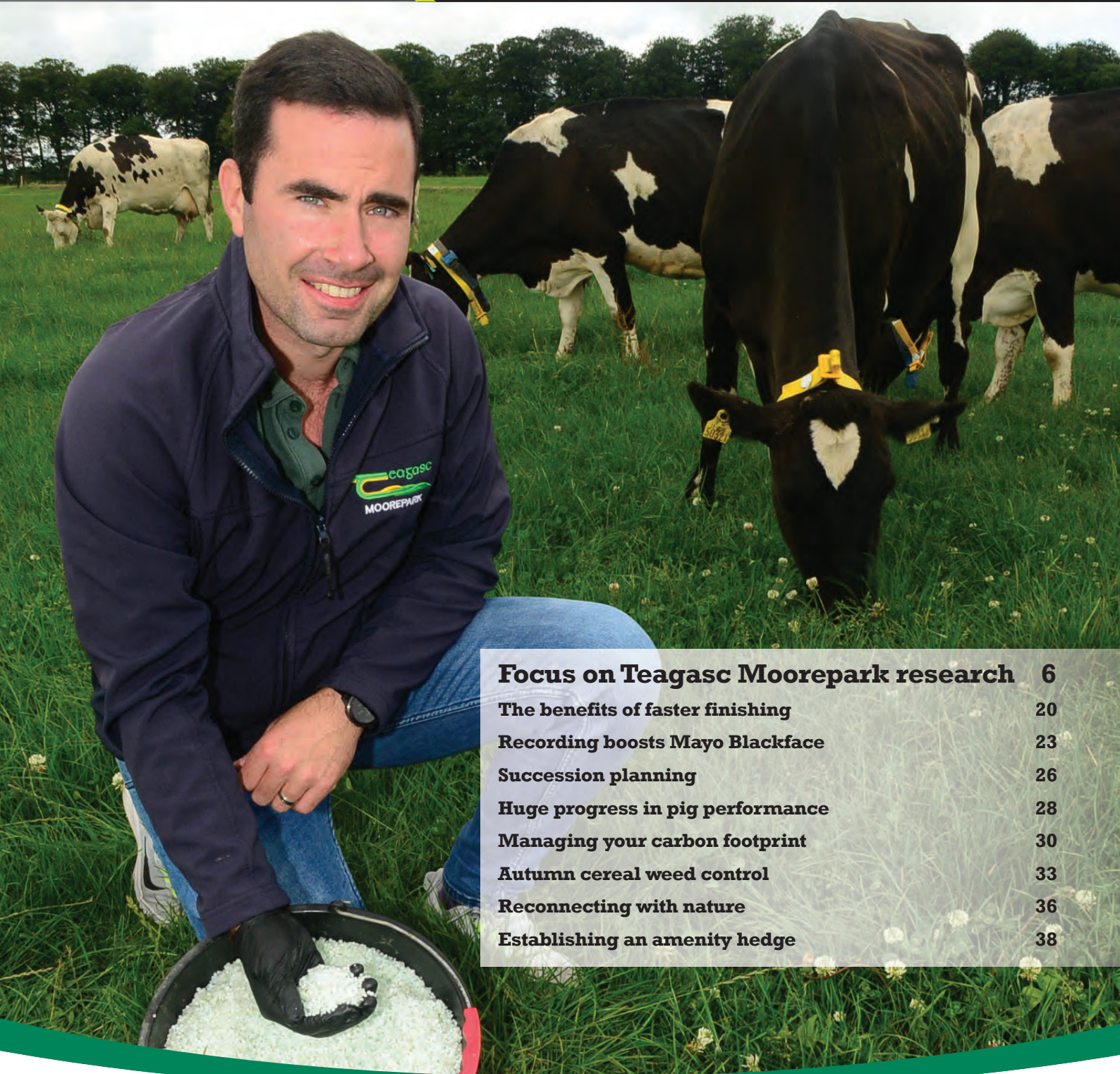




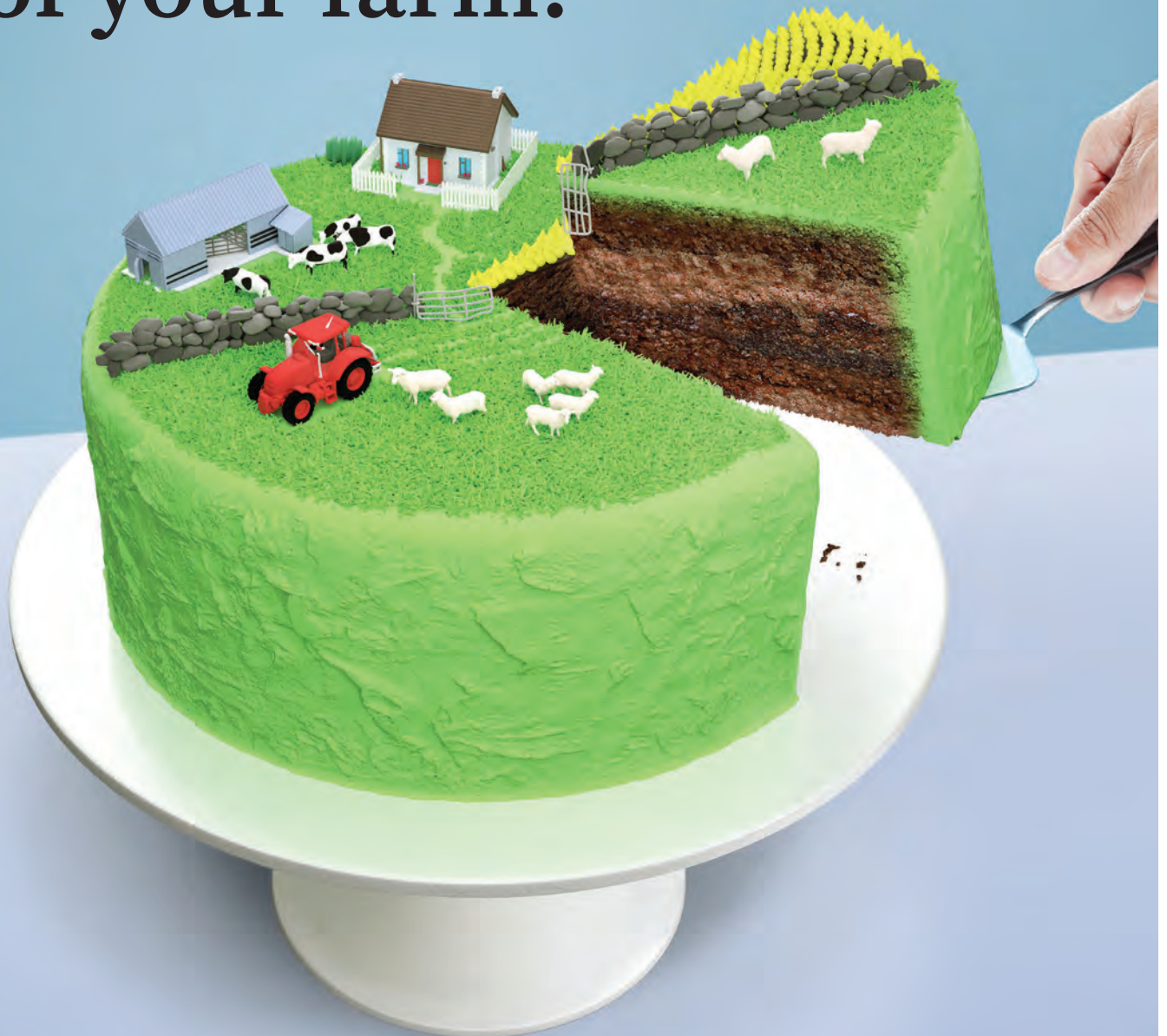
# Today's Farm

Business, production, environment and countryside issues [www.teagasc.ie](http://www.teagasc.ie)



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## COMMENT



**Mark Moore**  
Editor,  
Today's Farm

# Times of uncertainty

The restrictions necessary to contain the COVID-19 virus are still impacting our lives. A Teagasc Moorepark Open Day is planned for mid-September and as with previous open days, we are including a digest of dairy research in this edition of Today's Farm. We have tried to reflect the tremendous breadth and quality of the research, but there will be far more at the event itself.

Whether you get to visit this year's event in person, or at the virtual presentations, we hope you will be inspired to visit Teagasc Moorepark at the next possible opportunity.

# Éiginnteacht ár linne

Na srianta atá ag teastáil chun an víreas a chosc, tá siad fós ag cur isteach ar an saol. Beidh Lá Oscailte Teagasc na Cloiche Léithe ar siúl i lár mhí Mheán Fómhair agus, mar a bhí i gcás laethanta oscailte roimhe seo, tá achoimre ar an taighde déiríochta san áireamh san eagrán seo de Today's Farm. Tá iarracht déanta againn leithead agus cáilíocht an taighde atá ann a léiriú.

Cibé acu a bheidh tú in ann freastal ar imeacht na bliana seo go pearsanta nó go fíorúil, nó nach mbeidh ar chor ar bith, tá súil againn go spreagfar thú chun cuairt a thabhairt ar Teagasc na Cloiche Léithe a luaithe a bheidh an deis agat.

How big is your carbon footprint?

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Tipperary farmers John and Brendan Walsh.

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Sub-editors: Mary Ryan and Regina Horan  
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All editorial enquiries to: Teagasc, Oak Park, Carlow  
Tel: (059) 917 0200 Fax: (059) 9183498  
e-mail: mark.moore@teagasc.ie | web: www.teagasc.ie

All advertising enquiries to: Paul O'Grady, Think Media  
The Malthouse, 537 NCR, Dublin 1, D01V822  
Tel: 01-856-1166/086-246 8382

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**Cover** | Mike Egan is one of a number of researchers at Teagasc Moorepark focusing on how clover can reduce the need for mineral nitrogen fertiliser. The benefits for farmers and the climate are immense.

# Teagasc Moorepark 2021 Open Day

The Teagasc Moorepark 2021 Open Day planned for July this year was cancelled due to COVID-19. Following the sequence of open days in 'uneven years' and thanks to progress in combatting COVID-19, we plan to hold an open day in mid-September while abiding strictly by Government COVID-19 guidelines. The open day will be held over three days – Tuesday, Wednesday and Thursday the 14, 15 and 16 September – to facilitate as many people as possible to attend.

At the time of going to press, we cannot be certain what these restrictions will be in mid-September, but we are optimistic that we will be able to bring visitors to Teagasc Moorepark as well as holding online virtual events.

The aim is to display the answers that Teagasc is generating to challenges in relation to environmental and economics issues facing dairy and drystock farmers.

Visitors to the event will experience a familiar 'journey' including initial presentations at four main boards, addressing sustainability, economics, grassland and genetics.

In addition, there will be themed areas covering Grass10, SignPost Farms Programme, One Health Approach,



Pat Dillon.

Health and Safety, Creating Great Farm Workplace and DairyBeef500.

Numbers will be limited each day and pre-registration will be required. Registration will open on 6 September. Watch out for Teagasc communications confirming this.

There will also be three virtual events each day, accessed via a link from the Teagasc website:

• **14 September at 7pm:** Technical messages from the open day.

Research answers to industry challenges.

• **15 September at 7pm:** Industry forum covering challenges and opportunities facing the dairy industry, which will include a panel of high-profile speakers.

• **16 September at 7pm:** 2021 NDC and Kerrygold Quality Milk Awards. Access to these virtual events will be via a link from the Teagasc website.

– Pat Dillon

# Have your say on trees

In recent years, there has been increased emphasis on the multiple values of trees on farms. MSc Walsh Scholar Rachel Irwin is conducting an online survey of dairy and drystock farmers' perceptions of, and attitudes towards, trees on farms.

The results of this study will be collated and analysed to aid policy and help create guidelines for policy makers.

To anonymously complete the survey, please either scan the QR code with your smartphone or go to <https://tinyurl.com/fkj3n85z>.



# Application of slurry in September



One of the main tasks on all farms for September is to empty all slurry and soiled water tanks (taking due care of health and safety). Getting these valuable sources of fertiliser applied as early as possible will maximise the response to nutrients applied, reduce chemical fertiliser requirements and help build autumn grass covers. Weather conditions and correct buffer zones must be right to make best use of these home produced organic fertiliser and ensure no losses to waters.

Don't forget – the last date for spreading slurry is midnight on 14 October and that the normal buffer zone from water courses is 5m, but this extends to 10m from 1 October to 14 October. If weather conditions are right, get all the tanks emptied as we will get rain at some stage.

The last date for spreading chemical N and P fertiliser is midnight on 14 September – why wait until then to get it out, as the days are getting cooler and shorter. An application of cattle slurry in September will grow double the grass compared to an October application timing.

We hope to run our highly successful course in business strategy again later this year. We run this popular course in collaboration with the Smurfit Business School and Skillsnet. If you would like to express your interest in participating, please email [Mark.moore@teagasc.ie](mailto:Mark.moore@teagasc.ie) and put 'Business Strategy Course' in the subject line.



## Early planning for spring 2022

Maeve Regan,  
Head of Ruminant Nutrition, Agritech

**The success of spring 2022 will centre on the decisions and planning that will take place over the next number of weeks and months.**

At this point in the year, plans should be well underway to set the farm up for a successful spring. Already, a bank of grass should be building on farm to allow for an extended grazing season, as well as closing the farm with sufficient grass available for an early turnout.

Replacement heifers should also be weighed at this point to assess if target weights are being achieved (30% of mature body weight at 6 months).

Supplementation may be introduced at grass where a cohort of heifers are below target. Beyond this, now is also the time to assess the main herd nutritionally and make timely decisions to reduce the chances of metabolic diseases during calving 2022.

### Late lactation nutrition

Late lactation is the optimum time to manipulate body condition. If cows have a body condition score (BCS) < 3.0, energy intake needs to increase. The ideal scenario is to dry cows off in the same condition as when they calve down. This would result in only providing a maintenance diet over the dry period. Cows with a low BCS (<2.75) should be dried off early to assist in achieving target BCS at calving.

### Forage analysis

The importance of knowing the quality of your forage is often underestimated, as it allows us to make informed decisions. Winter supplementation levels for youngstock will be dictated by forage quality. Dry cow diets will also depend on the quality of silage in the yard, whereby dilution with straw may be required to avoid over-conditioned cows at the point of calving.

A forage mineral analysis will also highlight possible risk factors associated with metabolic issues. E.g., High potassium (k) levels in silage reduces magnesium availability which is often associated with milk fever. Tailored dry cow mineral provision advice is required in such cases.

### More information

For further information and advice on planning for spring 2022, contact your local Agritech Sales Advisor or visit [www.agritech.ie](http://www.agritech.ie).



[www.agritech.ie](http://www.agritech.ie)

# The key role of white clover



**Michael Egan**  
Research Officer, Teagasc.

**Brian McCarthy**  
Research Officer, Teagasc.

**Deirdre Hennessy**  
Research Officer, Teagasc.



The Ag Climatise policy document, published by the Department of Agriculture, Food and the Marine in 2020, set out a number of measures to achieve a reduction in chemical nitrogen (N) fertiliser use. These measures include a reduction in N fertiliser allowance for dairy farms, increased liming and use of Low Emission Slurry Spreading (LESS) to increase N use efficiency and the incorporation of white clover into grass swards to replace chemical N fertiliser with biologically fixed N.

**Recent clover research at Teagasc**

Research undertaken at Teagasc Clonakilty found that incorporating white clover into intensively managed swards increased annual herbage production by 1.2t DM/ha, on average, relative to grass-only swards (where both sward types received 250kg N/ha) over a four year period, with a sward clover content of 23%.

However, research at Moorepark and more recently Clonakilty has shown that in grass-clover swards, N fertiliser can be reduced by up to 100kg N/ha, while maintaining similar levels of herbage production (13.5t DM/ha), when a sward clover content of >20% is achieved, compared to grass-only swards receiving 250kg N/ha.

As well as potential savings in N fertiliser, including clover in grazed swards can result in increased animal performance.

Typically, when clover is included in grass swards, the nutritive value of the sward in mid-season tends to be higher, compared to grass-only swards.

Recent research at Teagasc has shown that milk solids production increased by up to 20kg milk solids/cow/year when clover was included in the sward (Table 1).

The increase in animal performance

is particularly evident from June onwards, when sward clover content is greatest.

This was associated with higher farm profitability on grass clover swards of €305/ha compared to grass-only swards. Nitrogen use efficiency was measured in Teagasc Moorepark over a four year period.

Nitrogen use efficiency increased from 40% on the grass-only swards receiving 250kg N/ha, to 59% on grass-clover swards with 150kg N/ha.

The increase in N use efficiency was largely driven by the reduction in N fertiliser application and the increase in milk production.

**Establishing a grass clover sward**

Establishing white clover at sufficient levels on dairy farms to offset the reductions in chemical N fertiliser use will be a challenge, however, the correct sowing and grazing management practices post-sowing will greatly help white clover establishment.

**Table 1:** Results from recent research in Teagasc Moorepark and Clonakilty.

	Moorepark <sup>1</sup>		Clonakilty <sup>2</sup>	
	Grass-only 250kg N/ha	Grass-clover 150kg N/ha	Grass-only 250kg N/ha	Grass-clover 150kg N/ha
White clover content (%)	-	22.0	-	16.8
Grass production (t DM/ha)	13.5	13.4	15.1	14.4
Milk yield (kg/cow)	6,068	6,331	5,521	5,744
Milk solids yield (kg/cow)	490	510	470	487
Nitrogen use efficiency (%)	40	59	-	-

<sup>1</sup>Moorepark – data is from 2013 to 2020

<sup>2</sup>Clonakilty – data is from 2019-2020

Incorporating white clover in a full reseed is the most reliable method of establishing white clover in a sward, as it gives it a better chance to establish and also provides the best opportunity for weed control.

Over-sowing is a simple and low cost method of introducing white clover into swards.

Success, however, is very much dependent on weather conditions around sowing, soil moisture, post-sowing grazing management and competition from the existing sward.

Therefore, there is a certain amount

of risk associated with this approach and it should be undertaken early in the year (early April to late May).

Some key points when using both methods include:

- Ensure optimum soil fertility (i.e pH > 6.3, index 3 for P and K).
- Reseed/over-sow as early in the year as possible – spring/early summer.
- Graze swards tight for at least the first three grazings post-sowing/over-sowing, keeping pre-grazing herbage mass < 1,100kg DM and grazing swards to ≤ 4 cm.

•Avoid over-sowing old 'butty' sward with a low perennial ryegrass content – a full reseed is best in these conditions.

•Avoid over-sowing large areas of the farm at once, as it can be difficult to maintain the correct pre-grazing herbage mass (<1,100kg DM/ha) on large areas at once.

For more information on establishing and managing grass-clover swards, download a copy of the *Management and establishment of grass-white clover swards* from the Teagasc website.

# Increased milk yields and milk solid yields from white clover

**Ellen Fitzpatrick**  
Walsh Scholar Teagasc.

Where access to additional land is limited, any increase in production forces farmers to either increase herbage production, feed higher levels of supplementary feed or consider alternatives, such as partial mixed ration (PMR) or total mixed ration (TMR) feeding systems.

However, a unique selling point of Irish milk is that it is produced from pasture and the inclusion of white clover in swards of PRG can offer increased nutritive value of the herbage, improved animal performance and reduced nitrogen (N) application rates.

My study at Teagasc, Moorepark, is looking at dairy cow performance across five different feeding systems – TMR fed to cows indoors using a roughage intake control system, a 50% TMR, 50% grazing PMR feeding system, grass-clover swards receiving 150kg N/ha, grass-clover swards receiving 100kg N/ha and grass-only swards receiving 250kg N/ha.

Results over recent years have indicated that the incorporation of white clover into grass swards results in greater milk yield and milk solids yield compared to grass-only swards. The increased feed available to the TMR and PMR treatments likely increased dry matter intake, resulting in the increased milk production.

In addition, the feed quality of TMR is less variable than that of grass-based systems throughout lactation. This helps to maintain a higher milk yield later into lactation.



moorepark open day

# GreenFeed machines measure methane



**Katie Starsmore**  
Walsh Scholar Teagasc.

Ireland's agriculture industry currently contributes 34.3% of total national greenhouse gas emissions. Methane is the largest component at 59.3% (EPA, 2021).

The Government has committed to reducing total emissions by 51% by 2030, relative to 2018 levels. This will generate pressure on all sectors within Ireland to play a role in reducing emissions.

Given the importance of methane in agricultural emissions, it is important that research is completed to evaluate the baseline methane

emissions, as well as the potential for methane reductions through, for example, grass quality, animal characteristics, as well as complementary feed-based solutions.

## Methane measurement

The majority of methane emitted from ruminants is released through burping/belching. Hence, methane measurement is focused on sampling air from the animal's mouth.

At Teagasc Moorepark, we are measuring methane using a device called the GreenFeed, which can measure approximately 25-30 animals in a pasture setting. These GreenFeed machines rely on the animal to voluntarily visit the machine as many times as possible per day to ensure accurate results.

When the cow puts her head into the feed bin of the GreenFeed, her electronic identification tag is recognised and sampling commences. While she has her head in the feed bin, small amounts of concentrate (35g) drop every 20 seconds over two to three minutes.

This encourages the cow to stay in the machine for the required period. While she is eating, air is sucked in through the feed manifold. This air

is then filtered by methane, carbon dioxide and hydrogen gas sensors on the machine. GreenFeed machines are mobile and are moved to follow the grazing rotation, so cows have constant access to them.

## Moorepark research

At Teagasc Moorepark, there are ongoing trials working on different mitigation strategies to reduce methane emissions at a cow and herd level. The trials completed to-date have shown that the data being collected is accurate and robust.

Therefore, the estimated methane emissions are reliable for the Irish grazing system. There are trials currently being carried out to measure methane on over 150 individual animals.

These trials are focusing on the effect of white clover, stage of lactation, feed additives and genetics on methane emissions. Other aspects of methane mitigation that are being explored are:

- Grazing management.
- Feed quality.
- Genetics/breeding.
- Rumen environment.
- Feed additives.
- Supplementation strategies.





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# moorepark open day

# Computer model predicts grass growth



**Elodie Ruelle**  
Teagasc Research Officer.

**I**n pasture based systems, farmers must make daily management decisions to ensure that good quality feed is available to their livestock both during the grazing season and housing period.

Being able to predict grass growth for the following week at farm level helps farmer to better anticipate variations in grass growth.

The Teagasc Moorepark St Gilles Grass Growth (MoSt GG) model is a dynamic model working at the paddock and farm level.

The on-farm grass growth predic-

tion project started in 2018 with 30 farms involved. The project now includes 57 farms and this number will soon be increased.

The grass growth prediction is for the week ahead, is specific to each farm, and takes into account soil type, grass management, fertiliser applied and weather (past and future).

Since August 2020, the grass growth predictions are also available at the county level (using the farm prediction data).

Grass growth predictions are available free of charge on the landing page of PastureBase Ireland, in the grass 10 newsletter as well as during the farmer forecast on RTÉ One.

They are also publicised on the Teagasc and Met Éireann twitter feeds.



Elodie Ruelle.

# Which is more efficient: rotary or herringbone?

Milking accounts for almost one-third of a dairy farmer's daily workload.

**John Upton**  
Teagasc Research Officer

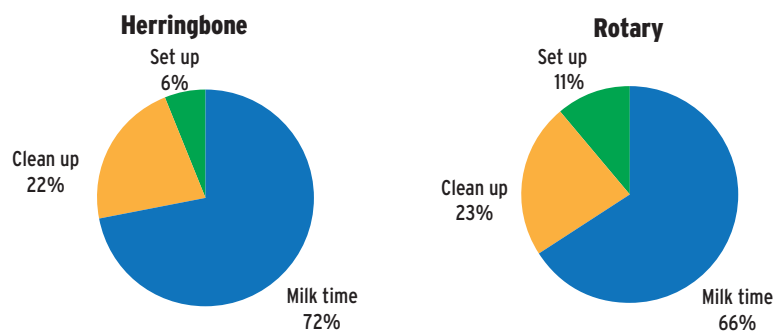
**Fergal Buckley and Ryan Prendergast**  
Walsh Scholars Teagasc

**I**n a Teagasc farm survey, milking process efficiencies were documented on herringbone and rotary dairy farms using video cameras and infrastructure surveys.

The average total milking process time for the herringbone group was 1 hour 45 mins and 2 hours 25 mins for the rotary group.

The average cow throughput was 105 cows/hour for the herringbone group and 155 cows/hour for the rotary group

**Figure 1:** Breakdown of milking process times for Herringbone and Rotary milking systems.



The aim of the survey was to generate a descriptive profile of all facilities, as well as establish the presence of automation on the farms. Record-

ing of video data took place over one week on each farm.

The milking process was divided into three distinct stages:

- Set-up time – first cow in holding yard until first cluster attached.
- Milk time – first cluster attached until last cow out of last row.
- Clean-up time – hanging up of first cluster until hosing of facilities was complete.

The total process time was defined as the first cow in the holding yard until hosing of facilities was completed. The times presented here are an average of morning and evening milkings.

### Results - infrastructural survey

• **Herringbone:** The herringbone group consisted of a sample of 17 farms. The average herd size was 174 cows (ranging from 70 to 336 cows). The average number of milking clusters was 18 units (ranging from 6 to 36 units). One farm had a double-up system as opposed to a swing-over system. Automatic cluster removers were installed on 88% of the farms, 41% had automatic feeders, 59% had automatic entry/exit gates, 24% had automatic backing gates and 12% had a rapid exit system installed.

• **Rotary:** The rotary group consisted of 10 farms. The average herd size for the rotary sample group was 386 cows (ranging from 275 to 570 cows). The average rotary farm had 50 units (ranging from 44 to 64 units).

Automatic cluster removers were installed on all of the farms, 70% had automatic teat sprayers installed and 60% had automatic backing gates.

### Results – video recording

• **Herringbone:** The average total process time for the herringbone group was 1 hour 45 mins (ranging from 1 hour 1 min to 2 hours 48 mins). Average set-up time was six minutes (ranging from one minute to 21 mins). Average milk time was 1 hour 23 mins (range 53 mins to 2 hours 24 mins).

Average clean-up time was 25 mins, (ranging from 10 mins to 52 mins). Average number of operators present at milking was 1.5, with 42% of the sample having more than one person present at milking.

Average number of rows recorded was 10 (ranging from six to 20). The



John Upton with a milking machine analyser used to test vacuum and pulsation.

average milking efficiency was 105 cows per hour (range 52 to 200).

• **Rotary:** Average total process time for the rotary group was 2 hours 25 mins (ranging from 1 hour 55 mins to 2 hours 59 mins).

Average set-up process time was 17 mins (ranging from six minutes to 33 mins). Average milk time was 1 hour 40 mins (ranging from 1 hour 8 mins to 1 hour 58 mins). Average clean-up time was 34 mins (ranging from 25 mins to 44 mins).

For 70% of rotary farms, there was only one operator present at milking, however 30% of the sample had two operators present at milking. The av-

erage milking efficiency was 155 cows per hour (ranging from 78 to 189).

### Conclusion

Rotary farms had longer milking process times and higher cow throughput compared to herringbone farms.

The farm-to-farm variability between herringbone and rotary systems warrants further investigation, in order to identify the factors that have the largest influence on milking efficiency.

The future work of this research project will seek to determine where maximum reductions in milking process time can be achieved.

## Eliminating chlorine treatment from the dairy

**David Gleeson**  
Teagasc Research Officer

David Gleeson (pictured right), has led research into eliminating chlorine from dairy equipment cleaning procedures.

He says: “Successful cleaning without chlorine requires changes to

previous cleaning protocols. These include re-calibration of detergent dosing equipment and an increased use of hot water and acid-based products.

“While choosing a good-quality detergent product is important, following the steps of one of the recommended wash protocols is critical.”



## moorepark open day

## Collaboration makes a lasting impact

**Mark Moore**  
Teagasc.

According to Joe Patton, head of the Teagasc Dairy Knowledge Transfer programme: “The success of a research programme can be gauged by its impact on farm management practice over time. We have seen over many years that when farmers, researchers and advisers work together on important issues, real progress can be made. Improving milk solids, reducing somatic cell count and uptake of grazing management skills are all good examples.

“A key strength of the Teagasc model has been excellent two-way communication of ideas and solutions between farmers and the research centres. Teagasc advisers and specialists have played a vital role in facilitating this process.”

The experiences of Mairead and Pat McLoughlin and the members of the Birr dairy discussion group are a case in point. The husband and wife team farm 70 dairy cows. Their previous Teagasc adviser, Mark Coyne, encouraged them to concentrate on dairying rather than beef when they took over the farm in 2014.

Keen to farm sustainably (they won both the Lakelands and Overall National Bord Bia Origin Green Sustainability awards in 2018), they have always included clover in their reseed mixes. However, like many farmers, they had seen the percentage of clover gradually reduce in the subsequent years.

“Jim Moyles, our dairy adviser, from Teagasc Tullamore who facilitates the Birr dairy discussion group, encouraged members to attend the Teagasc annual dairy conference in Mullingar in 2019, where clover was a central theme.

“We heard presentations by Teagasc Moorepark researchers including Brian McCarthy, who explained how we could enhance our management of clover,” says Pat. “We hadn’t been to Teagasc Moorepark, they came to us!”

According to Jim Moyles, the members of the Birr group are highly engaged and enthusiastic to learn from each other as well as outside sources. The 13 individual members often take a lead on a specific topic, effectively acting as pathfinders on a new technology.

“Pat and Mairead have implemented new ideas on clover management, which they have sourced from the Teagasc conference as well as via the internet, magazine articles, conferences and directly from Teagasc

**Pat and Mairead  
McLoughlin with Jim  
Moyles.**



researchers,” Jim says. “The group has already met 12 times to-date in 2021, often via Zoom.”

“In 2019, with growing confidence from research results, we began gradually reducing the amount of nitrogen we applied on the grass/clover swards,” adds Pat.

“On our primarily grass plots on the milking platform, we now apply around 200 units of N per acre, which yields about 14t of DM/ha per annum. On the clover plots, we apply only about 60 units, which is extremely low, but these paddocks yield very similar to the grass-only paddocks at 13-14t of DM per hectare.”

In 2021, Pat was invited to join a national group focused on clover facilitated by William Burchill, who works on the Teagasc/Dairygold joint programme.

“Our strategy is to bring together farmers who are enthusiastic about clover to share ideas and experiences

and bring those ideas back to their own discussion groups,” says William.

Mairead is in her second year as chairperson of the Birr discussion group. “It’s not straightforward to manage new technologies on-farm and our success with clover is thanks to input from the researchers, Jim our adviser, as well as constructive comments from other farmers both local and across the country.”



# Beefing up dairy

**Alan Twomey**  
Research Officer, Teagasc.

**F**armers spend weeks scrolling through AI catalogues and active bull lists. Multiple discussions are had with advisers to identify the ideal team of dairy bulls, but when it comes to beef bulls, the discussion can boil down to 'whatever easy calving and short gestation beef bull is available'.

With a growing dairy herd, the improvements in fertility and the availability of sex semen technology, beef bulls are increasingly being used on dairy cows. Although many regard beef calves as a by-product, these animals are far from it.

The majority of animals now being slaughtered in Ireland are bred from dairy cows. Integration of the dairy and beef sector is vital, and it can't all be one-way traffic. For this symbiotic relationship, dairy farmers need to deliver a calf with superior beef genetics to ensure the beef farmer can have a sustainable system.

To maximise beef usage on dairy herds, dairy farmers should aim to

breed sufficient amounts of replacements without breeding excess heifers. Herds with good fertility should look at using sexed semen to breed replacements, which will allow for greater usage of high-value beef bulls. Beef bulls are usually used at the end of the breeding season. Dairy farmers should also consider using beef bulls earlier in the breeding season on low genetic merit cows (i.e. poorly ranked on the EBI), poorly performing cows and problem cows.

There is also the potential to use beef bulls on cows cycling prior to the target breeding season start date. This creates the opportunity to use beef bulls with longer gestation, increasing the number of cows calving earlier in the calving season.

The Dairy Beef Index (DBI) is a tool used to identify the most profitable beef bulls on dairy cows, bulls that are easy calving and have short gestation, but also a high beef merit.

Figure 1 shows the composition and the relative emphasis of each trait in the DBI. A validation study showed that, on average, progeny of bulls selected using the DBI compared to

bulls selected just for calving traits will, on average, have a similar calving difficulty and gestation length, but superior performance at slaughter (Table 1).

Just like the Economic Breeding Index (EBI), the DBI will be developed further. New traits will be added in future years. Breeding values for age at slaughter have recently been developed and are showing huge potential for breeding animals suitable for slaughter earlier in life.

Bulls in the top 20% for age-at-slaughter breeding values are producing progeny up to a month younger at slaughter compared with progeny from bulls in the bottom 20% for age-at-slaughter. This trait will be vital for reducing greenhouse gas emissions in agriculture.

Other traits envisaged to be included in the DBI in future include calf health, meat quality and environmental traits.

More focus needs to be placed on beef breeding in dairy herds to provide the genetics for a sustainable beef industry, which will also provide a sustainable dairy industry.

Beef selection should be based on the DBI, not just easy calving and short gestation. Further information will be provided at the Moorepark Open Day on the 14-16 September.

**Figure 1:** The composition and relative emphasis of each trait in the Dairy Beef Index.



**Table 1:** Average performance of progeny from bulls in the top 20% for calving traits compared to progeny from bulls in the top 20% for the Dairy Beef Index.

Trait	Top 20% for calving traits	Top 20% for Dairy Beef Index
Heifer calving difficulty (%)	3.71	3.12
Cow calving difficulty (%)	0.81	1.62
Gestation length (d)	283.4	283.8
Weight (kg)	301.1	309.7
Conformation (scale 1-15; EUROP)	5.52 (O+)	5.77 (O+)
Fat (scale 1-15; EUROP)	8.54 (3+)	8.34 (3=)
Overall specification (%)	43.78	48.3

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# moorepark open day

## Examining sexed semen

**Stephen Butler**  
Teagasc Research Officer.



**I**t is now possible to almost eliminate low value male dairy calves by using enough sexed semen to generate the required number of replacement dairy heifers, with all other dams inseminated with high-DBI beef bulls.

The resulting calf crop will be composed of dairy heifers (to be retained) and readily saleable beef-cross calves. Sexing Technologies have agreed to establish a sexed semen laboratory in Teagasc Moorepark AGRIC, and will provide a semen sorting service open to all companies in the Irish AI industry starting November 2021.

The presence of a sexed semen lab in Ireland will result in an increase in both the size of the team of bulls and the quality (EBI) of that team available to farmers (i.e more bulls and higher-EBI bulls selected for sorting). This will stimulate a marked increase in the demand for sexed semen.



In addition, it will provide access to a key tool to facilitate genetic gain, as both X-sorted (female offspring) and Y-sorted (male offspring) semen will be potentially available from a wide range of bulls.

### In-vitro produced embryos

Mass uptake of sexed semen by Irish dairy farmers will diminish the number of male dairy calf births, and hence a new strategy to generate the next generation of high-EBI bulls for use in AI needs to be developed.

In addition, to achieve genetic gain in DBI, an intensive genetic selection

programme will be required.

One option is to use a combination of Assisted Reproductive Technologies (in-vitro produced (IVP) embryos, sex-sorted semen) to intensively select for genetic improvement in elite dairy bulls and beef breed bulls suitable for use in the dairy herd.

During the spring (i.e before the breeding season), elite EBI dairy dams and elite DBI beef dams are scheduled for oocyte collection one day per week.

The harvested oocytes from each donor undergo in-vitro fertilisation (IVF) with semen from different elite sires on different weeks to maximise the diversity of dam-sire combinations. After fertilisation, the IVP embryos are grown in a lab for seven days and are then transferred into surrogate dams that are on day seven of their cycle. Sexed semen can be used to generate IVP embryos, and hence it is possible to pre-select the sex of the IVP embryo offspring.

A trial to evaluate IVP embryos was conducted in spring 2021, and the results will be presented at the open day.

## PastureBase Ireland expands userbase

**Mícheál O'Leary**  
Manager, PastureBase Ireland.

**D**espite 2021 being a difficult year for grass growth and grass quality, PastureBase Ireland (PBI) continues to gain momentum, with more farmers now measuring grass (~3,500).

The frequency of measuring farm covers is also increasing (19.1 covers per farm in 2020 vs 13.8 covers per farm in 2019), which shows that farmers are seeing the benefits of measuring and managing their grass through PBI.

Over the last 12 months, new tools and reports are being developed and added to the application to aid farmers in utilising as much grass as possible on their farms. These include the nitrogen planner, grass report and farm cover report.

An exciting new addition to the application this August was a mapping tool. Farmers can now map their farm and display results (paddock cover, days last grazed, soil fertility etc) as a map rather than in tabular form.

At the Teagasc Moorepark 2021 Open Day, the new Nitrogen Use



Efficiency (NUE) calculator will be launched. Farmers will be able to benchmark their NUE and farm gate nitrogen surplus values against the top-performing farms as well as their farming peers.

All farmers are encouraged to sign up to PBI and start measuring their farm covers today.

For more information, please contact your local Teagasc office or email [support@pbi.ie](mailto:support@pbi.ie).

# The Irish rural revolution

**Mícheál Ó Fathartaigh**  
Dublin Business School.

Over the last nine years, and despite the recent disruption caused by COVID-19, Ireland has been commemorating the revolutionary period of a century ago with a 'decade of centenaries' programme. It is hugely important that we remember this political history, but it is unfortunate that we do not reflect on other significant aspects of our history with quite the same gusto.

For instance, agricultural and rural history is sometimes overlooked (though not by Teagasc) and, in terms of it, the whole 20th century – let alone one decade of it – was characterised by profound change. In 1900, rural Ireland and Irish agriculture were synonymous with poverty, but by 2000, they had become synonymous with progress.

Driving this Irish rural revolution were the people of rural Ireland themselves, chiefly farmers, but also their organisations, such as Macra na Feirme, the Irish Farmers Association (IFA) and the Irish Creamery Milk Suppliers Association (ICMSA) and their other advocates, including the *Irish Farmers Journal*.

In addition, and consistently central to the revolution, were the advisory services.

They were founded at the start of the 20th century, thanks largely to the father of the Irish rural revolution, Horace Plunkett, who prompted the British government, in this final epoch before Irish independence, to establish an Irish department of agriculture.

In conjunction with this, together with the new county councils, each county in Ireland would, from the early 1900s, begin to recruit advisors (or instructors, as they were then called) to work with farmers to develop their agricultural practices and, as a consequence, develop rural Ireland more generally.

These advisors were trained to the highest international standards, principally at the Royal College of Science (the forerunner to UCD's faculty of agriculture and based at what is now Government Buildings), the Albert Agricultural College and the Munster Institute. Their brief was to help farmers improve their enterprises.

For much of the 20th century, there were three categories of advisor; the general agricultural instructor; the horticultural and beekeeping instruc-



## DEVELOPING RURAL IRELAND

A History of the Irish Agricultural Advisory Services

Mícheál Ó Fathartaigh



tor and the poultry-keeping and butter-making instructor.

Their interactions with farmers incrementally and very tangibly bore fruit. Enjoying the most immediate success were the poultry-keeping and butter-making instructors.

They were exclusively female and their assistance to farming women in sourcing pedigree hens and producing good-quality eggs often made the decisive financial difference on smaller farms. Each succeeding generation of instructors, and latterly advisors, co-operated with farmers and also research scientists to adopt the most modern agricultural approaches and then, increasingly, to implement

most efficiently the various agricultural initiatives brought forward by the government and, from the 1970s, Europe.

At the turn of the 21st century, although rural Ireland was by no means fully developed, it was clear that it had been transformed over the previous century. The rate at which its various structures had changed was without parallel.

There had been an Irish rural revolution and the revolutionaries who had led it on a continuous basis throughout the 20th century had been farmers and the advisory services. Both they, and their revolution, deserve to be commemorated.

# Dairying need not be all work and no play

**Martina Gormley**  
Teagasc dairy specialist,  
Athenry.



**R**esearch has shown that many dairy farmers work up to 70 hours per week – and that doesn't include breaks! But a recent study has found that owners on the most labour efficient farms work just 45 hours a week. So, what are they doing differently?

We've spoken to two dairy farmers who prioritise work-life balance; Sean Moher in Cork and David Gannon in Galway.

Sean Moher farms outside Mitchelstown and is married to Treasa. Their children are Fionn and Molly. Since Sean took over the farm in 2000, herd size has grown from 60 to 88 cows. The milking block consists of 28ha, with 44ha of owned land away from the milking ground.

## Who helps run the farm?

"As my father started to take a step back from the farm, I decided to get a relief milker to allow us to go on holidays," says Sean.

"At first I found it hard to get my head around the idea of paying for help, but the benefits greatly outweighed the cost.

"Last year, I had the relief milker in for three evening milkings per week and this year I increased this to four. For two of these evenings, I take on other important jobs on the farm and on the other two, I'm in the house."

## Contractor usage on the farm

"I used to do all the slurry spreading myself. Bit by bit, I got the contractor to do some of this work and since 2015, the contractor does all slurry spreading. Reseeding is also contracted out, but I spread the fertiliser."

Of the 18,000 dairy farms in Ireland, three-quarters have 100 cows or fewer, the remainder have more than 100 cows. Sean says it's not just the larger farms who should consider using contractors more.

"Maybe you can't afford a full-time person, but you can get people in for odd jobs here and there," says Sean. Power washing the sheds is an example.

"We make around 600 bales each



Teagasc dairy advisor  
Padraig McCormack and  
Sean Moher.

year. I used to draw them all in myself, now the contractor does that too. Looking back, I regret not deciding sooner to pay people who specialise in these jobs and have skills and machinery to do them very efficiently."

## Family life and milking time

"I bring the kids to school every morning, so I start milking at 6.30am. The farm allows great flexibility with school runs, which reduces childcare costs. I train my son's under 11 hurl-

ing team. I enjoy it and it's something different. We are just back from a few days away. We go away every year, and this is important to us.

"Evening milking starts are 4pm in the spring and 4.30pm for the rest of the year. Milking times have always been set. My father was big into training hurling teams. He had to be gone out of the yard by 6.30pm in the evenings. He would refer to milking time as 'cow time'.

"I remember being at a group meet-

**Table 1:** ICBF herd performance for the Moher farm

	Fat %	Protein %	SCC	Milk solids	Six week calving %
2020	4.33	3.70	85	525	91
2019	4.27	3.71	88	528	90
2018	4.15	3.55	121	469	76





Sean Moher, Fionn and part-time milker Sean Browne.

ties and 42 hours on average per week working on the farm.”

**Lean farming**

“I joined the Dairygold Lean Programme three years ago. It really made me question waste and inefficiencies. A big focus was on farmyard organisation, in particular having a set place for everything.

“Before this programme, at times I would be at a loss where to find certain tools, etc. There is more organisation and less time wasted now.

“There is a whiteboard in place and clear instructions for the milking parlour routine. I use this board for writing up the next paddocks cows are going to, what meal they are on and SCC issues. I wouldn't be without it. The relief milker looks at this board before the milking starts.”

**David Gannon**

David Gannon from Craughwell, Co Galway, is also conscious of work-life balance. His father Robby ran a dairy farm, but gave up milking in 2004 due to quota restrictions. David studied engineering in NUI Galway and worked off-farm, while also running the family suckler and calf-to-

» Continued on next page

ing and the grass was gone too strong on a farm. The group concluded that the farmer should get someone in to milk the cows and he would have time to look after the grass management, which would more than pay for the relief milker.”

**Farm performance and taking time off**

“The farm isn't perfect by any means, but it is improving each year. Paying for help, along with having structure

and discipline in every aspect on the farm, allows me to manage the farm fairly well.

“Last year, I took part in a labour study where farm tasks were recorded through a time app. It showed me where I was spending too much time and also showed that my working day was 6.30am to 5.30pm, on average, over six months.

“To my surprise, I was spending five hours per day on non-farming activi-

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David Gannon and part-time milker Katie O'Toole.

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beef farm. Going back into dairy was always in the back of my mind," says David. "When quotas were abolished, I drew up a dairy business plan. I first worked alongside an established local dairy farmer and this experience really enhanced my knowledge on the profitability and lifestyle that dairy farming can offer.

"In 2018, I went back into dairying with 69 cows and decided to continue working full-time during the first year. Today, we are milking 150 cows

on a 52ha milking block and 39ha out blocks. The plan is to go to 180 cows."

### Who helps run the farm?

"I work full-time on the farm with two part-time staff, Joe Dos Passos and Katie O'Toole. Joe helps full-time in the spring and three morning milkings for the rest of the year.

"Katie works Saturday and Sunday for the spring and does two milkings per week for the rest of the year. So I do nine milkings per week and I'm happy with that."

### Milking time

"Cups are on at 7am and 4.30pm. Milking is at set times. It has to be, as I play hurling with Kilconieron three times per week. Also, staff need to know when they will start and finish. I'm just back from four days away. Everything ran fine without me!

"I got into dairy to improve my lifestyle and that's now being delivered. Before going into dairying, I was farming before work and after work – it wasn't sustainable."

### Working with people

"We are very lucky that we have a great contractor service. He does all the slurry, reseedling, bales and fencing. I like working with people because I was trained to manage people when I worked off the farm.

"I believe people are a resource. I try

to give clear instructions and from day one, I make it clear what I expect. I find this allows people to develop and gives them autonomy to make decisions.

"For example, when I came back from being away, I went to the paddock where I thought the cows should be. They weren't there, they were in the next paddock. I explained to Joe from day one that the cows come first and if he thinks they are hungry, then he has the authority to move them on, and that's what he did.

"Also, in spring I was away for a day and Katie brought a sick calf to the vet. She wasn't worried if that's what I'd want or not. She knows the animal comes first.

"If something does go wrong, it's probably my fault, because I didn't give clear instructions or check that the person fully understood the task."

### Summary

These two farmers may be 150km apart, but their goal to have time off the farm is the same. They use similar practices and technologies, and stress the importance of people management skills and invest time upskilling in this area.

"Regardless of where you spend your time off the farm, having time available gives you options," concludes Sean.



David Gannon with his business partner and fiancée Deirdre.



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# When cattle finish earlier, your finances and the environment benefit

Practices to reduce agriculture's environmental footprint, particularly greenhouse gases, will shape farming for years to come. This Limerick farmer is showing the way

**Alan Dillon,**  
Green Acres programme manager

**Sean Cummins,**  
Teagasc Green Acres programme

**A**ge at slaughter is increasingly coming under the environmental spotlight. The younger the better, is the verdict. Limerick farmer Ciaran Bartley has made substantial progress in this area of his enterprise in recent years.

Ciaran, who operates a calf-to-beef system on 74ha in Boher, east Limerick, where 150-160 mainly Holstein Friesian bull calves are purchased each year, has reduced the average age of slaughter by 2.4 months.

A participant in the Teagasc Green Acres Calf-to-Beef Programme, Ciaran has worked closely with Green Acres advisor Sean Cummins and B&T advisor Aileen Walsh to improve the profitability of his farm in a sustainable way. Approximately 70% of the land base is classified as 'heavy'.

"Reducing the age of slaughter has been a target on the farm since we joined the programme," says Ciaran.

"Aiming to finish before the second winter challenges us to reach greater levels of efficiency and reduces the need for cattle sheds."

### Younger at slaughter – why?

Data from ICBF has shown that reducing the national age of slaughter for the same carcass by just one



month to 25.1 months would eliminate 247 KT of greenhouse gases.

This is the equivalent of avoiding the slaughter of around 97,000 cows from our dairy and suckler herds.

If the average age at slaughter is reduced to nearer 24 months, it is the equivalent of close to 200,000 cows avoiding the same fate.

Trends in the national slaughter data from the last decade on cattle from the dairy herd show marginal improvement, with average age of slaughter from dairy beef cross cattle reducing by two days from 787.5 days to 785.7 days, while carcass weight increased from 334kg to 338kg.

The pure dairy cattle slaughtered over the same period maintained age of slaughter at 783 days, but carcass weight increased by 3.2kg.

### Two months younger in the Treaty County

To evaluate how age of slaughter has changed on Ciaran Bartley's farm in

**Table 1:** Slaughter performance of Holstein Friesian steers

Year of birth	Age (months)	Carcass weight (kg)	Grade	Fat score
2016	26.6	295	O-	3=
2017	25.9	300	O-	3=/3+
2018	25	304	O-	3-/3=
2019	24.2	299	O-	3-/3=



Sean Cummins, Ciaran Bartley and Alan Dillon.

recent years, slaughter data from animals born in 2016, 2017, 2018 and 2019 have been compiled and analysed.

Driven by improved animal performance, Ciaran's age of slaughter for 2019-born animals was 2.4 months younger than calves purchased in 2016, while comparable carcass weights and carcass conformation scores were achieved.

An average age of 24.2 months was recorded for 2019-born animals, achieving a 299kg carcass, while calves purchased in 2016 achieved a 295kg carcass at 26.6 months.

### How was it achieved?

At the beginning of the programme, Ciaran's system was evaluated to identify the strengths, and more importantly, to identify any areas of underperformance.

Although Ciaran has decades of experience in calf rearing, the first area where an issue was identified was during the calf rearing period.

"The issue did not lie in the way in which calves were managed from arrival to turnout, but more so in the way in which we were sourcing calves," says Ciaran.

A key target for the farm was to reduce the number of herds from which calves are purchased, with increased focus placed on purchasing calves directly off-farm. Through this change in calf buying strategy, Ciaran has reduced the number of source herds from a total of 37 in the spring of 2019 to just five this spring.

"Mortality rates have fallen significantly since we started doing this," Ciaran adds.

"Falling from 4.7% in the spring of

» Continued on next page

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Ciaran Bartley and Sean Cummins discuss silage. Quality silage is key to performance, both agree.

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2019 to 1.2% in 2021, the loss in animal performance associated with disease and illness has also been reduced significantly.

“Originally, I was buying calves directly off a buyer and they were coming from numerous herds. I was having a bit of trouble with disease during the calf rearing period. Over the last two springs, I’ve bought all of the calves directly from dairy farms and I’ve seen a drastic improvement in calf health.”

In addition, given the heavy nature of the land, increased emphasis was placed on silage quality.

Too often, animals failed to reach the desired levels of thrive over the winter months, leading to one of two things – increased age at slaughter or lighter carcase weights.

To counteract this lack of performance, Ciaran has pulled back silage

cutting dates on-farm.

“Our goal is to have first cuts completed by late May,” he says. This practice has resulted in first-cut silage quality on the farm improving from 68 to 72 DMD units.

On account of the improved winter feed quality, weanlings on the farm achieved higher daily weight gains over the winter months – gaining 0.18kg/head/day more in the winter of 2020 than the previous year.

Over a typical 140-day winter, this improvement in performance represents a liveweight increase of almost 25kg, equivalent to 25-28 days additional performance at grass for the second season in previous years.

“Making better quality silage has been the biggest benefit,” Ciaran said.

“The land here is very heavy and only in a very good year will you have cattle out before March 17.

“Animals are now performing much better over the winter months and are

suffering no setbacks.

“Those extra kilograms that are being gained over the winter months mean that animals are having to do less over the second grazing season.

“It also means that a proportion of steers are fit to draft in mid-October, eliminating the need for winter finishing.”

Another area where the Limerick native has made considerable strides is in grassland management, with weekly measuring and budgeting completed during the grazing season.

By implementing this technology, Ciaran has the flexibility to target steers for slaughter from mid-October onwards.

Through the combination of regular monitoring of livestock performance, maximising the performance from grass and targeting animals for slaughter based on type, Ciaran has been able to make significant strides in reducing slaughter age.

### An early adopter

In addition to reduced age at slaughter, Ciaran has adopted a number of other goals to improve efficiency and reduce his ‘emissions footprint’.

Like many beef systems in Ireland, grass is the driver. However, soil fertility is the fuel on which it runs. When soil tests were completed at the beginning of the programme, just 7% of the

farmed area was optimum for pH, P and K, with 65% of the farm needing lime. Since initial soil tests were completed, over 200t of lime has been applied, while a fertiliser programme is being followed that also accounts for P and K applications. Although a huge array of fertiliser products are available on the market, just two form the backbone of Ciaran’s fertiliser purchase list – protect-

ed urea and 10-10-20. Slurry is targeted to silage crops.

“Slurry is applied to replace the nutrients taken off by silage crops,” Ciaran explains.

“Compound fertilisers are applied to low-index fields from the second round on. I made the switch to protected urea last year and I’m very happy with the results,” he concludes.

# Flock recording helping to protect Connemara/ Mayo Blackface

**Joanne Masterson**  
Drystock advisor,  
Teagasc Athenry

**Damian Costello**  
Sheep Specialist, Teagasc Animal and  
Grassland Research and Innovation  
Programme, Mellows Centre, Athenry

**F**ather and son partnership Martin Joe and Martin Kerrigan are hill sheep farmers in the Glentrague valley near Clonbur in Co Galway. Their land is in the heart of 'Joyce Country' and overlooks the picturesque Lough Mask.

The farm includes 133ha of good-quality mineral type enclosed hill grazing, along with 4ha of grazing in the foothills and a further 4ha of improved permanent pasture.

The farm has been in the family for generations, with Martin Joe taking over from his father in the early 90s. In recent years, Martin Joe has been joined by his own son Martin as joint flock owner. The farm is home to 220 Connemara/Mayo Blackface ewes, 40 replacement ewe hoggets and six stock rams.

"We breed our own ewe lambs to reduce the risk of buying in disease, but also because it offers us the opportunity to fully exploit genetic improvement," says Martin Joe.

## Flock recording

Following the setting up of a flock book for the Mayo/Connemara Blackface Sheep Society, the Kerrigans joined the recording group for purebred status.

"We've collected data on 40 ewes with the help of an EID handheld reader and submitted the information via the Sheep Ireland app," says Martin Joe.

Martin adds: "The best way for farmers to improve the overall quality of their breeding stock and productivity is to start recording their flock. It is then a lot easier to identify bad genetic traits in stock, which can be culled from the farm".



Mayo Blackface producer Martin Joe Kerrigan and Damian Costello.

In the last year, recording has been expanded to include the whole flock, in order to accelerate overall genetic gain.

## The nuts and bolts of flock recording

It's fair to say the uptake of flock recording has been a slow burner in the hill sector, mainly for understandable practical reasons.

"Lambing most of the ewes indoors makes tagging and recording at birth a little easier," Martin Joe remarks.

However, he is quick to point out that he has seen other group members lambing outdoors having great systems in place to do the necessary birth recording.

"At turnout, each ram EID is linked to their ewe group in a single sire mating system," he explains.

"When a ewe lambs down, scanning her EID tag with the handheld device

immediately brings up the sire," he continues.

"The progeny are then EID tagged (usually within 24 hours of birth) and linked to the dam, giving full parentage details. A birth weight is then taken and, along with the sex of the lamb, recorded on the handheld."

Martin Joe acknowledges Martin as being the more 'tech savvy' of the pair, but is now very comfortable using the technology himself.

When questioned about the extra work involved, he says he feels that with a good system in place, the flock data being captured is invaluable relative to the time spent recording it.

In terms of tips and tricks, he puts forward the insertion of different coloured management discs at tagging time, to identify lambs from the different sires, as a very useful management tool.



Martin Joe and local Teagasc advisor Joanne Masterson view some Mayo Blackface ewes.

### Using data to cull poor performers

"In late July, we gathered the single-rearing ewes and their lambs and took them down from the hill for weaning. The 25% of the ewe flock rearing twin lambs had been grazed on the improved grassland area since lambing," says Martin Joe.

All ewes have since gone through their annual fitness-for-breeding health check after weaning. Udders, teeth, body condition score, feet etc, were checked, with culls identified for selling. Ewes that had issues during the year, such as prolapse, had this information recorded on the hand-held device and were also identified for culling.

"Ewes that presented at weaning with the lightest lambs reared are not up to the job," says Martin Joe.

"Using the data recorded at birth, we can identify the dam as a poor performer and cull her out of the system, which will prove a major positive for overall flock performance into the future."

### Selecting ewe lamb replacements

Another important task that takes place at weaning is selecting the

home-bred ewe lambs that will be retained in the flock for breeding.

The Kerrigans have a keen eye for selecting replacements that are true to type. By selecting well-grown lambs at weaning, they are selecting progeny from the top-performing ewes in the flock.

The progeny of any ewe that has had issues around lambing, such as poor milk supply, poor mothering ability etc, does not receive a management disc and will not be considered as a replacement.

"As the parentage of these replacements has been recorded, inbreeding can be avoided when these lambs come of age to join the ram at 19 months old," says Martin Joe.

"Once replacements are taken out, the surplus lambs are marketed at a number of local special breeding sales."

### Connemara/Mayo Blackface breeding group

In the past year, Martin has been involved in the development of the Connemara/Mayo Blackface breeding group. This is a group set up for all farmers who breed Connemara/Mayo

Blackface sheep.

At the forefront of this initiative are young, driven farmers in the area, who respect and see a bright future for the Connemara/Mayo Blackface breed and hill farming.

Breeders in the area were concerned that the genetic traits of the Connemara/Mayo Blackface breed were in danger of being diluted, as a result of crossing with other Blackface breeds.

The main goal of the group is to revive this unique and versatile hill breed and they ultimately hope to improve the overall quality and standard of the breed.

The group is currently busy with preparations for their first premier breeding sale, which takes place in Burkes Livestock Mart, Maam Cross on 2-3 October – ewe sale on 2 October and ram sale on 3 October.

"Hopefully, it will be a great way to showcase the breed and we are expecting to attract buyers from all over the country, as well as local customers," Martin says.

"We have a Facebook page set up Connemara/Mayo blackface group, if anyone wants further information on the sale."





“We’ve collected data on 40 ewes with the help of an EID handheld reader and submitted the information via the Sheep Ireland app,” says Martin Joe Kerrigan.

## Hill sheep research

The Teagasc BETTER Farm sheep programme covers lowland and hill sheep farms spread right across the country. The programme has highlighted the necessity for having a clearly defined plan for managing and grazing a hill flock throughout the year.

Furthermore, by having a defined breeding policy in place the potential for genetic gain in a hill sheep enterprise is clear.

These farmers are recording performance data from their flocks throughout the year and are using this data to track the performance of individual rams, similar to the Kerrigans.

Data derived from the Teagasc National Farm Survey (NFS) has shown that 25% of the national lamb carcase output originates from hill progeny.

Teagasc has an ongoing research programme examining the options for finishing hill lambs indoors to carcase weights of 12-16kg and over 18kg and looking at the options for finishing hill lambs outdoors on a selection of for-



Mayo Blackface rams.

ages. This research is aimed directly at hill farmers hoping to finish their own lambs on farm but also at providing information to store lamb purchasers buying hill bred lambs after weaning.

Over the past number of seasons Martin Joe and Martin have sold some ram lambs to Teagasc for this project and are quick to endorse the value of this work to the hill sheep sector.

They have also used the blueprint coming from this study to intensively

finish some of their own ram lambs indoors and sold them through the Connemara Hill Lamb producer group.

“I have found the Teagasc store lamb calculator excel programme a very useful tool in deciding whether to head to the mart with store lambs or opt to finish the lambs ourselves,” adds Martin Joe.

More information on the store lamb calculator at the following link: <https://www.teagasc.ie/animals/sheep/financial-management/>

# Better three hours too soon than a minute too late

The words of Shakespeare are apt when it comes to farm succession planning

**James McDonnell**  
Teagasc Farm  
Management Specialist



**I**ncreasingly, farm transfers are taking place during the owner's lifetime, allowing all parties to manage the process. Every family has a different set of circumstances, but it is always better to have a plan in place. The worst case scenario is where the transfer is unplanned as a result of illness or the death of the owner, leading to tax and legal complications.

Many farmers say they will never retire, however you do not have to be retired to have a succession plan in place. There are many decent tax reliefs and benefits to encourage you to prepare a plan in good time.

## P.L.A.N.

•**P = Preparation:** Organise your thoughts and have a discussion with the family. An open conversation with all those involved will help avoid misunderstandings. It can be beneficial to bring in a specialist adviser to facilitate this discussion.

•**L = Legacy:** Plan how the farm is going to be passed on. From both a tax and a legal point of view, early planning is the key to reducing potential cost.

•**A = Action:** Make appointments with the professional experts you require to make informed decisions.

•**N = Now:** This is the time to get this item off the "to do" list. Government policy could change significantly over the course of a few budgets. Postponing a decision could make it more difficult to achieve your wishes in the future.

## The first step

Make a will. Many people put this task on the long finger, as they probably do not want to think about the inevitable. In some cases, there is total denial. Start the conversation about making the will by emphasising the need to plan for the future: "I don't want our family to end up fighting like what happened with Jack's family when he passed away."

If there is no will, then the State



decides what happens to your estate. The Succession Act of 1965 is used to decide. For some, the will becomes the plan. For others, the will becomes an insurance policy so that their wishes are carried out, if the succession plan has not been achieved because of an unforeseen death.

## To help you prepare

Teagasc is hosting two webinars in October as a follow-on to the webinar held last November.

At last year's webinar, we focused on three areas:

•**The key questions** you need to answer during the decision making process when planning succession.

•**Taxation:** there are three taxes that could prove extremely costly if a succession is poorly planned.

•**Farming in partnerships:** these are an important model that can form part of a succession plan, especially if parents are young and there is a

short generation gap between them and their children.

If you missed last year's event, or want to view it again, it is available to watch at this link: <https://www.teagasc.ie/rural-economy/farm-management/succession--inheritance/>

This year, we will focus on different areas and will give you more information to help you sort out issues of concern.

## No successor

I've come across a common situation, where the lack of early discussion results in no successor. For example, farming parents (mid 50s) have a child (early 20s) eager to start farming, but the parents are not ready to hand over (as they have not reached pension age, have other children to look after etc.) so no conversation takes place.

The potential successor goes away and gets a job in the city.

His farming parents review the situation 10 years later (close to retirement age) by which time the successor has settled away and has no intention of farming.

“ For some, the will becomes the plan. For others, the will becomes an insurance policy so that their wishes are carried out, if the succession plan has not been achieved

**‘Fair and Equal’**

Farmers are seen as wealthy group owning a lot of valuable assets. The reality is that due to the nature of the enterprises carried out, the annual cash returns are often low.

Where there are a number of children to be “looked after” there is sometimes an expectation that the farm should be divided equally in monetary terms, which means that if one child is getting the farm, a cash payment must be made to other siblings.

This approach could put the farm out of business, as it could not carry the debt generated. So how can a parent treat all the children fairly? Fair may not always mean equal.

Providing one child with a decent education and another with a site and a third with the farm may be a fair result. The child getting the education may end up with a better salary than the farmer.

What is fair? Is a fair share an equal share? It all depends on the situation. Sometimes farm families need some help to have a discussion on this. A mediator will speak during the webinar on this topic.

**Communication**

Family involvement in planning for succession is essential. A key aim

must be to have an open conversation with the people involved so that misunderstandings are avoided.

Policy and taxation encourage early transfer, so it is important to have the conversation early to avail of all the incentives, some of which are complex, and may come with specific conditions – however, in most cases, the conditions are easily met.

A new CAP will commence in 2023 with a strong emphasis on generational renewal, so it is a good time to make a plan and get the benefit of the extra payment incentives that will become available.

**Nursing home support scheme (Fair Deal)**

The Fair Deal scheme always comes up in conversation with farmers nearing retirement. If nursing home care is needed in the future, it is better to have the farm transfer completed at least five years prior to making application for the Fair Deal scheme.

Nobody can see into the future, and time spent thinking or ignoring the problem could be time wasted.

There has been a lot of discussion recently on changing conditions attached to the scheme to make it more suitable

for farming and business owners to avail of.

Hopefully, the changes will come soon and achieve what they were set out to do.

Finally – do not leave things to chance; careful planning is required to protect your assets and provide for your family in a tactical way to reduce stress and cost on all concerned. As Benjamin Franklin once said: “Nothing in this world is certain except death and taxes.”

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pigs

# Staggering improvements in pig performance

Irish herds are bigger, and animals more productive, than ever before

**Gerard McCutcheon**  
Teagasc Pig Development  
Department, Oak Park



In 1959, when An Foras Talún-tais purchased the Moorepark farm near Fermoy and began pig research (and dairy research, of course), there were 120,000 farms in Ireland keeping pigs, supplying a national output of less than one million. Pig production was, essentially, a cottage industry that supplied meat to feed families and/or cash for the household.

In 1975, the Central Statistics Office (CSO) recorded 23,000 holdings keeping pigs. This had dropped to just 3,000 holdings by 1990, with a definite move to a more concentrated “commercial” sector, with units becoming fewer and larger as a result of the need for economies of scale.

Today, there are circa 290 “commercial” pig farms (defined as farms keeping more than 20 pigs) with an average herd size of over 700 sows on the farms with breeding stock.

The national output of pigs totals 3.8m pigs each year and the Irish pig sector is regarded as highly efficient internationally. The value of pigmeat exports in 2020 reached almost €1bn.

The Teagasc Pig Development Department (previously through AFT and ACOT) works with Irish pig farmers to help them monitor and improve their pig unit performance.

### Monitoring the performance

A large portion of pig farmers submit their performance data to their

Teagasc advisor to assess on the Teagasc eProfit Monitor (ePM) recording system.

This allows them make decisions using data and also helps monitor the impact of those decisions. Most farms submit their input figures four times each year.

The data is compiled each year and published as the ‘national pig herd performance’.

This is a very good measure of how farms are performing, and is a useful benchmark for the Key Performance Indicators (KPI) on pig farms. A good baseline year for the commercial pig farm performance is 2000. There has been a consistent increase in output per sow since then.

In 2000, the ePM data was compiled from 141 farms (with an average of 400 sows per herd), from 98 farms in 2010 (average of 654 sows per herd), and 88 farms in 2020 (with an average sow herd of 799 sows).

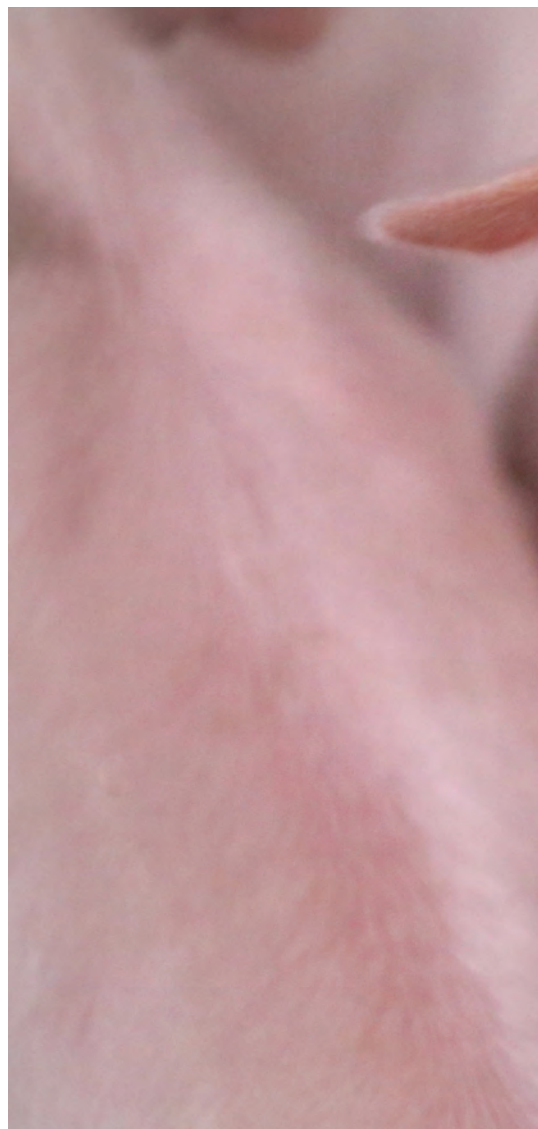
The database represents approximately 50% of the Irish pig herd. The main KPIs achieved on farms are shown below from 2000 to 2020.

### 1 Pigs per sow per year

The number of pigs produced per sow per year is the total born alive, minus all deaths, averaged per sow on each farm. It is a good KPI for farmers to compare their performance.

Table 1 shows the average number of pigs produced per sow per year on Irish herds, keeping records on Teagasc ePM during 2000, 2010 and more recently in 2020.

The ‘born alive’ figure has risen



steadily, with a 31% increase when 2020 is compared to 2000 performance. The number of litters per sow per year has also improved slightly, but the increase in born alive per litter is the major factor contributing to the 28% increase in pigs produced per sow per year in 2020.

### 2 Growth performance

The growth performance of weaned pigs has greatly improved over the years. Table 2 shows the performance, based on feed conversion, of pigs from weaning to sale over the same period. There has been an increase of 25.2kg in live sale weight over the 20-year period.

The increase in deadweight (carcase weight) is 20.1kg over 20 years. This is significant, as it further increases the output per sow per year. The average daily gain from the time the pig is weaned from the sow to the point of sale has improved by 150g per day over the same period.

The slight increase in the Feed Conversion Efficiency (FCE) is related to a rise in FCE as the pig gets heavier.

The feed used for the heavier pigs is less costly and so is generally more profitable if the farmer has the accommodation to rear the pigs as heavy as the market will pay.

**Table 1:** Pigs produced per sow per year from 2000, 2010 and 2020

	2000	2010	2020
Litters/sow/year	2.29	2.32	2.31
Born alive/litter	10.85	12.01	14.26
Piglet mortality %	9.0	9.9	11.1
Weaner mortality %	2.6	2.4	2.8
Finisher mortality %	2.3	2.5	2.7
Pigs produced/Sow/Year	21.5	23.9	27.5

Source: Teagasc ePM.



**Total output of pigmeat**

Having more pigs produced and the increased carcase weight of each pig has contributed to more pigmeat being sold per sow per year (an increase of 56% compared to 2000). This is a substantial increase in performance, mainly due to advances in animal genetics, nutrition, healthcare and overall management.

The amount of feed required to produce each kilogram of carcase is also improving over time, particularly with advances in nutrition and genetics. This can be seen in the drop from 3.66kg to 3.50kg of feed needed to produce a kilo of pigmeat, as shown in Table 3 below. This is a substantial

improvement in efficiency of feed usage (mainly as a result of the extra output per sow).

In 2000, it took 143 days from the time of weaning to reach the sale weight of 90.1kg liveweight. In 2020, it took 147 days after weaning to reach the sale weight of 115.3kg. The improved growth rate has driven output substantially.

Management of animal health and biosecurity (disease prevention measures) has also greatly improved on farms, and this has contributed to the performance gains. Of course, as already stated, genetic improvements and better nutritional management have also contributed greatly.

**Table 2:** FCE Weaning to Sale in 2000, 2010 and 2020

	2000	2010	2020
Liveweight at sale (kg)	90.1	103.6	115.3
Deadweight at sale (kg)	68.1	78.9	88.2
ADG (g)	585	668	735
Feed Conversion Efficiency	2.37	2.47	2.40

Source: Teagasc ePM.

**Table 3:** Pigmeat produced and FCE Weaning to Sale in 2000, 2010 and 2020

	2000	2010	2020
Carcase weight sold/sow/year (kg) *	1,464	1,884	2,426
Total feed per sow (kg)	5,358	6,952	8,488
Kg feed per kg of Carcase	3.66	3.69	3.50

\*This is the pigs produced /sow/year multiplied by the average deadweight at sale.

**Conclusion:**

Performance on pig farms is forever changing, as new processes and technologies are developed over time.

Farmers must constantly assess their production model and adapt to changes in performance to optimise the profitability of the business, be they in genetics, nutrition or elsewhere on their farms, just like every other farm enterprise.

**Interesting facts:**

- The pig sector in Ireland is not very intensive at a national level. There are around 148,000 sows in the Irish national herd. In The Netherlands, there are six times as many sows in an area the size of Munster.
- The pig sector uses over 8t of feed per sow plus progeny each year. This requires 1.1m tonnes of feed for the sector. Cereals would make up 70% of this figure.
- Pigmeat is the most consumed meat in the world. In Ireland, 28kg of pigmeat is consumed per capita each year

# How big is your carbon footprint?

Regardless of your enterprise mix, carbon footprint is becoming a key indicator of farm efficiency

**Siobhán Kavanagh**  
Teagasc



**Eleanor Murphy**  
Bord Bia



**Grainne Hurley**  
Teagasc



## What is the difference between weather and climate?

The weather is the wind, rain, temperature etc, that we experience on any given day. Climate is how the weather conditions are over a much longer timeframe.

## What is climate change ?

Climate change is a change in climate, which is currently being driven by an increase in global temperatures resulting from increasing levels of greenhouse gases (GHG) in the atmosphere.

## Why are they called greenhouse gases?

These gases trap heat in the atmosphere like the glass in a greenhouse does. The more greenhouse gases, the more heat is trapped, resulting in global warming.

## What are the main greenhouse gases relevant to agriculture?

The three agricultural GHGs are carbon dioxide, (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O).

## What are the main sources of these GHGs?

In most countries in Europe, the human population is greater than the cattle population, so emissions are much greater from human or industrial sources than from agriculture.

In Ireland, agriculture contributes 35% of the total GHG emitted. Animals (CH<sub>4</sub>, 64%) and fertiliser (N<sub>2</sub>O, 32%) contribute the most to GHG emissions from agriculture.

## What is a carbon footprint?

The carbon footprint refers to the ratio of how much GHGs are emitted

from an activity, such as the production of milk or meat, or driving a car or taking a flight. The emissions of all GHG gases are expressed as carbon dioxide equivalents (CO<sub>2</sub> Eq) for ease of comparison. In farming, the production of every kilogramme of milk, meat or grain has a carbon footprint.

The carbon footprint is the ratio of total GHG emissions to total outputs of the farm enterprise. Output for dairy is kilograms of fat and protein corrected milk (FPCM) and kilograms liveweight for beef.

As farmers, you are being asked to reduce GHG emissions from your farming system to help alleviate global warming.

But how can you be expected to do this if you don't know what your current emissions are?

You do have access to your carbon footprint figure, however. Over 54,000 farmers nationally, dairy and beef, have a carbon emissions figure available to them, but many are not aware of this information.

After each Bord Bia audit, all certified dairy and beef farmers receive a Farmer Feedback Report with their farm's carbon footprint, as well as an assessment of farm productivity, nutrient management, grassland, animal feeding and farm safety.

## How is the carbon footprint calculated?

Bord Bia utilises a beef and dairy carbon footprint model to calculate the carbon footprint of a herd. Both of these models have been developed with Teagasc and are accredited by the Carbon Trust to its PAS 2050 Standard. There are four sources of data required to complete an accurate calculation of a farm's carbon footprint. Bord Bia has data sharing and transfer arrangements in place with industry stakeholders to reduce the burden of data collection on the farmer.



- **Animal Identification and Movements Database (AIM)** – DAFM – Beef and dairy.
- **Daily Liveweight Gain – Irish Cattle Breeding Federation (ICBF)** – Beef only.
- **Milk Production Data – Dairy processors** - Dairy only.
- **Sustainability Survey** – Scheme Members – Beef and dairy.

The sustainability survey is the only data source required for the carbon footprint calculation that is collected directly from the farmer.

## How does the information provided in the sustainability survey relate to the carbon footprint?

The sustainability survey captures data related to farm inputs and farm management. The main farm activity data collected via the survey is outlined below;

- **Turnout and housing:** Required to calculate the grazing and housing periods of animals on the farm. This data influences the calculation of manure storage emissions, grazing and digestion-related emissions and can influence the grass-fed status of a herd.



John and Brendan Walsh.

**Where do you find the carbon footprint on the report?**

Your most recent carbon footprint is displayed on the first page of the report, alongside percentage change from the previous audit (where available) and the typical carbon footprint of farms within your category. It appears again in section two, page three.

Current assessment refers to the footprint of the farm at the time of the most recent audit, the percentage change refers to the increase or decrease since the previous audit and the average for the 125-150 cow farms refers to other farms with similar cow numbers.

For beef systems, this could be comparing a suckler-to-beef enterprise to other suckler-to-beef operations.

**Target Carbon Footprint**

The milk production target for carbon footprint is 0.70kg CO<sub>2</sub> eq per kg FPCM. The target carbon footprint for suckler beef systems is 13.2kg CO<sub>2</sub> eq per kg liveweight, assuming a kill out of 56%. Dairy beef targets are being developed.

However, reducing carbon footprint without a corresponding reduction in total gas emissions from an individual farm will not reduce our overall emissions.

**How do you know what is contributing to your carbon footprint?**

On page three, a graph displays the percentage share of carbon emissions on your farm under the following headings – animal digestion, manure, fertiliser, forage/feed production, other (transport, fuel, etc).

• **Manure management:** Calculates the emissions from the application and storage of manure on the farm. This is influenced by the timing of manure application and the method by which manure is applied to the land.

• **Concentrate feeding rates:** Calculates the emissions associated with the production of concentrate feed which is fed to animals. This data can also influence the grass-fed status of the herd. Milk replacer feeding rates are also captured in this section under calf management.

• Fertiliser application data is required to track the emissions from the production of fertilisers and minerals and the emissions related to the application of fertiliser to the land.

• It is important to note that inaccurate data provided to the sustainability survey can result in an inaccurate carbon footprint, grass-fed result, and Farmer Feedback Report.

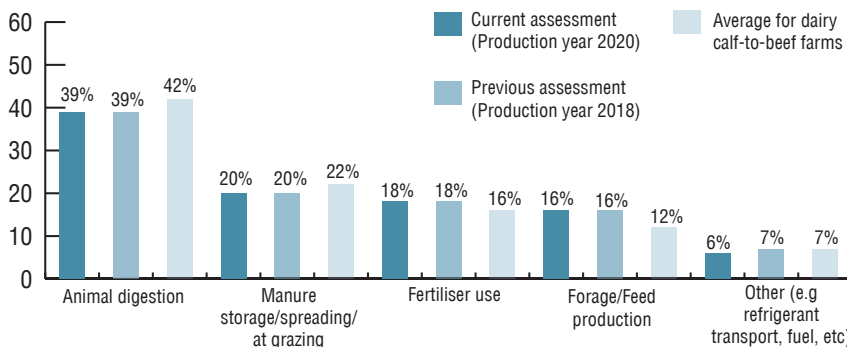
**When do you get the Farmer Feedback report?**

The feedback report is posted to the farmer within one week of certification of the Bord Bia audit. It can also

be accessed from the audit portal website, farm.bordbia.ie using your username and PIN, which you received after the most recent audit.

**Feedback from Bord Bia to John and Brendan Walsh**

Percentage share of farm carbon emissions for John and Brendan Walsh.



Parameter	Unit	Current assessment (production year 2019)	% change from previous (production year 2018)	Average for 125-150 cow farms
Carbon footprint - dairy enterprise	kg CO <sub>2</sub> /kg FPCM	1.10	-3%	1.15

## In the information and advice section, there are green and white-shaded leaves – what do these colours indicate?

The advice is broken down into two levels of activity. The green leaf relates to actions specifically set out in the Teagasc Marginal Abatement Cost Curve (MACC). These actions are provided to encourage farmers to engage with the Climate Action Plan and inform farmers on those types of actions.

For example, on the farm emissions section, the advice is to improve EBI, consider the use of sexed semen and improve animal health to reduce emissions.

While in the fertiliser advice section, the advice is to soil test, apply lime and use protected urea.

The white leaf relates to more general information.

## What should a farmer do after receiving the report?

Some farmers may feel satisfied to interpret the report themselves. Others may wish to share the report with their advisor and discuss the next steps for improvement with them.

The advisor will be able to see quite clearly where the different emissions are coming from and help the farmer identify which areas to focus on.

## Dairy farmer

We will examine the farmer feedback report for John and Brendan Walsh, Signpost Dairy farmers, farming in Ballylooby, Cahir, Co Tipperary. The father and son team are milking 132 cows, achieving milk solids per cow of 539kg.

“We had our last audit in September 2020,” says John.

“We take care in completing the Sustainability Report because we need to ensure that we have an accurate figure for the carbon footprint to benchmark progress year-on-year and against other farmers.”

In John's case, the carbon footprint was 1.10kg CO<sub>2</sub> Eq/kg fat and protein corrected milk, which was 3% lower than it was in 2019 and 4.5% lower than farms of similar scale.

Thirty nine percent of the emissions on the farm are from animal digestion, compared to 39% from the previous audit and 42% for the average farms of similar scale. Fertiliser use contributes to 18% of emissions, compared to 16% for the average farms of similar scale.

John has met with his advisor Kevin Barron and programme advisor Grainne Hurley and decided on a plan of action to reduce emissions further on the farm.

Some of the actions that are currently being taken include:

## General information and advice (farm emissions) from the Walsh's Farmer Feedback Report

- Improve the Economic Breeding Index (EBI) of your herd through selecting a team of high-EBI AI bulls for use on your best dairy cows.
- Sexed semen reliably produces a 90% sex bias, but can result in poorer conception rates than conventional semen (although not in all herds); it is a viable strategy for generating replacement heifers on dairy farms.
- Increasing the proportion of grazed grass in the feed budget and reducing the proportion of grass silage in the diet improves feed digestibility and quality. Improving the digestibility and quality of feed consumed reduces methane emissions because of improvements in animal productivity as well as reductions in the proportion of dietary energy lost as methane.
- The greatest source of GHG emissions is methane gas (CH<sub>4</sub>); this is mainly produced in ruminant animals' stomachs and released via the mouth while the animal is ruminating.
- Improving the overall herd health reduces GHG per kilogram product by reducing the need for replacements and an increase in overall production.

## Information and advice – fertiliser applications from the Walsh's Farmer Feedback Report.

- Aim to soil test your entire farm every two to three years to determine the soil pH, P and K status. This will provide the basis for the preparation of a tailored fertiliser programme, which offers large production/emissions efficiencies.
- Balanced soil fertility reduces the need for chemical fertiliser application and ensures that the soil is getting the nutrients required for optimum growth.
- Apply lime to correct soil pH/neutralise soil acidity, thereby benefitting crop production, soil nutrient availability and fertiliser use efficiency.
- Protected urea can replace both urea and CAN fertilisers to economically produce top grass yields on your farm at no additional cost, while also reducing both GHG and ammonia emissions.

## Beef farmer

Jarlath Ruane runs a dairy calf-to-beef enterprise near Claremorris, Co Mayo. Jarlath's footprint was 8.11kg CO<sub>2</sub> per kilogram beef liveweight in 2020. This had not changed since 2018, but is almost 12% lower than the average for dairy calf-to-beef farms.

As with John and Brendan Walsh, Jarlath takes great care in completing the sustainability survey to ensure that he gets an accurate carbon footprint.

Forty eight percent of Jarlath's emissions come from animal digestion (or methane) with 27% coming from manure, 7% from fertiliser, 3% from forage and feed and 15% coming from other activities including transport.

- White clover has been incorporated into the swards on the milking block. They have currently five paddocks that have received no chemical nitrogen since May.
- All slurry is spread using Low Emission Slurry Spreading (LESS). The farm has invested in a dribble bar.
- Protected urea fertiliser is being used on the farm.
- Red clover has been sown on the

The key actions that Jarlath is taking to reduce his carbon footprint include:

- Incorporating clover into new re-seeds to reduce chemical N usage.
  - Increasing usage of protected urea on-farm, replacing CAN-based products.
  - Concentrating on calf health and grassland management to increase carcass weight of each animal.
  - Putting plans in place to convert to low emission slurry spreading.
  - Maximising silage quality in order to reduce meal requirements of young cattle, stores and finishing cattle.
- James Fitzgerald is his Green Acres programme advisor and Amy Connolly is his local Teagasc advisor.

outside blocks for silage.

As farmers are beginning on the journey towards reducing gaseous emissions, it is important that you know where you are starting from. It's the old adage – you can't change what you don't measure.

Take the time today to root out your most recent Farmer Feedback Report and make a start.



# Autumn weed control: know your enemy

Each crop, weed and indeed, each field, must have its own action plan if satisfactory long-term control is to be achieved

**Phelim McDonald**  
Teagasc tillage advisor,  
Oak Park, Carlow

**T**he first step is to identify and locate the main weeds present. Creating a weed map will give you a visual indicator of the extent of your target weeds and show how those weeds are spreading or diminishing over a number of years.

You can use copies of your BPS maps, marking areas of infestation with colours or symbols. Updating the map each year will help you to assess your weed control strategies.

With the loss of active ingredients, a more imaginative approach is essential for weed control on the farm. This 'Integrated pest management' (IPM) ties in well with the increased focus on reducing the quantity of plant protection products (PPP) and the enhancement of biodiversity in agriculture.

Better results are likely when every effort is made to make life difficult for grass weeds before applying any herbicide. IPM combines the advantages of physical, cultural, biological and chemical tools as the best approach to minimise PPP use, while achieving best weed control at justifiable levels of herbicide use.

Your weed map is particularly useful when deciding if there is a role for cultural/cultivation control methods. Examples of these are the light harrowing of land to produce stale seedbeds (used against sterile brome and other weeds), choosing a sowing date when weeds are less likely to germinate and can be out-competed by the crop, higher seed rates, or switching crop type from winter to spring, or from cereal to broad leaf crops.

Gary Bayley, who farms just north of Carlow town, can point out the many cultural options he has taken, and more available to him, in his efforts to control sterile brome in some of his fields.

"The weed first emerged about seven years ago and around that time,

Gary Bayley and Phelim McDonald.



I was entering GLAS," says Gary.

"It seemed a good opportunity to make use of the scheme to aid control solutions. I opted to plant arable margins in particular fields, which, as it happened, was the highest paying measure in GLAS on a per hectare basis."

The aim was that the planted margin would establish itself and prevent the encroachment of the broom into the fields, as further cultivations would not be carried out on the margin. Gary sowed a grass mix with over 60% Timothy.

He says that while the arable margin itself has worked, it has virtually no broom in its width, and has certainly paid for itself. However, some broom has reappeared along the field edge of the margin. "It amounts to about

a foot or two wide, located in patches along the length of the grass margin," adds Gary.

Mowing before August 15 is not permitted under GLAS and strimming the edge of the crop is impractical, as Gary also works off-farm.

"I might try one run of a light disc, right up to the margin, to produce a stale seedbed to reduce the seed bank in the soil," he adds.

The key message from Gary's work is that while no cultural control method on its own is 100% effective, combinations are much more likely to achieve satisfactory results.

Gary is also considering changes to his rotation, which has seen winter barley in this particular field for the

.....  
» Continued on next page



Phelim McDonald and Gary Bayley view some of the few sterile brome plants that have escaped Gary's control programme.

» From page 33

last three years and for five of the last six years.

“A change of rotation would allow me to plant at a more opportune time and also use alternative active ingredients,” he says.

The land in question, while not ideal for wheat or for beans, could grow them with the expectation of benefits to succeeding crops as outlined in detail at the Teagasc Oak Park Open Day last July. This second line of attack may well get Gary over the line to even more acceptable control in the coming years.

Gary used post-emergence applications of Firebird and DFF, followed by AllyMax and Axial Pro in spring to complete his weed control strategy.

The principles Gary has employed in regard to the management of his grass weed are the same as should be used by every farmer with difficult weeds, be they wild oats, canary grass, annual meadow grass or black grass – identify, locate, prevent seed return, implement cultural/physical

control and only then select the best available chemical control.

While all this is going on, Gary, and all readers, will also have to contend with the full spectrum of Broad Leaf Weeds (BLW) found in tillage fields.

IPM will work in your favour for BLW also, and so the choice of chemical and its timing will come after IPM strategies have been implemented (stale seedbeds, rotations, cultivation systems, sowing rate and date).

The application of herbicides in autumn is undergoing a change at present. There is a trend in favour of pre-emergence application and in particular on early-sown fields, or where grass weeds are a problem and where drill markers or GPS technology is available.

Of course, it is the availability of time that will eventually determine this course of action, but you also need the seedbed to contain some moisture or receive light rain after application.

In many cases, a follow-up application will be required to catch late germination and weeds not susceptible to the pre-emerge herbicide, and this can be done in spring.

The more traditional post emergence spray is still very much a valid option. Application at the two to four leaf stage of the crop is best for control of grass weeds. Indeed, all weeds are more susceptible at younger growth stages.

It is really only around the peri-emergence stage that herbicides should be avoided, as bleaching and scorch of the crop is more likely then.

As with all herbicide choices, farmers are advised to use a mix of active ingredients as an anti-resistance strategy and to select herbicides based on the most competitive weeds in the field.

In many cases, fumitory, poppy and cleavers can be dealt with in spring, before they start to compete with the crop.

Table 1 offers an overview to many of the products available this autumn for weed control in cereals.

Your choice should only come after implementation of the main control strategies, the cultural/IPM controls discussed. Take note of the approved crops, rates and latest timings, as well as the comments on strengths and weaknesses.

## Teagasc weed screen trial 2021

As part of the Enable Conservation Tillage (ECT) project, Teagasc conducted a weed screen trial to look at the various different herbicide options that are commonly available on the market.

The trial looked at pre and post-emergence options and both autumn and spring applications to figure out the best strategies to control a variety of weeds, including sterile brome, annual

meadow grass, wild oats and various different broadleaf weeds

From our observations of the trial, a number of key recommendations for optimum weed control emerged:

- IPM strategies are important for optimum weed control – these include stale seedbeds, knowledge of the predominant weeds in the field and selecting the correct herbicide for each individual situation
- Pre-emergence application of autumn herbicides generally give better

control of weeds, especially difficult grass weeds such as sterile brome.

- It is possible to achieve good control of weeds post-emergence, but timing and product choice are critical.
- Leaving weed control until the spring is the least favourable option, as control can often be less than ideal and the herbicides can be tougher on the crop.

The results of the weed screen trial are available to view on the Teagasc Crops YouTube channel.

**Table 1: 2021 winter cereal herbicides.**

Name	Active ingredients	Rate/Ha	Latest timing	Comments
Avadex Factor <b>Wheat &amp; Barley</b>	Tri-allate 450g/l	3.6l	Pre-em	Can reduce blackgrass population. Apply pre-em in combination with Flufenacet (+DFF) +/- PDM. Will need post-em follow up. Do not apply to shallow drilled wheat in the autumn. Does not need incorporation.
Alister Flex <b>Wheat only</b>	Diflufenican 120g/l Mesosulfuron-methyl 9.0g/l Iodosulfuron-methyl-sodium 7.5g/l	0.8-1.0l	GS 29	Cleaver control up to 4 whorls, good on fumitory, poppy and vol. osr. Good contact effect on grass weeds. Limited residual effect. Use early post-emergence.
Firebird Navigate <b>Wheat and barley</b>	Flufenacet 400g/l Diflufenican 200g/l	0.3l WB 0.3l WW	GS 24 GS 24	Good residual control of BLW & grass weeds esp. AMG. Use pre-emerge for best effect. Max single dose 0.3L/ha
Griffen <b>Wheat &amp; barley</b>	Flufenacet 400g/l Diflufenican 200g/l	0.3l WB 0.6l WW	Dec 31	Good residual control of BLW and grass weeds esp. AMG. Use pre-emerge for best effect. Max single dose 0.3L/ha WB & 0.6L/ha WW
Reliance Naceto <b>Wheat &amp; barley</b>	Flufenacet 400g/l Diflufenican 200g/l	0.6 L WB 0.6 L WW	GS 21 GS 13	Good residual control of BLW and grass weeds esp. AMG. Use pre-emerge for best effect. Max single dose 0.6L/ha
Firebird Met <b>Wheat &amp; barley</b>	Flufenacet 240g/l + Diflufenican 90g/l + 70g/L Metribuzin	1.0l WW 0.5l WB		Broad spectrum weed control. Can be used pre-em up to end of Nov, but best effect from earlier applications.
Monolith <b>Wheat only</b>	Mesosulfuron 45g/kg Propoxycarbazone 67.5grms	0.33kg/ha	GS 33	Mainly for sterile brome and black grass, but also control wild oats, AMG RSMG.
Defy Roxy 800EC Quidam/Crozier <b>Wheat &amp; barley</b>	Prosulfocarb 800g/l	2.0l	GS 21	Very good option for high AMG situation. Add DFF 0.1l/ha for additional BLW control. Use pre- or early post-emergence. Avoid use at peri emergence on winter barley.
Diflanil 500 Hurricane/ Stride Semptra/ Solo Farmco Dazzle <b>Wheat, barley, oats</b>	Diflufenican 500g/l	0.25l	GS 29	BLW only. No grass-weed control. Poor on fumitory and poppy.
Purelo <b>Wheat &amp; barley</b>	Prosulfocarb 667g/l Diflufenican 14g/l	4.0l	GS 13	Mix of Defy and DFF can be used both pre- and post-emergence.
Pendifen Stomp Aqua Fastnet Most Micro <b>Wheat &amp; barley</b>	Pendimethalin 400g/l Pendimethalin 455 g/l Pendimethalin 365g/l Pendimethalin 365g/l	3.3l 2.9l 3.6l	GS 30	Broad spectrum. Good on cleavers, poppy and fumitory, weak on groundsel. Use pre-emerge for best AGM control.
Adept <b>Wheat &amp; barley</b>	Pendimethalin 313g/l Diflufenican 15.6g/l	4.2l/ha	GS 30	For AMG suggested pre-emerge use 4.0 plus 0.15L/ha DFF. For post emerge use 3.25L/ha plus Defy 2.0L/ha.
Tower <b>Wheat &amp; barley</b>	Chlorotoluron 250g/l Diflufenican 40g/l Pendimethalin 300g/l	2.0l	GS 30	Amg control plus BLW incl. Fumitory, cleavers, poppy, speedwell. Can be applied pre- or post-emergence. Buffer zone 9m.
Fence/ Tacit <b>Wheat &amp; barley</b>	Flufenacet 480g/l	0.5l	GS 13	Good grass weed control when used early. Tank mix partner for DFF and PDM mixes.
Tribe <b>Wheat, barley, oats</b>	750g/kg Tribenuron	10g+	GS 33	Good mixer for BLW control. Will control vol. osr and beans at 10g/ha.
Cameo Max <b>Wheat, barley, oats</b>	Tribenuron-methyl 250g/kg Thifensulfuron methyl 250g/kg	Max dose 60g/ha	GS 39	BLW control. Useful for tidy up. Needs growth for best results.
Zypar <b>Wheat &amp; barley</b>	Halaxifen-methyl 6.25g/l Florasulm 6g/l	0.75l	GS 45	Useful tidy for difficult weeds incl. cleavers, fumitory, poppy, vol. osr, beans, wild carrot.

# Forests: helping us to re-connect with nature

Now more than ever, individuals and society are questioning “the meaning of life” and seeking answers. A new native woodland in Roscommon offers a re-connection with nature

**Noel Kennedy**  
Teagasc Forestry  
Development Officer

In the gently rolling limestone fields of south Roscommon, Hillside Holistic Farm offers a helping hand to people looking for answers and guidance towards wellbeing and fulfilment. Since 2004, the farm has been run by Sean and Helen Butler as an organic beef farm and holistic centre, with wellbeing and empowerment at the heart of everything they do.

Describing himself as an energy healer and organic farmer with a mission “to help people to find peace with themselves”, Sean is the fifth generation of the Butler family to work the land. Helen is not from a farming background and Sean says she “brings a different type of thinking.”

Concerned by increasing animal health issues and dependence on medicines in conventional farming,

the Butlers looked for a different, more natural approach, and in 2002, they began a two year conversion to an organic system that aimed to “create a less stressful environment for the animals and produce healthier meat.”

Unexpectedly, the move to organics also brought health and lifestyle benefits for Sean and Helen. Wanting to share these positive health and lifestyle benefits with others, they developed their interest in alternative therapies.

Today, Hillside Holistic Farm is a working organic farm and a recognised hub for holistic healing, youth and project mentoring and social farming. With a dedicated therapy room that can be used by groups and therapists, the farm itself provides a calming backdrop and unique opportunity to re-connect with nature.

## Native woodland

Sean has long harboured a desire to plant a broadleaf forest to complement the farm environment and offer



Noel Kennedy and Sean Butler.

additional therapeutic benefits. I had met him several years ago to look into this in more detail.

In Sean’s mind, planting trees “would allow him to work with the land and not against it.”

In addition to the many positives for biodiversity and water quality, Sean and Helen also noted the growing evidence showing the wider wellbeing benefits of spending time with trees.

In 2019, the Butlers decided to dedicate 11ha, approximately one-third of the farm, to planting a new native woodland that reflected, in their eyes, a natural, positive and practical change.

To accommodate the new trees, they made the difficult decision to get out of sheep and concentrate on the suckler herd.

Liaising with a registered forester from Western Forestry Co-Op, a Native Woodland Establishment (NWS) grant application was submitted in autumn 2019.

Following a lengthy process of operational and environmental assessment and public consultation, a

Grass around young trees is walked down to help them compete. Cutting the grass would encourage it to tiller and grow faster.





grant approval was issued by DAFM in early 2021, with planting completed in March – an ideal time for tree planting – and appropriately during National Tree Week!

NWS supports the planting of native trees, with the selection of species guided by soil type and vegetation indicator species. Pre-planting preparation follows close-to-nature principles, resulting in minimal soil and environmental disturbance.

The Butlers' new native woodland has three main species – Pedunculate oak, Downy birch and Hazel – all supporting a rich biodiversity as they grow. Other species include Wild cherry, Hawthorn, Holly and Scots pine – an iconic native conifer.

The woodland was planted, and will be maintained, by the Western Forestry Co-Op until the trees are established, normally after four to five years, in return for the Afforestation Grant.

The annual forestry premium will yield €7,500 for 15 years, which will, according to Sean, more than compensate for the loss of sheep income,

factoring in the income tax exemption available for the forestry premiums.

The young trees have gotten off to a good start with healthy new growth – but so too has the grass. Sean has been working with his forestry company to carry out 'grass cleaning' which ensures the grass does not hold back the trees.

All grass control is manual and no herbicides will be used to establish the trees, which, for the Butlers, is a really positive feature of the native woodland scheme.

### Forest bathing

Already an integral part of the farm, the Butlers see many opportunities for the new woodland in the years ahead, not least the therapeutic potential for energy healing and facilitating social farming initiatives with vulnerable groups.

Of particular interest is the Japanese concept of Shinrin-yoku or 'forest bathing' which allows people to take time out, slow down and connect with nature.

The Japanese have long recognised the benefits of interacting with trees, with research now supporting the claims of physiological and psychological benefits.

Hillside Holistic Farm also facilitates social farming, which Sean says "has given us the opportunity to share the benefits of farm life with others."

He is excited that the growing woodland will add to the social farming experience, providing opportunities to work or just get a feel for the outdoors, bringing a positive impact on mental health and wellbeing.

### The future

As we slowly – and with some trepidation – recover from the impacts of the pandemic, the unique skills, services and facilities offered by Hillside Holistic Farm may be sought after like never before – and the native woodland will play its part in the years, decades and centuries ahead.

As they grow older, the oak, birch, hazel, cherry and other assorted native trees will provide new homes for many flowers, insects and animals, bring a riot of autumnal colour, store away carbon in the timber, while giving shade and shelter to stock grazing in neighbouring fields.

But maybe their greatest contribution will be fostering the human connection with the natural world for those who choose to "bathe" in the forest and experience peace, tranquility and self-fulfilment.

Trees truly are amazing.

More information on Hillside Holistic Farm is available at <https://hillsideholisticfarm.ie/> and the Native Woodland Establishment at <https://www.teagasc.ie/crops/forestry/grants/establishment-grants/native-woodland-establishment/>

### Thinking of planting?

There are so many good reasons to plant forestry. As well as Native Woodlands, there is now support available to plant other types of forestry, including commercial conifers, agro-forestry and forests for fuelwood. DAFM's Afforestation Grant and Premium scheme supports planting through afforestation grants and annual premium support.

Annual premiums are paid for 15 years and typically range €510 to €680/ha. For more information on planting, talk to your local Teagasc forestry adviser or see <https://www.teagasc.ie/crops/forestry/grants/establishment-grants/>

New forests may also be eligible for Basic Payment.

# Creating an amenity hedge near a rural house

**Paddy Smith**

Teagasc College, National Botanic Gardens



**A**s the bareroot season approaches, hedgerow planting, aka boundary hedging around one's dwelling, must be carefully planned and executed with good aftercare.

Common pitfalls begin with cost, whether outsourcing the operation to a landscape contractor or, if it's a DIY job, "cheaper is not always better." The same goes when sourcing planting material – you will always have to pay for quality.

Plants need plenty of room. Consider the following:

- How do I cut and maintain the back of this hedge along the boundary fence once established?
- What grazing animals will be present in the adjoining lands and is the hedge poisonous to them?

Domestic hedgerows should be planted 1-1.5m away from a boundary line. Planting too deep (soil above the nursery mark) and using planting material that is not suited to the site's location or soil type and condition are common mistakes.

## What is the best planting method?

This depends on the quantity to be planted, topography of the site, time and labour availability, soil conditions and existing ground vegetation.

Most rural dwellings are sited on anywhere from 0.5-1.0ac of garden. Traditionally, the skill of planting was mainly undertaken by hand and spade, using the notch technique.

A manual auger can be damaging to both your wrist and the soil where larger stones are encountered. Soil smearing can occur when augers are used in undesirable conditions, which can also result in a reduction of backfill material.

Small, low compaction mini-diggers aided with sheets of plywood for traversing lawns, can be employed to dig a trench. This allows rotten farmyard manure (FYM) to be placed in the base of the trench to aid the plants.

This speeds up the planting operation, but nearly always leaves clumpy soil as backfill, which can be onerous to shovel back in.

Two machines that are often over-



A trencher positioned 1.2m away from boundary fencing planting 3 Lt potted prunus with a wind-breaker attached to the boundary fence.



Two-wheel tractor and rotary plough in action.



looked are a trencher or a combination of a two wheel tractor and rotary plough.

A tracked trencher ticks nearly all the boxes in relation to speed, maneuverability, low soil compaction and capability to create a desirable backfill material (soil tilth).

Trenchers can create a wide and deep enough trench to facilitate the incorporation of FYM and potted hedging.

The rotary plough is slower and can suffer from loss of traction on softer ground conditions, while creating

less suitable backfill material.

They often fail in expelling all the tilled soil from the excavated trench, which then requires shovelling, but I would have it any day over a mini-digger, spade or auger for this task.

Windrock is the rocking of stem of the tree, especially evident in taller, bare rooted hedging by the wind, which causes the loosening of the roots. This can be combated in two ways – with the installation of a wind breaker in the form of netting and the installation of a support structure/fence.



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