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Issue 04 2021

GRASSROOTS

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Pre-mating tips

LIC's Sally Pocock talks about how we can ensure a successful mating period and increase our chances of getting cows in calf.

So, what is pre-mating?

When I talk about pre-mating with my farmers it is often greeted with a mixed reaction.

Pre-mating heat detection is the period of time in lead up to the planned start of mating date (PSM). It's used to identify which cows in the herd are cycling as expected, and those that are not.

The thought of adding an additional three or four weeks to a long mating period can seem daunting to some, and perhaps of little value, but there are benefits to be had as a result... benefits that can save you money.

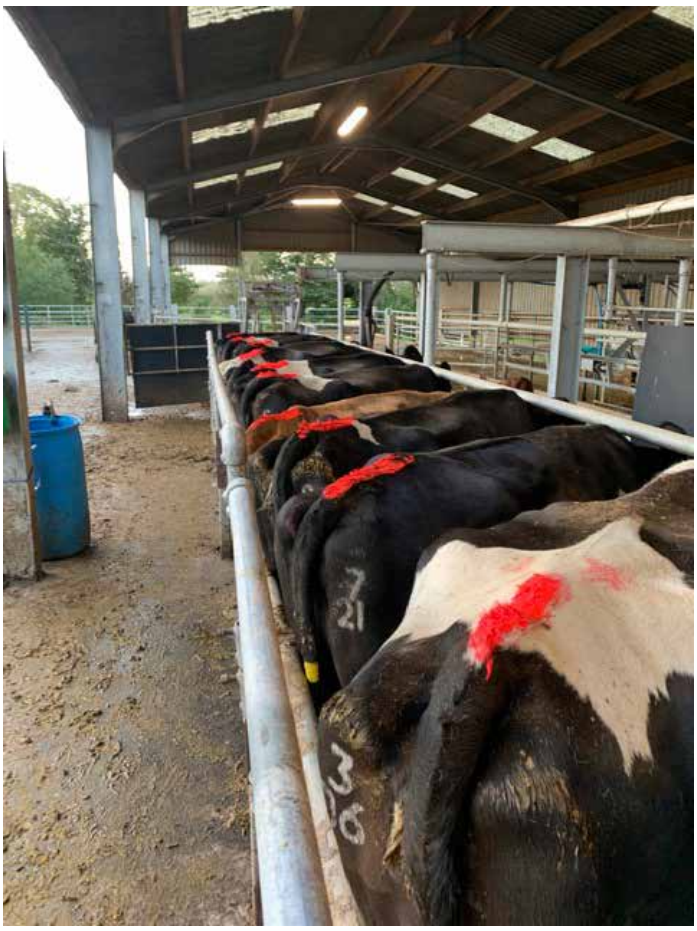
Know the value of heat detection.

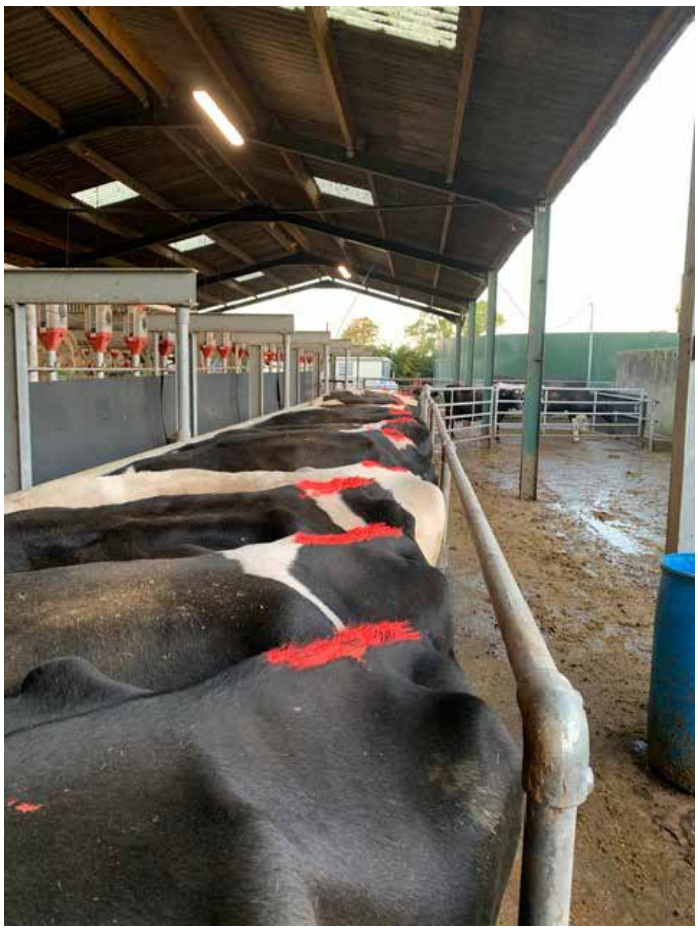
Poor heat detection can be very costly to your farming business. The cost of a missed heat can be calculated with the following equation:

Additional days in milk (days in oestrous cycle - 21 on average)	X	Production (Litres or kgMS)	X	Payout (£)

In addition to the production cost above, there's the flow on cost of having a cow calving later than expected, leading to less time to recover and get in-calf early the following season.

The majority of UK farms have good submission rates at 80-90%, the number of non-cycling animals we expect to identify during pre-mating is small, 10-20%. When these cows are identified early, and treated appropriately, you can improve your 6-week in calf rate and reduce overall empty rates at the end of mating.





Pre-Mating heat detection.

Start early, at least 35 days prior to PSM.

The most common method is to apply tail paint and observe the rub marks to determine pre-mating heats.

Record your pre-mating heats. This doesn't have to be an onerous task. A simple wall chart or diary with the cow numbers that have cycled each day will help.

When you have new staff or staff on farm that aren't as skilled at heat detection as others, I recommend using the pre-mating period to upskill them, while they gather the pre-mating on heat dates for you.

These recorded dates provide you with a reference to check back to during mating.

This can help you:

- reduce the number of 'if in doubt, put her up' short returns
- reduce the number of straws used on cows that are not in heat.

Remember, a NZ-genetics cow comes on heat every 18-24 days on average, a Holstein every 19-22 days.

As pre-mating progresses, you can use the information to understand the proportion of your cows that are not cycling and consider your treatment options.

What to do with non-cycling cows

Have a plan in place for how you manage them.

Options can include:

- Vet checks
- Using two forms of heat detection from PSM to help identify these cows more easily
- Running them as a separate herd
- Providing preferential feeding
- Moving them to once-a-day milking to give them a greater chance of cycling before mating

When you have a high proportion of non-cycling cows, talk to your vet about a management plan.

Whatever your plan is, you'll have identified which cows to keep a closer eye on during the mating period.

In summary:

Pre-mating is the perfect time to:

- check that your cows are cycling correctly before your PSM
- identify non-cycling cows for early treatment
- fine tune yourself and upskill your staff's heat detection skills
- train any new staff in heat detection
- confirm on-farm mating and short return policies
- ensure all staff involved are on the same page and ready for the mating season.

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.

David Beca

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.

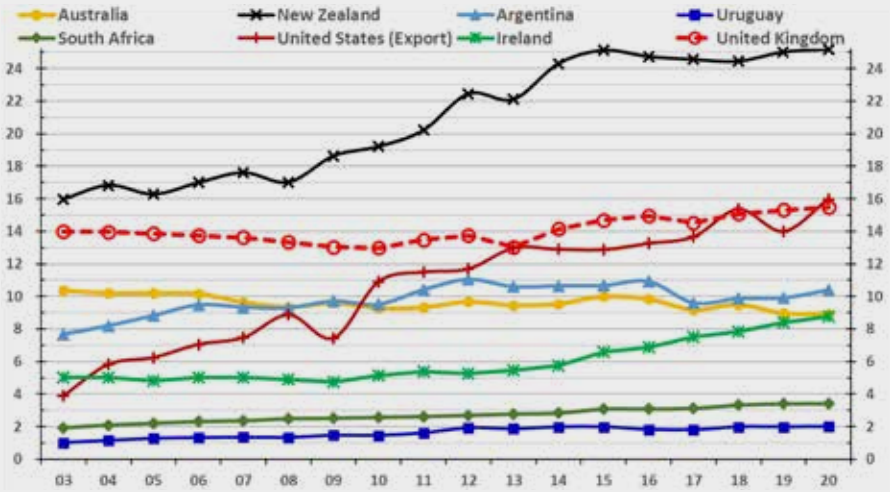
Under each scenario as the percentage of pasture increased so did the profitability. The most compelling part of this model work was when looking at return on capital and profit per hectare, the drought affected scenarios had the biggest improvements as the level of pasture in the diet increased.

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/pasture-to-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	P
Return on total capital (ROC) [defines profit]	**Comparator for other ratios**		Profit per hectare	0.79	<= 0.001
			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 Ilona 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 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.

February - first round grazing

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

August growth

> 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.

Building a dairy and reaching the finals of the RABDF Gold Cup

Reaching the final six in the 2020 RABDF Gold Cup has 'thrilled' Wiltshire dairy farmer Mark Hoskins, who has got into farming the hard way, literally starting from scratch.

Believing in LIC genetics, and running a grass-based system, allows him to maximise forage use in the ration and keep costs to a minimum. He says when getting into farming 'the hard way' it's important that you don't spend money unless it's absolutely vital, and he puts his success down to grit and determination.

His business joins five others in the title race, and with judging needing to take place in person on the farm, the RABDF is waiting until Covid 19 restrictions allow the final decision to be made.

"I never thought I would get this far," he says. "It's a huge accolade. I'm the only spring calver in the final group, and when I look at my competitors I realise how far I have come. It's amazing."

Mark has a contract farming agreement, that started as a tenancy, at Down Dairy Farm, Hindon, Salisbury and his decade-old business caught the judges' eye because of his impressive fertility figures and efficient milk production. He is currently milking 410 Friesian-Jersey x dairy cows on a platform of 138ha, with another 170 followers on a 226ha block also used for silage, some hay and winter grazing when the cows are dry.

He grew up on a dairy farm, but after the herd was sold when Mark was 19, he left to go contracting, spent two-and-a-half years working in New Zealand, as an assistant manager of a 3600-cow unit, eventually moving up to become a manager.

He moved back to the UK in 2010, feeling the loneliness of being on his own and says he was extremely lucky to find a like-minded business partner in Jason Vickery, who invested equally in Down Dairy Farm. Today Jason is a silent partner, and also runs a Duchy Farm with 330 milkers and a 400-cow set up near Gillingham in Dorset.

"I had saved every penny I could," he says. "It was still a meagre amount by today's standards, and it's been tough. But I believe I have a blueprint here that could be followed by other young farmers keen to get into the industry.

"The business stands on its own two feet, doesn't claim any subsidies, and still makes a healthy profit."

The herd's tight 12-week calving

block starts on February 1. AI is used for the first four to five weeks, with sweeper bulls used for the remaining seven weeks. Around 65% of the cows conceive to first service, a figure he is very proud of achieving. AI starts on April 25 and with such a tight calving interval it's a very busy time at Down Dairy.

Heifer calves are reared with the surplus sold, and some bull calves reared too. Although Mark says that they have limited market opportunities, he has an increasing number of private buyers who come to him for stock. Those they rear themselves are sold on as stores.

The cows are milked twice-a-day through a 32:64 Fullwood herringbone parlour with a throughput of 200 cows/hour during the summer months. Average yield has been 5200 litres/cow in the past 12 months. In 2019, the year used for the Gold Cup competition, his yield was 4600 litres/cow from just 180kgs concentrate. Some 92.5% of yield was coming from forage and bought-in concentrate cost just 1.3ppl.

His milk solids figures are some of the best, and with an average cow weight of 480kgs he has topped 480kgs a head recording 5.05% butterfat and 3.82% protein. His SCC is down to 130,000 cells/ml.

The herd is managed on an all-grass system with a growth target of 14tonnes/hectare. "Growing grass and utilising it are both fundamental to our business." He monitors grass growth weekly and also pays particular attention to soil health.

Breeding has always played a key role on the farm, and he says choosing the right bulls and sticking to a plan are both essential for success. "We use LIC's genetics because they offer us the right type of cow with plenty of capacity for forage and ones that produce high fat and protein as well as excellent fertility.

Bulls used include Misty, Izabull, Critical, Hoss and Gameplan, and this year he's going to use sexed semen for the first time - from Hoss and Gameplan.

"To be frank I've been a bit cautious but talking to local farmers they've had some great results. It's vital that I don't compromise my tight block, but to be able to produce more heifers will certainly improve my profitability."

His milk contract is with local business Blackmore Vale Dairy, who pay for fat and protein, with additional bonuses. Mark says they have expanded their range of dairy products, helping to be more resilient, as last spring they suffered with retail losses and the milk price fell to under 20ppl with the Covid closures.

"Our standard litre now is 27.65ppl and I believe both Blackmore and ourselves have put a lot of work into trying to future-proof our businesses. We really hope we're beginning to move forwards again now but being prepared for future market challenges is vital to ensure resilience."

What are Mark's aims for the future?

"My real ambition is farm ownership," he says. "At the moment my asset is the cows, and that makes it hard to borrow to buy. I can't see the price of land coming down, there are too many investors, and I honestly don't know whether I'll be able to get there or not.

"Certainly moving from a tenanted agreement to the contract farming agreement allowed us to grow, and I'm certain this could be a blue print for others to follow.

"I feel positive about the future of dairying, and I love this job. I never tire of being on the farm."

Farm facts

Herd size	410 Friesian-Jersey x dairy cows, plus 170 young stock
Average yield	4,700kg, at 5.05% butterfat and 3.82% protein, with a SCC of 130,000 cells/ml
Unit size	340 hectares, 138 hectares for dairy
Fertility	
CI	363 days
Conception rate	67%
Health	
Schemes	Johne's and BVD eradication schemes.
% of herd not J4 or J5	92%
Mastitis cases per 100 cows	7
Replacement rate	17%

Day in the Life of... Claire Hunter

Claire joined LIC in September 2020 and tells GrassRoots about some of the challenges she's faced and how much she's enjoying her role as Farm Solutions Manager for Northern England and Scotland.

No two days are ever the same - and having huge variety within every 24 hours is something that motivates Claire, making her certain she's found her dream job.

"When I first saw the job advertised, I wasn't certain I was right for it, but applied, and during the interview process, soon discovered I was going to enjoy it. It combines everything I love - the countryside, animals, travelling and driving."

All four have been present in her life for many years. Today she lives in Preston, Lancashire, but has a background in dairy farming in New Zealand.

"When I was 19 I spent three years on a dairy farm there," she explains. "I was a general farmhand and in line for the herd manager's role, but to be honest, every day was the same and it had got quite monotonous and I wasn't ready for settling down in the role." She'd grown up on a beef and sheep farm where there was more variety, so decided in June 2013 to go travelling and see more of the world.

With her boyfriend at the time, she toured Europe for three months and deciding they were heading in different directions went to Norway on a working holiday, shearing sheep and working in a slaughterhouse.

"I was in a place called Mo i Rana in the middle of the country, about one and a half hours from the Arctic Circle. I did a lot of shearing on farms there, and also met my now husband, Robert. He's from Lancashire, and that's one of the reasons we've ended up back here."

For three years the couple would spend the autumn in Norway, go back to New Zealand for their summer, then return to Norway for the spring, then summer in the UK before starting all over again. Robert became a fencing contractor, a business he runs today, and Claire would continue to be a contract shepherd, lambing, gathering, rearing calves, and helping him fence.

Today her main love away from her job, is working sheepdog trialing with the three dogs she owns. Two dogs, Penny (3) and Dot (8) are collies, the third, Mist, is a collie x kelpie.

"I took this up as a hobby and although we are entry level in what is a very widespread and popular sport, I'm loving every minute." Obviously field trials are 'on hold' during lockdown, but you can hear the enthusiasm in her voice as she talks about what a trial involves.

"It's all about smooth and flowing movement. You take the dog around a course. The sheep are let out, the dog does an outrun and drives the sheep straight back to you. Later you cross drive through gates, shed the sheep and pen them.

"My skills need to improve but maybe one day you'll see me on TV on One Man and His Dog!"

To add to the pet count she has a budgie called Geoffrey who she describes as 'really naughty'. He's six months old and apparently started talking from about a year old. "I had one as a child called Willie and he used to make a lot of noise and soon picked up the phrase 'shut up Willie'."

Geoffrey can be quite a distraction when she's trying to work, as he spends a lot of time out of his cage and keeps Claire company. She says he's in the 'naughty corner' at the moment as he keeps chewing her desk and jumping all over the computer keyboard.

Claire stopped travelling between Norway, New Zealand and Britain in 2017 and spent 2018 to last year calf rearing in Anglesey and lambing in Northumberland and Lancashire. Her summer months were quieter, and then

she found herself helping out on the farm where they were living and helping a friend milk their grazing Jerseys.

When she was shown the LIC advert the couple were trying to buy a house, and she knew the security of having a permanent job rather than being self-employed would help her gain a mortgage.

What are the things she loves most about the job?

"I love being on the road. I've always enjoyed driving, so travelling long distances is actually a bonus for me. I have a huge area to cover, from South Lancashire to Dundee, and the scenery is spectacular. When I'm driving across the Yorkshire dales, or on the Scottish west coast, I have to pinch myself to believe this is my new job.

"I'm a bit of an amateur photographer, so I find I often have to stop the car and photograph something. The views I get to enjoy are incredible."

She says she's not quite sure what she expected from the job, as she has never been in sales before, but gets great pleasure from a farmer ringing up and placing an order. She enjoys working with other people and is keen to develop great and lasting relationships with her customers.

"Perhaps it wasn't an ideal time to take on a new job, as the Covid lockdown came soon after I'd joined. But I did manage to get to see most of my autumn customers, and I'm really looking forward to getting out soon to see the spring group."

At the moment she's working hard to learn as much as she can about the job and her customers, determined to forge great relationships and to convince them she's here to stay. "I see this as my career and I want my customers to have the security of knowing I am able to help them grow and develop their businesses."

Relationship management is her top priority. "If you haven't got that relationship it's much easier for them to move to another supplier," she says. "I don't want to just sell semen; I want to grow the herd improvement reports and learn a lot more about genomics and other tools that LIC is offering. I'm fascinated by both genetics and science, and really want to further my knowledge in this area."

She's also a rugby fan, and often finds herself chatting to farmers about the games after a weekend of TV watching.

"When I'm out in the country, driving to a customer, I have to keep remembering how lucky I am to have the British scenery as my office," she adds. "I'm travelling to areas of the country I've never seen, I'm meeting a lot of lovely people when I can, and when they want to see me, and I'm doing a job I love. What more could I ask? She adds.

If you'd like to get in touch with Claire, pick up the phone and call her on 07966 090848

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.

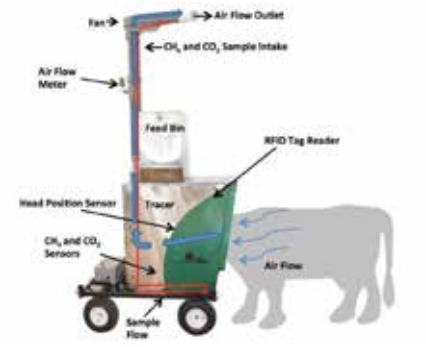
The New Zealand Government has a stated commitment to reducing gross methane emissions by 10% (relative to 2017-levels) by 2030, and by 24-47% by 2050.

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).



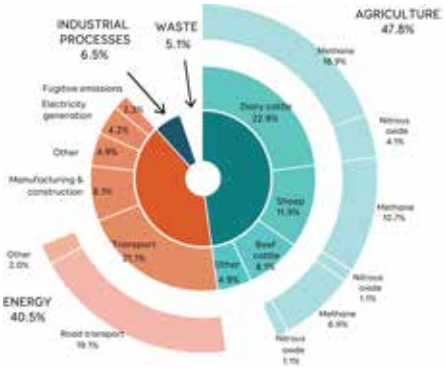
A joint project between LIC and CRV, funded by the New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC), aims to measure methane from dairy bulls entering the sire proving schemes of both breeding companies.

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 sub-samples 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 let-down. 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 top-quartile 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-of-conversion 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 bell-shaped 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 I'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.

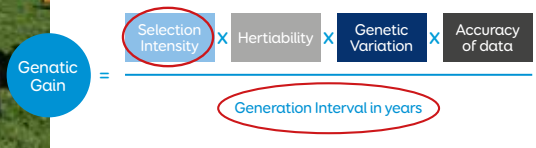
I declared in 2016 that (if we weren't already) we, as an industry, were very close to cow peak. I celebrated the fact that cow growth had fuelled sector productivity and prosperity for 2-3 decades, and I sensed at that time that we were going to need to put the heat on genetic gain and the principals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



It's a special celebratory year for LIC

Incorporated as a company operating from the UK in 1996, LIC has been selling semen here for nearly 40 years, but it's the 25th anniversary that will be celebrated across this spring, summer and autumn.

Highlight of the year will be a charity ball coupled to a farm visit. The ball will be held in the Melton Mowbray area and will be black tie, giving everyone a chance to dress up after such a restricted year. It will raise funds for the Yellow Wellies charity.

The venue and ticket prices will be announced soon and, of course, we're hoping that by September we'll be able to hold events such as these indoors, still following any Covid-19 regulations.

The date is now confirmed – September 24 – so make sure you get the date in your diary and make plans to come along.

On the night we'll be holding a charity auction, and we're on the look-out for some special prizes. If you have anything you would like to offer for this please call one of the organisers, Claire Hunter (07966 090848) or Libbie Harris (07773 348101).

We'll also be looking for farmers who've been with us over the years. We want you to tell us your stories. And we'll be searching for the oldest LIC cow still milking today – send in your pictures and her date of birth to admin@liceurope.com. There will be some great prizes up for grabs.

Our farm visit on September 24 will be to the 138ha farm of Kieran and Gaynor Wellwood. They've been the tenant at Saltby Dairy Unit, Stonesby Road, Melton Mowbray for the past 10 years, and have used LIC genetics throughout.

Today she milks 330 crossbred cows at peak, and has 160 one-year or two year-old followers. On average her grass yield is 11tonnes/ha and the cows are yielding 6300 litres with 540kgs/MS. As the average cow weight is around this level, she's hitting her target of getting the cows' bodyweight in milk solids.

So - save the date - September 24 and look forward to a great celebration of LIC's achievements. More details will be coming soon.

Farm Safety Foundation

Unfortunately, while farming accounts for just 1.5% of the UK's working population, farmers account for 20% of all workplace fatalities and, as a result, continue to have the poorest safety record of any occupation in the UK.

Rising concerns over the continuing high level of fatal and life-changing injuries on farms prompted leading rural insurer, NFU Mutual, to set up a charitable foundation in 2014 to preserve and protect the physical and mental wellbeing of the next-generation of farmers.

The Farm Safety Foundation, or Yellow Wellies as they are also known, aims to challenge and change the risk-taking behaviours that give farming such a poor safety record. A key part of the charity's work is their two national campaigns, Farm Safety Week and Mind Your Head. These campaigns focus on both mental and physical health in agriculture as they are both so connected.

To find out more, please visit **www.yellowwellies.org** or follow them on social media **@yelllowwelliesuk**

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