergence of synthetic foods and plant-based foods, being lauded by some as the nutritional saviours of humanity and our planet. This is short-term thinking and marketing spin that can often blind us. Digging deeper into these multiprocessed foods, one could only imagine more of the same. These are not healthy foods but an opportunity to sell and grow new markets.

To ignore them would be foolish, as political will and capital seem to herald their arrival

with excitement. They'll form part of the food systems of the future. A far greater outcome, however, will be the re-imagining of our existing and current food system.

The production of healthy food balances ecology, welfare, production, and profitability.

Who pays?

With all these challenges, the responsibility must be shared. The consumer and policymakers cannot expect to drive up standards and create complexity without bearing the load.

Food is now too cheap, and excellent food is dear to produce, especially when we strive for higher ecological and welfare standards in the future.

With so much food waste in our world, we must all do better. Progress can also unintentionally bring inequality where some families struggle to put any food on the table.

The primary producer must be supported as new demands and more ecological farming systems are employed. They cannot be expected to deliver these on the same treadmill which got us here.

In a world obsessed with cures for disease, we badly need to shift the reward system to people who work in the business of health.

Farmers producing high-quality nutrientdense foods have the most significant role to play in our health. We must place value again in food.

The future of food

It's easy to talk about farming when your plough is a pen. Change though constant is never easy, and we must focus on the value

that farming brings to human health and that of the planet.

Farms of the future can be diverse businesses producing health solutions and within circular systems adding great value while waste is minimised.

With the potential complexities of farming in the future, we cannot forget every person's greatest need to be economically sustainable before we dare to dream of anything else. Add complexity to food systems without the financial returns for effort; then, we are destined to fail.

The pandemic has taught us about essential professions. Our food systems survived the rigour of a once-in-a-lifetime event. It told me two things, one that our food system is not quite as broken as some might suggest, and it showed that farming would be an essential component of society long into the future.

A move to biological solutions and more regenerative practices are muted as the solution to all our food systems problems. They will only play a part in this complex web and ecosystem.

We will need to harness every aspect of scientific research and technology to overcome our challenges, which means GMOs, CRISPR technology, larger farms, and the rise in urban farming, to name a few. It will mean that even synthetic biology will be needed alongside our traditional farming practices.

We will have to go back to basics and relearn soil management. We will have to be aware of all the finite resources we plunder for progress.

In a planet consumed by solutions to disease, there's not enough focus on

health. A great pillar of that health is the food we consume. The environment we live in produces the next great pillar of a healthy biome.

Farming is touted by many as the problem, in fact, our great saviour could be a diverse farming and food system working within nature's parameters that's closely aligned to future technologies.

Agriculture is the most exciting industry to work in. While there are many challenges, few industry solutions will have the farreaching consequences of agriculture.

This must feed into a new dawn where people are not just born into farming but want to be part of this great industry,

We must do more to attract and make accessible opportunities for people to farm. It should no longer be a birth right. We must endeavour to bring the brightest minds into all levels of our food production systems.

We must put more value in food, looking at it as a simple commodity will lead to failure.

If we don't recognise the biodiversity challenges that face us, or the subsequent collapse of our ecosystems, this will be the legacy we leave our children.

This is something that I cannot personally leave behind me.

While we often look for political leadership, it will probably come from individuals and the private sector. Any business now focused on profit alone without greater social conscience will only prosper in the short term.

Change will always be met with resistance, but change is constant and will most of all require leadership.





Tommy Heffernan is a veterinary consultant based in Co Wicklow. Tommy worked in mixed practice for 16 years and was a practice partner for 10 years. He developed a huge interest in preventative medicine and farmer training. He completed a Grad cert in dairy herd health and became a cowsignals masters' trainer.

Leaving practice, he obtained a Nuffield farming scholarship where he proposed the idea of an animal centred approach for the modern dairy industry. He also worked for 16 months with the Irish Farmers Journal as their animal health specialist. Noe he's set up a new training company called Vision Farming Ltd.

Profitability trend in international pasture-based dairying

Pasture to Profit consultant Sean Chubb reflects on our most popular webinar to date.

In January LIC was lucky to have David Beca speak on the findings from his latest paper titled key determinates of profitability for pasture based dairy farms. David brought a wealth of knowledge with him, having farmed in Australia before starting his own consultancy company, developing an agriculture and benchmarking tool called Red Sky, which is used in Australia, New Zealand, and South Africa.

On top of this David has held leadership positions in large corporate dairy, beef and cropping businesses with operations based in Australia, New Zealand, Uruguay, Chile, Romania, Poland, and Russia. This included three years living in Uruguay as CEO of publicly listed NZ Farming Systems Uruguay, and several years in Tasmania as CEO of Australia's largest dairy farming business.

Below are the three take home messages that I got from the webinar, and if you missed it and would still like to watch, follow the link at the end of this article. We're also planning to release shorter portions of the webinar in the spring on our Facebook page.

International trends

The first part of David's presentation was to give some content around different countries and how their milk production, cost of production and operating revenue has changed between 2003 through to 2019.

While David didn't have as much information on the UK and Ireland markets, what he did have showed that once quotas were removed in Ireland, the country had a large increase in milk production (75% increase) from the base figure in 2003. The UK was only able to increase its milk production by 10% over the same period. During this time the average milk price was equal to or higher than that of Ireland, so what enabled Ireland to grow their milk production at a much higher rate than that of the UK?

David put this down to profitability. In Ireland's case the predominantly grass based system gives them a low cost of production, whereas the UK is mostly made up from a high input, low margin production system. The level of profitability is a direct driver in giving farmers the confidence they need to expand as well as the funds.



The good news for the UK dairy industry is that this doesn't have to be the case going forward. David showed that countries who decreased their percentage of grazed grass in the diet increased their cost of production and lowered their operating profit.

While the UK has the ability to grow high quality grass throughout the grazing season, there's great potential for the industry to increase its profitability and catch up on the production gains that other countries have experienced. For Ireland, the goal is not to be drawn in by the flashing lights of producing more litres through increased levels of supplements.

Areas to monitor

David highlighted a number of areas that farmers should monitor to help them drive profitability. What was interesting was that at no point did David highlight the milk from forage ratio or milk production per cow. These ratios, while they may make you feel good, have no impact on profitability. Focusing on these ratios and trying to improve them is unlikely to increase your operating profit. Unless the increase in production per cow, or milk from forage, is coming from grazed grass, they are more likely to increase your cost of production.

David also touched on other sets of ratios that pasture based farmers should monitor: the first was pasture harvested which most farmers do and monitor well through a tool like Agrinet, the second was ratio of pasture cost per tonne of dry matter not monitored. Having the sole focus on the pasture harvested can sometimes lead to the detriment of the pasture cost per tonne of dry matter.

Reducing the financial impacts of climatic events

The biggest surprise of the webinar for me was when David gave his explanation on how to reduce the financial impact of climatic events. Coming from Australia, and working with farmers in South Africa, I was expecting the solution to be to hold greater feed reserves or to look at alternative grazing species within swards that have greater drought tolerance.

Instead, his answer was rather counter intuitive - increase the percentage of



grass in the diet. His reasoning was very sound. Through increasing your percentage of pasture in the cows diet you're lowering the cost of production and increasing operating profit.

A sustainable business needs to be profitable to be able to withstand events outside of your control, things such as milk price fluctuations and climatic events. David backed this up with a model he'd undertaken for South African farmers where he looked at the impact of climatic events that would reduce and increase grass harvested by up to a tonne and maize harvested by a tonne along with the impact this climatic event would have on concentrate prices.

Under each scenario as the percentage of pasture increased so did the profitability. The most compelling part of this model work was when looking at return on capital and profit per hectare, the drought affected scenarios had the biggest improvements as the level of pasture in the diet increased.

So, to summarise my points, to have a resilient business you need to maximise your profit by reducing your costs, this can easily be done through having a high level of grazed grass in your diet. Monitoring of the right ratios will help lead your business in the right direction.

These are only three points I've taken from David's presentation, I'd recommend anyone wanting to improve profitability to view the webinar and take note of other points David highlights.



You can view it by going to: https://uklic.co.uk/news/pastureto-profit-insights-2021-webinar/

Annual milk production growth (2002/03 Base = 1,0 ECM)



Prioritised list of key ratios

Primary ratio	R ² P		Secondary ratio or proxy	R ²	Р
Return on total capital (ROC)	Compa	rator for	Profit per hectare	0.79	<= 0.001
[defines profit]	other	r ratios	Profit per cow	0.73	<= 0.001
Operating profit margin	0.75	<= 0.001	Profit per litre	0.76	<= 0.001
Cost of production per litre	0.44	<= 0.001	Total expenses per litre	0.51	<= 0.001
Pasture harvest	0.41	<= 0.001			
Pasture cost per tonne dry matter	0.23	<= 0.001			
Milk price	0.20	<= 0.001			
Milk production per hectare	0.20	<= 0.001	Stocking rate	0.25	<= 0.001
Supplement cost per litre	0.20	<= 0.001	Total feed cost per litre	0.21	<= 0.001
Core per cow cost	0.20	<= 0.001			
Labour cost per cow	0.18	<= 0.001	Cows per full-time staff equivalent	0.13	<= 0.001
			Labour cost per litre	0.17	<= 0.001
			Litres per full-time staff equivalent	0.11	<= 0.001
Core per hectare cost per tonne dry matter of pasture harvest	0.17	<= 0.001			
Pasture as per cent of diet	0.08	<= 0.001	Pasture consumed per cow	0.07	0.001

Sensitivity analysis parameters seasonal climatic conditions

SENSITIVITY TABLE	Units		-	BASE	+	++							
Seasonal Climatic Conditions													
Pasture Harvest Variance	tDM / ha	- 1.0	- 0.5	+	+ 0.5	+1.0							
Pasture Harvest	tDM / ha	10.3	10.8	11.3	11.8	12.3							
Maize Silage Variance	tDM / ha	- 1.0	- 0.5	+	+ 0.5	+ 1.0							
Maize silage Yield	tDM / ha	13.0	13.5	14.0	14.5	15.0							
Maize Silage Cost	USD / tDM	\$ 83	\$ 80	\$ 77	\$ 74	\$ 72							
Maize Silage Cost	€/tDM	€ 75	€ 72	€ 69	€ 67	€ 65							
Concentrate Variance	USD / tonne	\$ 13	\$7	+	-\$7	-\$ 13							
Concentrate Price	USD / tonne	\$ 267	\$ 260	\$ 253	\$ 247	\$ 240							
Concentrate Price	€ / tonne	€ 241	€ 235	€ 229	€ 223	€217							

Pasture based farming on the Isle of Man

Running a dairy business on the Isle of Man is not without its challenges, but Manx producer David Cooil wouldn't have it any other way and loves the rural landscapes he wakes up to every day.

David farms three units, run as one family business with his brother Robert. A total of 540 acres supports a 230-head dairy herd where grazing forms a key part of the operation.

"Our aim is to get as much milk as we can from forage, and to continually look at reducing costs rather than push yields," says David. "Robert and I work really well together, sharing the tasks, and as dedicated dads wanting to be finished in time to take our kids to school in the morning, and finished by 6pm to spend time with them before they go to bed."

The pair started farming together in 2010, taking two of the farms over from their father, who came out of dairying in 1977 and, at the time of his retirement, was running a beef and sheep unit.

"We looked at the economics and couldn't see how a beef and sheep business could allow us the lifestyle and profitability that we were seeking. We were reliant on the Single Farm Payment as beef and sheep farmers, and we wanted to make sure that as our business moved forward, we were not relying on Government support payments to make a profit.

"We were already paddock grazing our beef cattle and once we decided to move into dairy, investing in a shed, parlour and the cows was relatively straight forward, we haven't looked back since, and we'd never go back."

The three farms are Ballagawne (230 acres and the base for the dairy cows), Ballakilpheric Farm (180 acres) and Ballacreggan Farm (120 acres) home to Robert, his wife llona and four children. David, his wife Kim and two children live at Ballagawne where 150 acres of grass is put aside as the grazing platform.

David says the cows are currently a bit of a mix as they were purchased from several places, but he has used LIC genetics from the start, aiming for a 520kgs cow producing 520kgs milk solids. The plan is to build a British Friesian x Jersey herd that are fertile, good grazers and can produce 90% of their milk from forage.

"We're moving this way as fast as we can, but we still have some bigger

Holstein types from the stock we originally purchased. Our yield is currently around 5600 litres per cow, with 4400 litres from forage, giving 4.86% fat and 3.63% protein.

Perhaps unusually the herd is split block calving, with 140 spring and 90 autumn calvers. All milk is sold to the Isle of Man creamery, a farmer owned co-operative, which is the only processor on the island apart from two small producer retailers.

"The system and herd, allow us to achieve the bonuses available from having higher fats and the extra from the A and B prices offered."

Last year his average milk price was 30.7ppl and the creamery, with a large daily doorstep delivery service, needs level production from the Island's 30 suppliers.

One of the disadvantages of living on the Island is the additional cost of moving in supplies. Imported feed and fertiliser is around £60/tonne more expensive.

"We look to import top-quality feed so we only have to feed small quantities," explained David. "We use a maximum of 950kgs/head and to reduce our reliance on purchased feed, we grow barley that we feed ourselves and 30 acres of kale to outwinter the dry cows and some of our beef animals."

Some of the crossbred milkers

All the calves are reared, with heifers retained for the herd and male dairy and beef cross calves taken through to slaughter at Isle of Man Meats. Some beef cross heifers are sold to local suckler farmers and currently they are rearing 130 cattle per year including a few bought-in stores.

Grass is vital across the three farms, and David says the IOM climate is ideal to grow good yields. He has recently soil tested each of the 37 dairy grazing paddocks and is now saving on fertiliser costs, only applying it when and where needed.

"We walk the paddocks and use a plate meter every week during the season. This links to the Agrinet computer program which delivers a grass budget so we know how long each paddock will last. We rotationally graze and get the cows out as early in the year as possible, usually around the second week of February, grazing through to the end of November if the weather allows".

"At the start of the season they go out for three or four hours straight after milking and come back in to eat silage before going out again following the afternoon milking. They're brought back in around 9pm. They eat around 75% of what they will consume in the two to three hours after milking, so this works well until there's enough grass growth to sustain them."

All the farmers on the Island graze cows, as the creamery market the milk as 'Grassfed accredited', and all farms are audited to ensure the herds are grazed for a minimum of 200 days a year. David says the community spirit is good, and there is a good following for local produce.

"There's still plenty of scope for us to improve," he says, "We need to get better at measuring and managing to ensure more efficient production, and to use farm manure and slurry better to reduce our costs further."

The brothers are full of praise for their local bank - the Isle of Man bank - who supported them with loans to invest in the dairy unit. "Our manager, Lindsay Leece, has always had a keen interest in what we are doing, and even came to do a full day's work alongside us, starting at 5.45am!" They also made use of available Government grants.

They installed a Fullwood 20/40 swingover parlour, a Packo 6000litre bulk tank and fitted the existing cattle shed with 92 cubicles. They also recently built a further shed with 120 cubicles.

There was also the need to purchase the stock, with 50 heifer calves from Yorkshire in spring 2016 and 78 in-calf heifers from Anglesey in November 2016 to start calving in February 2017. A further 28 bulling heifers joined from North Wales to serve in December 2017 and calve in September 2018. The Island is TB and BVD free, so the health status of the animals we bought was a key factor when we were looking for dairy animals.

So where do the brothers want to be in five or 10 years' time?

"We'd like to get the farm carbon neutral or negative in the next 10 years or less and keep improving every aspect of the farm business including expanding if it's sustainable and profitable. Questioned about how Covid-19 had affected his business, he stressed that he felt, as an Island, they had coped well, and the Island was without any restrictions from June 2020 to January 2021. At that point they had a three-week firebreak lockdown and that seemed to have worked. Supplies have, on occasions, been held up, so one plan for this year is to order his semen early so he can be certain of getting access to the bulls from LIC that he believes will improve his herd.

"I've also found benefits I hadn't considered - for example I've been able to attend lots of online conferences and farm specific meetings, which I would not have been able to attend normally - both because of the travel costs and difficulty of leaving the farm for a couple of days. That has been very beneficial."



David and his daughter with their dairy cows

"Spending as much time as possible with our families, and working together is important to us, especially so we can structure our days around our kids – we start early and always try to finish by 6pm"

"Both Rob and I are keen to help young people or people interested in furthering their farming career. We have four part time workers including a young lad that we share with a neighbouring dairy farm that works with us for two days a week, and also an older chap that, despite having a good joinery business, wanted to work on a farm and learn more about farming. We've helped him get a small sheep flock established.

"Also, when we took on the tenancy of Ballakilpheric, we took on the farm worker who has a few beef animals of his own. We're keen to give good people responsibility and trust them to get on. Hopefully, by being seen as a good employer and a good place to work, people will come looking for work, rather than us having to look for good people."

FARM FACTS

Total size of three farms	540 acres
Grazing platform	150 acres
Cows milked	230
Beef reared	130
System	Block spring and autumn calving
Yield	5600litres with 4400litres from forage
LIC bulls used in 2021	Schraders Tusk, Lynbrook Kartell Jareem MH Verdict, Zinks GBF Bachelor
Breeding policy	Sexed semen only for 4 weeks, then sweeper bulls for a further 5 weeks
Bull choice	Made on fertility, solids and SCI

Spring tips to maximise your grazing

Pasture to Profit consultant Piers Badnell talks about the main drivers in a grass-based system as the end of the first grazing round approaches.





March - shows a good residual for a first round grazing in March



Producers who've been using a spring rotation planner should have grazed the required area and found their average cover is on plan.

With the drivers of profit being cost of production, utilisation/ ha, output/ha and fertility, I'm concentrating on how to drive utilisation and output/ha – get those right and they will drive cost of production and fertility. They combine well with increasing the percentage of grass in the diet, as David Beca explained in the recent LIC webinar, and this in turn drives profit.

I've nothing revolutionary to say, just a reminder of the drivers of success with grazing. I see a lot of problems later in the season, often created by mistakes and/or inaccuracies in the early part of the season.

Hitting residual is vitally important in the first round as this sets the base for the residual for the year. The early part of February has been wet and tricky for some, so we may have to hit some residuals in the early part of the second round, as conditions did not allow us to in the first.

Milk prices are stable now, but input costs are rising. The pressure to be accurate with grazing, and stingy with concentrate, is paramount. Concentrate use is not a sin but should only be used to cover deficits.

Profit drivers

David Beca adds that grass production and utilisation is the driver of profit - and milk is the by product, so we need to get the grass bit right.

A poor start to the season with poor residuals and poor utilisation will lead to poorer quality through the sward profile in subsequent rounds. Why? We'll have grass from the previous rounds in the sward which is dropping in value along with the new growth thus diluting quality. This dilution will reduce sward quality from 12+ ME to, for example, 11 ME. The double hit comes when the plants go reproductive in late May - early June, and we have to support production with concentrate unnecessarily.

So, to avoid this scenario and grow quality grass, which is highly digestible with high-quality protein, we need to make sure we get a few things right and to make sure everyone in the team understands this. There are many reasons for things not going as well as they could, and one of those is assuming everyone knows as much as you think they do... it's very difficult to say "I don't know" when you feel you should know. So does everyone know what the drivers are?

My first point is to have the correct average cover all season, manage this and by default you will grow the most grass at the highest quality. You're not in control of growth rate, you can influence it a little with management and fertiliser, but you don't control it. That's down to weather, time of year and climate. However, you are in control of demand and as such you are in control of average cover.

What else do we need to control?

When we combine correct entry cover and residual to the average cover, then we are really tightening the management nut on the bolt to success.

Correct entry cover is 2800 – 3000kgs/ DM/ha and residual 1500kgs/DM/ha (3.5-4cm) and an even residual. Not an average 1500 where some are 1300 and some are 1700.

Entry cover is vital, too high and utilisation becomes difficult for the cow, the base of the sward becomes shaded slowing regrowth, plus quality drops as we get more stem and dying fourth leaf. Too low and we're not making full use of the plant's potential as the third leaf is 45% of plant yield. Too low a cover and we miss out on the third leaf which is very important in pushing grass into a dry period. A longer rotation allows for third leaf growth, and therefore more grass on hand.

In wetter weather it may be advantageous to come down the wedge a little to the 2600 cover paddock and then on drier days go back to the 2800.

We should also be aware of the dry matter of grass. For example, in warm dry weather and in the first round, grass dry matter can be in the low to mid-twenties, as opposed to lusher second round grass, which may be in the high teens on drier days and around 15% on wet days.

So, when allocating grass what is the dry matter of the grass, what can the cow eat? If she's being fed supplement, she'll eat less grass. For example, she can eat 17kgs/DM and if we feed her 2kgs concentrate, we need to allocate grass accordingly for 15kgs or marginally less.

Pre balance day on the spring rotation planner, the area is set and as such there may not be enough grass to feed her, so we then have to feed supplement to make up the cow's requirement. It's vital to get supplementation correct.

Edge of appetite is key, supplementation does reduce grass intake by substitution so, if she needs supplementation make sure she still has the edge of appetite going to grass. Residual and consistent residual drives quality regrowth, 3.5 to 4cm is the target and achieving this means extra leaf (10% more compared to 5cm residual). Poor inconsistent residuals mean grass from previous rounds are in this round's allocation diluting quality and growth potential. Poorer quality in the sward will not support the potential milk production and then people will lean on concentrate.

So, entry cover, allocation accuracy, supplementation, and an understanding of how much your cows can eat (which does vary between the start and end of lactation) are the keys to residual which drives future quality & quantity – plan it, do it and review it. How well did you do?

Other areas to plan for and consider:

- Water trough placement.
- Fertilisers nitrogen is a feed driver, apply as you need to produce feed do not over apply creating too much surplus.
- Growth prediction, you know the weather we've had and are having now, plus soil moisture levels. Looking at the forecast you can predict quite accurately the growth to come in the

next round. Look back at previous years' growth curves - what's the range on the dates you're looking at?

- Post balance day grass is no longer limiting. You'll be in surplus, so now is the time to look at taking out concentrate and any silage.
- I believe 12-hour allocations aid accuracy and give greater control and mean the cow has a more even diet as she's eating everything at once as opposed to a 24 hour or 36 hour break where she eats the best bits first then the second-best bits in the second 12 hours etc. I know there are advocates for the 24 and 36 hours – something for further discussion.
- At the end of the first-round, blend first round and second round grass for a few days, say one at night and one during the day. The difference and blending over a few days helps the cow adapt.

Conclusion

Manage your average cover by what you can control - demand and round length. Enter at the right cover, hit residuals and the quality will enable you to increase the percentage of grazed grass in the diet therefore enhancing profit.

Irish Bull Breeding Programme bulls come on-stream in Ireland

For over 20 years, Irish farmers have been using LIC's high quality pasture-based genetics. The co-operative is teaming up with those same farmers to produce bulls from leading Irish herds through LIC's genomic selection breeding programme in Ireland, the Irish Bull Breeding Programme (IBB).

The IBB complements our flagship delivery of high quality daughter-proven New Zealand LIC genetics to Irish farmers with an LIC genomic bull offering from within Ireland itself.

The young bulls undergo genomic evaluation using LIC's long-standing expertise in both purebred and crossbred animal evaluation, in addition to evaluation on EBI.

Uniquely, these bulls have both gBW and gEBI figures, with the very best picked for The Forwards® team.

TheForwards®

The Forwards bulls are sourced from Irish LIC Premier Club members' herds. These herds have spring-calving grass-based systems and contain many exceptional cows. The young bulls are the offspring of matings between high EBI cows, most with strong LIC pedigrees, and the very best of LIC's elite daughter-proven bulls, available through the Premier Club.

LIC's breeding experts examine the



candidate bull's pedigree, physical attributes and cow family information to increase the accuracy of delivering genetics to further improve the genetic merit of your herd.

Evaluation using both EBI genomic evaluation and LIC's own powerful genomic evaluation tool, the Single Step Animal Model (SSAM), provides a more reliable estimate of a bull's genetic quality at a young age than that from ancestry alone. With both gBW and gEBI to look at, The Forwards® bring you a unique opportunity to fast-track genetic gain in your herd.

Programme manager, John Tobin proudly presents the latest bulls from the IBB.

"The incoming pipeline of bulls looks very promising too, with the 2020 crop producing candidates worthy of the SPS program in New Zealand. While the motivation is to create herds that are more efficient converters of feed-to-profit, we're always mindful that a balanced approach is paramount," John adds.

Available Bulls Source: LIC 24/10/2020

IRE AI Code	Name	gBW	gBW rel %	Fertility BV	Milk Volume BV (I)	Fat BV (kg)	Fat % BV	Protein BV (kg)	Protein % BV	SCCBV	Longevity BV	Heifer Calving Diff BV	Cow Calving Diff BV	Liveweight BV	Body Condition Score BV	Capacity BV	Udder overall BV
FR6277	LIC Coolhull Daly	215	60	2.1	657	29	4.7	37	4.0	-0.46	577	0.2	0.0	52	0.20	0.78	0.44
JE6886	LIC Kilvoige Aaron	307	55	5.0	-68	43	5.8	14	4.2	0.20	540	-1.5	-0.4	3	0.24	0.71	0.34
JE6895	LIC Brooklawn Moonlight Eclipse	268	56	2.6	152	26	5.1	26	4.2	-0.48	439	-0.7	-0.4	-16	0.03	0.29	0.16
FR6823	LIC Kilvoige Stephen	186	56	0.8	510	38	5.0	24	3.9	-0.03	430	1.5	0.1	41	0.00	0.34	0.23
NA	LIC Newbawn Lily	156	51	5.1	262	30	5.1	15	3.9	-0.27	306	0.3	0.2	57	0.35	0.62	0.57
FR6892	LIC Moorehill Max	345	58	4.2	474	45	5.2	30	4.0	-0.13	931	-0.5	-0.1	23	0.27	0.54	0.49
JE6898	LIC Moorehill Galaxy	208	55	6.4	131	16	4.9	20	4.1	-0.10	562	-0.5	0.0	8	0.20	0.29	0.16
JE6820	LIC Ahabeg Defender	180	52	6.1	191	27	5.1	9	3.8	-0.09	469	-0.3	0.0	29	0.31	0.39	0.90
TEAM A	VERAGE	233	55	4.0	289	32	5.1	22	4.0	-0.17	532	-0.2	-0.1	25	0.20	0.50	0.41



"The balanced approach to breeding not only delivers profit on farm, but ensures that resulting cows have good parlour attributes, the physical capacity to compete (i.e. get their share of feed), and an ability to walk, conceive, and stay in-calf."

A Taste of the 2020 bulls

LIC Brooklawn ML Eclipse is a Glen Koru Epic son (JE4509) out of a Moodys Executive (YMD) cow coming from Cathal Lowry's herd in Galway. The F9J7 dam's five-year production average is 660kg/MS. Fertility is proven, at 364 days CI to date. Eclipse is 264 gEBI and 268 gBW.

Joining him is LIC Moorehill Max with 345 gBW and 264 gEBI, sired by the well-known Carsons FM Cairo (FR4507),

impressive on fertility at 4.2 gBV (the dam's six-year CI average is 371 days).

Andrew Dineen's bull LIC Kilvoige Aaron is a G-Force (JE4558) son with good fertility indexes. His dam is doing milk solids in excess of her liveweight in her first lactation. Aaron is 307 gBW and 272 gEBI.

To order or for advice on how to use The Forwards® bulls as part of your breeding programme, contact your LIC Ireland breeding advisor.

High Input	EBI	EBI Rel %	Milk SI	Fertility SI	Calving	Milk kg	Fat kg	Fat %	Protein kg	Protein %	Dairy Heifer Calv Diff	Dairy Cow Calving Difficulty	Sire	Breed Split	A2 Status	Birth Date
1263	228	55	92	93	41	-57	14	0.28	10	0.21	5.17	2.08	ARKANS BEAUT ET	F11J5	A1/A2	06/02/2019
1301	272	51	114	98	46	-173	23	0.53	9	0.26	4.98	2.12	VAN STRAALENS G-FORCE	J10F6	A1/A2	11/02/2020
1255	264	50	115	87	36	37	15	0.24	15	0.23	4.15	2.03	GLEN KORU EPIC	F8J8	A2/A2	15/02/2020
1205	268	58	111	99	39	-74	22	0.44	10	0.22	5.43	2.38	PRIESTS SIERRA	F12J4	A2/A2	17/02/2020
1222	268	48	105	102	40	-131	23	0.5	8	0.22	5.41	1.65	CRESCENT EXCELL MISTY ET	F8J8	A2/A2	15/02/2020
1338	264	51	98	108	56	63	17	0.26	12	0.16	3.92	1.67	CARSONS FM CAIRO S3F	F12J4	A2/A2	01/03/2020
1202	244	49	113	83	40	-65	17	0.34	12	0.25	5.20	1.94	GLEN KORU EPIC	F9J5O2	A2/A2	02/03/2020
1236	233	51	99	73	35	-26	24	0.44	8	0.16	4.88	2.56	VAN STRAALENS G-FORCE	F11J5	A1/A2	15/02/2020
1253	255	52	106	93	42	-53	19	0.38	10.50	0.21	4.89	2.05				

A Day in the Life of... Aiden Cunningham

Managing cows in countries as far apart as the US and New Zealand, with Ireland somewhere in the middle, gives Aiden Cunningham the skills and experience to add to his role as a Breeding Advisor for Cork and South Tipperary.

Joining LIC and Eurogene in October last year, he says he's 'well bedded in now' and before the latest Covid-19 lockdown did manage to meet with most of his customers. He already loves his job and says he's so pleased his career took this change in direction.

Aiden was born in New Jersey, stateside. His parents are Irish, his father from Coole, Westmeath, while his mother was born in the States, moving back to Donegal with her mother when she was young. Aiden's family moved to Kildare in '92 before deciding to go back to the states in '96.

His father was a highly regarded cabinet maker and had very highprofile clients in New York City. His parents decided to send Aiden home each summer where he lived with his grandparents and uncle working on their farm. "I really loved the farm, milking cows, making silage, working cattle," he says. "Ireland was always home for me, and I loved farming from an early age."

When Aiden was 18, he moved back to Ireland, and took a construction management course in Galway, as farming was seen as a sunset industry in Ireland. "I felt I'd have better opportunities in construction but I didn't enjoy the course and realised I wanted to be involved in farming.

"While looking in Farmers Weekly for tractor driving jobs in the summer, I saw an advert for a job in NZ. After applying



online I got a phone call four hours later, a job offer a week later, and six weeks later I was on a flight to NZ."

Aiden spent a year working for Robin and Pixi Moss in the Waikato on a 700cow high input system. "I was given the responsibility of doing the farm walks, and really enjoyed helping to manage pasture and residuals. Before I left I applied to CIT and WIT for Ag Science courses, but due to the recession, demand for places skyrocketed and I didn't get an offer. I decided to apply to Massey University for Ag science and, with a bit of help from the international students' office, I was accepted."

While studying at Massey University, he worked in the mornings on farms before his lectures, feeding out silage and doing crop allocation during the winter, helping with night checks during calving, and milking cows during the spring.

After finishing at Massey in 2014, he moved to Missouri in the US, where he managed a unit with 1500 cows on a high input NZ pasture-based system. This was a massive learning curve, managing 1500 cows and up to eight employees, but a great experience. After being away from Ireland for nearly six years, he decided to move back, helping to convert and manage a large dairy farm in Kilkenny.

While he was back in Ireland, he was hoping he'd be successful at finding a farm to lease. "I thought I had one lined up, but unfortunately it just didn't happen." So, at a bit of a loose end, he went to visit family in New Jersey and, for a change in pace, took a job in NYC helping to put in foundations in Queens



and Brooklyn for two months before setting on a six- week motorcycle trip around Canada and USA.

He bought a cheap second-hand motorcycle and loaded it up and set off early July, with a vague date set for arrival in San Francisco for the last week of July. While on the trip he lived off \$10/ day for food and spent an average of \$30/day during the six weeks.

"I've travelled as much as I can. I love seeing new places and love seeing how other people do things, you can always learn something from everyone. Farming in different climates has made me appreciate how blessed we are to be farming here."

While stopping in Missouri, to say hello to a few old friends, he was asked to travel to New Zealand to manage a farm in Canterbury, before ultimately doing the same thing in Missouri. While he was hoping to stay in Missouri for a full season, COVID and travel bans meant that Caroline, Aiden's girlfriend, couldn't travel to Missouri.

Coming back to Ireland, he saw the LIC job advertised and thought it would offer him a great opportunity. He had been looking for land to lease in Ireland, but had found it hard to find the right one. "I feel this new role gives me the chance to potentially lease a smaller block of land if one comes up.



"I think Ireland, as a country, has much to be proud of. We have great pasturebased systems, brilliant research facilities, leading farmer co-operatives and family farms, ultimately producing a product that's the envy of the world. It's a lovely place to farm, and there's nothing quite like home."

Caroline has now been offered a PhD, partly funded by Teagasc, and is looking at reducing methane emissions through the use of feed additives.

They plan to take Aiden's GS1200 motorbike on a tour around Europe or North Africa once travel restrictions are lifted, and he says travel is still one of his key passions.

He also enjoys hurling and rugby and played both in his youth. "In New Zealand I loved playing rugby. It was such an inclusive sport that everyone really enjoyed. Obviously, the kiwis are very good at it, and it's played at a very high level, but I really enjoyed the culture of encouragement and learning."

What does he love about his job as a breeding advisor?

"I love getting out and meeting farmers. I enjoy helping them make the breeding decisions and choices that are right for them and their herds, by putting together breeding plans and advising on the best bulls to use. Some farmers are very particular about what they're looking for, and know what they're looking to improve on, while others know what type of cow they want to milk but might need help making the breeding decisions that will help bring that cow to life, one that will be functional, efficient and profitable too."

On a personal note, he says he's really delighted he took the change in direction. "Working with LIC is helping to develop my life skills and I do feel this role will get me closer to finding my own farm in the longer term."

14 LIC GRASSROOTS

Can low-methane bulls be bred?

Lorna McNaughton, LIC reproduction scientist, looks at the importance of low-methane bulls as we move towards reducing emissions.

The New Zealand Government has a stated commitment to reducing gross methane emissions by 10% (relative to 2017-levels) by 2030, and by 24-47% by 2050.

This signals significant change for the agriculture industry, and more specifically, the dairy sector which, according to the Ministry for the Environment, account for 48% and 22.9% respectively of all greenhouse gas emissions in New Zealand (mostly in the form of methane, although a small portion is in the form of nitrous oxide).

Ruminant livestock emit methane, mostly through burps, as part of the digestion process, and the amount produced depends on how much feed is eaten and what type.

It's estimated dairy bulls burp every 90-120 seconds, so reducing this 'gassy' emission is a focus for many New Zealand breeding companies, including LIC.

Breeding is one tool that could be used to help dairy farmers reduce emissions on their farms. Methane emissions have



been shown to be heritable (0.10 to 0.20), a necessary step on the pathway to develop a breeding value. The degree of heritability is similar to that of somatic cell score (0.15), but lower than milk traits (0.31 to 0.36).

A joint project between LIC and CRV, funded by the New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC), aims to measure methane from dairy bulls entering the sire proving schemes of both breeding companies.

A significant trial is now taking place, part of it at LIC's Chudleigh Farm at Tauwhare, east of Hamilton. The project's first stage was to design and develop methods that enabled the emissions of 300 to 350 bulls to be measured each year. To do this, a single pen was set up with a Greenfeed machine to measure methane, and feed bins allowed each bull's intake to be measured.

Selection of feed type was important. The low dry matter of grass, or grass silage, together with variations in quality, meant that alternative feeds needed to be identified. Lucerne hay cubes were selected because they were a forage high in dry matter.

This also meant bulls only needed their feed bins topped up once or twice per day, with quality relatively consistent from year-to-year. A small quantity of pelleted feed was available in the Greenfeed machine to entice the bulls to visit the machine.

When bulls initially put their head in the machine, pellets 'dropped', and kept dropping at specified intervals, to keep the bull's head in the machine for at least



two minutes. Air was then sucked into the Greenfeed machine to ensure all of the bull's breath was captured, with subsamples analysed for methane.

The bulls were allowed to visit the Greenfeed up to five times a day. The diagram at the bottom shows the key parts of the Greenfeed machine. Two pilot trials took place at both LIC's Chudleigh Farm and at a CRV property. After minor adjustments of methods and practice in using the machines, both LIC and CRV are confident that the planned trial design will work.

A full trial is now being planned, and kicked off in February 2021 at LIC and will get underway in June 2021 at CRV. Preliminary breeding values are expected after one year, although three years of data will be needed to estimate breeding values with a suitable degree of confidence.

Genetic improvement is a slow game, but the process has begun, and the rewards are potentially significant for both farmers and other

countries in the world.



These cows can milk

by Malcolm Ellis, LIC general manager NZ markets who says this is a call he really enjoys hearing from dairy farmers - and one that's increasingly being heard.

In spring last year, I spoke with a highly-charged, fantastic, contract milking couple from Canterbury, as they excitedly talked of the cows hitting 2kgMS/cow/day on just the eighth collection of the season, with the majority of cows in at that time being heifers.

Then, when we caught up a short time later, the 1300 cows were 'in-the-groove' and rock solid at 2.5kgMS/cow/day. This really is an outstanding performance. What's more, there were plenty of reports where there wasn't a kilogram of supplement fed since the first cow calved, this has been pure milk production and genetic expression from pasture - New Zealand farmers, and Kiwi cows at their profitable best.

That's what we expect, surely?

As a fourth generation farmer, I know it hasn't always been like that. I often tell the story that I was brought up with a piece of sunlight soap in my hand, and if we didn't use it before Christmas, you didn't get much milk after Christmas.

This related to the practice of pre-milking washing and manual stimulation, lactation persistency was an issue, as was milk letdown. Temperament wasn't flash either. But it doesn't matter how you look at it, the modern cow is simply unrecognisable compared to the cow milked a generation ago.

These cows today can milk! I'm a big advocate of the modern cow and a staunch opponent of the 90%-feeding, 10%-breeding principle. Of course, feeding and nutrition are important considerations within a farm system, but if the 90/10 breakdown is right, how do we explain the 160 kgMS difference between the topquartile and bottom-quartile of all herd tested cows (noting this is corrected for the age of the cow, her breed, and the location within which she is milked)?

The cow of today is indeed a special asset, but within 'the herd asset' a big range of ability and contribution still exists. A good deal of this variation exists following the 'cow growth years' where some cows were retained that arguably shouldn't have been. While I understand their retention at the time, they remained bred from because they fuelled the growth model of the capital gain construct.

But today the focus is more on efficiency-ofconversion of those individual cows.

Increasingly we're celebrating the dizzying heights of the performance of some of these cows and putting the critical spotlight on those at the other end of the bellshaped curve. Farming by numbers, genetic gain doesn't just happen. In reality, it's derived from the elements of the 'breeder's equation'.

Personally, I was fortunate to have had the concept first explained to me (in my Massey days) by the late, much-celebrated, Colin Holmes. The old adage of 'mate the best cow to the best bull to get the best chance of the most desirable outcome' certainly rings true.

But the breeder's equation contains the really good oil, and I've been true to it for years on the farm within the 'Hillstar' & 'Te Aranga' herds, and then for the five years I spent within LIC's breeding scheme.

All elements of the equation have impact, but for me the two we have most control over (and influence on farm) are the two l've put a ring around. Selection intensity/ pressure should be a big driver. Herd testing to better understand 'the wheat



from the chaff', and then focusing on the overall reproductive performance of the herd to earn the right to not involve those poorer cows in the propagation of the next generation, is a key component of the rate of genetic gain.

Generation interval is also a real driver, the concept of which is often borne out on the female side with a farmer's intent to AB his or her yearlings, citing these as the richest reservoir of genetic merit.

The same goes with the boys, and this is where the co-operative investment in genomic technology comes in. Using DNA and the identification of superior genetic markers, allows us to inject the influence of superior bulls at an earlier age, further ramping up the rate of genetic gain.

I declared in 2016 that (if we weren't already) we, as an industry, were very close to cow peak. I celebrated the fact that cow growth had fuelled sector productivity and prosperity for 2-3 decades, and I sensed at that time that we were going to need to put the heat on genetic gain and the principals of herd improvement to etch out the gains from the next chapter of our proud industry.

I think we're extremely fortunate to have a co-operative construct focused on this key driver in New Zealand, and at LIC we're powerfully and passionately focused on the responsibility to drive the elevated gains.

We're also super engaged on working with you to unlock the data and insights within your herd to help move the dial faster.

The spring of 2020 again opened our eyes to the power of the modern cow, but there's always room for improvement, and we're determined to help deliver those gains.

As we continue to navigate the general uncertainty around us - take a moment to be proud of the resilience that is dairy as we look set to power on and deliver

the sixth consecutive milk price on the north side of \$6, despite the global disruption.





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