



Today's Farm

Business, production, environment and countryside issues www.teagasc.ie



Grow more, graze more, earn more...half a billion! 13

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COMMENT



Mark Moore
Editor,
Today's Farm

Grow more, graze more, earn more

Unlike cereals or potato crops, which will die stone dead in a matter of hours if the right (or rather wrong!) disease or pest appears, grass is hardy and resilient. Even where soil fertility is less than ideal, grass will grow. The downside is that the grass crop's potential is often unmet.

Nationally, we could easily double our production and utilisation of grass dry matter through greater use of fertiliser, paddock management, reseeding and more frequent grazing. Ten grazings per year per paddock is the goal...how often do your animals graze your paddocks?

Bí Ag Fás Tuilleadh Bí Ag Innill Tuilleadh Bí Ag Tuilleamh Tuilleadh Airgid

Murab ionann agus gránbhairr nó prátaí a gheobhaidh bás go tapa má thagann an galar nó an phéist cheart (nó mhícheart fiú) ar an láthair, tá an féar crua agus athléimneach. Fiú nuair nach bhfuil torthúlacht na hithreach go rómhaith, fásfaidh an féar. Is é an ghné dhiúltach de ná gur minic nach mbaintear amach acmhainneacht an bhairr féir. Go náisiúnta, d'fhéadfaimis an táirgeadh agus an úsáid ábhar tirim féir a dhúbailt go héasca trí úsáid níos mó a bhaint as leasacháin, bainistíocht banrach, athshíolú agus innilt níos minice. Deich n-innill in aghaidh na bliana an sprioc...cá mhinice a bhíonn do chuid ainmhithe ag innilt na mbanrach atá agat?



BEEF

Take the Tullamore bypass and watch the cattle thrive

>> 26-27

Conor McGrath has a 23ac outfarm on the busy N52 Tullamore bypass.

Today's farm is a bi-monthly publication produced in a joint venture between Teagasc and the Agricultural Trust, publishers of the *Irish Farmers Journal* and *The Irish Field*.

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Cover | Teagasc dairy specialist Emma-Louise Coffey, farmer Noel Hurley and Teagasc advisor Sean Cooney agree that grass is the most valuable feed for freshly calved cows in February.

EU PiG: Europe-wide network to improve the pig industry

Ciarán Carroll
Head of Teagasc Pig Development Unit
Moorepark

EU PiG is a Europe-wide network developed to improve the pig industry and is made up of a consortium of 19 organisations from across 13 member states in Europe. It is a four-year, €2m project funded by the European Commission's research and innovation programme, Horizon 2020.



The network coordinates, collaborates and shares findings from existing pre-farmgate research, shares best practice on technical production and exchange approaches to knowledge transfer with pig producers and associated advisors.

The consortium represents 13 member states, which together account for 92% of the EU's pigmeat production and 89% of the EU's pig herd in 2014. The EU PiG consortium has links to, national and regional pig producer groups, researchers, rural development boards and innovation practitioners, including a number of small- and medium-sized enterprises (SMEs).

The project is focused on four main areas, with two "challenges" per area to be addressed in each of the four years. The challenges in the first year of the project (2017) were:

- **Health management:** biosecurity and the use of antimicrobials.
- **Precision production:** feed efficiency and water efficiency.
- **Animal welfare:** tail docking and castration.
- **Meat quality:** reduction of boar taint and organisational innovations in the supply chain.

A key part of the project is run as a competition with a "Grand Prix" designed to identify industry best practice for each area listed above with eight winners or "ambassadors" selected and their best practices shared via the project website www.eupig.eu, social media (@EU_PiG https://twitter.com/EU_PiG) and via local advisory teams.

Appropriate tools (factsheets, videos, etc) and practical guidance



The ultimate aim is for improvements in biosecurity to translate into better pig health and performance, along with lower costs.

around innovative best practice, combined with scientific knowledge of the industry, will be made available.

Teagasc pig development department research and advisory staff represent Ireland in the consortium. For 2017, in total, 248 best practices were submitted with 26 of these coming from Ireland under the following categories:

- Biosecurity: four.
- Antimicrobials: five.
- Innovation in the supply chain: four.
- Tail docking: six.
- Feed efficiency: three.
- Water efficiency: four.

All submissions were evaluated by a network of industry experts (including pig producer organisations, veterinarians and academia) with experience across the themes and topic areas, using their knowledge and information on current state-of-the-art practices to validate the best practices submitted.

The evaluation determined the eight winning ambassadors across each of the topics and these were announced in November. We were delighted to hear Irish pig producer Eugene Sheehan was awarded EU PiG Best Practice Grand Prix ambassador in the biosecurity category within the health management theme for his im-

plementation of the innovative biosecurity scoring tool (BiocheckUGent). The ultimate aim is for improvements in biosecurity to translate into better pig health and performance, along with lower costs. Eugene was considering some changes at that time, so the advice he received during the discussions guided these changes.

EU PiG Grand Prix 2018

The industry challenges and topics for the 2018 Grand Prix have been chosen:

Health management

- Managing without zinc oxide.
- Optimal vaccination strategies.

Meat quality

- Reducing variation before slaughter.
- Producing testier pork.

Welfare

- Loose farrowing systems.
- Innovative enrichment materials.

Precision production

- Increase sow performance.
- Reduce emissions.

If you have a best practice to submit or would like more information on the project, please contact your local specialist pig development officer (details on www.teagasc.ie/pigs)



Helen Brophy (SBS) with recent graduates Nicholas Kelly, Donal McElroy, Sean Coughlane, Pat Ryan, Trevor Hales, Martin Heaney, Jamie Costin, Owen Brodie, Willie Kehoe, Nicholas Cooney, Aiden Cunningham, Donnacha Tobin, Tony O'Regan, TJ Twomey, John Dunne, Ger Reidy, Pdraig Keane, Noel O'Keefe, Adrian Ryan, Paddy Whyte, TJ Meegan, Garry McCarthy, John McElroy, Mark Moore (Teagasc), Kieran Phelan. Seated: Edward Kenny, Frank Clare, Vanessa Kiely O'Connor, Prof Gerry Boyle (Teagasc), Imelda Kinsella, Emer Howard, John Holton, Joe Leonard, Prof Pat Gibbons (SBS).

Teagasc/Smurfit Business School course in farm strategy

The highly successful Teagasc/Smurfit Business School course in farm strategy has been run five times with a total of more than 100 farmer graduates. The course will run again in autumn 2018 but places are limited to 25. To register your interest, contact Mark Moore at mark.moore@teagasc.ie or phone 087-417 9131.



Urine and dung patches are easily noticeable on the left field.

Monitoring of Grass Changes using Drone Imagery

This image shows urine and dung patch detection from grazing dairy cows on Johnstown Castle farm collected using an Unmanned Aerial Vehicle (UAV) from 35m height. Urine and dung patches are easily noticeable on the left field. The image was captured as part of a project (funded by DAFM and led by Juliette Maire) investigating approaches to scaling reactive nitrogen mitigation in grasslands systems.

Organic beef production

Cattle production is the most important enterprise in the Irish organic sector with over 70% of organic farmers involved.

Teagasc advisors Dan Clavin and Elaine Leavy have recently published the second edition of the Teagasc Guidelines for Successful Organic Beef Production booklet. Whether you are an existing organic farmer or a conventional farmer taking a serious look at converting this booklet contains relevant information for you.

This edition contains timely updates on industry and technical information with updates on forage production and animal nutrition. A range of Teagasc and external experts contributed.

To get a copy contact Dan Clavin at Dan.Clavin@Teagasc.ie or phone 091 845285.





The Calfcare events will focus on saving labour during the calving season.

CALFCARE EVENTS

Each of the events, taking place at locations across the country, will focus on four topics:

- Johne's control in the young calf.
- Disinfection of calf housing and equipment.
- An update on calf housing specifications.
- Saving labour during the calving season.

Dates and locations for Calfcare events

Tipperary	19 Jan	Tom and Patricia Moran, Ballygriffin, Golden, Co Tipperary
Arrabawn	23 Jan	Aidan and Kathleen Treacy, Lisnacody, Eyrecourt, Ballinasloe, Co Galway
Kerry	24 Jan	James and Michael Hickey, Inch St, Laurence, Caherconlish, Co Limerick
Aurivo	25 Jan	David Henry, Roscrib House, Ballymote, Co Sligo



Options
think · plan · act

Improve your Farm Income
With Teagasc Options for Farm Families Workshops

A Teagasc Options workshop will:

- Provide you with new thinking
- Generate new ideas
- Generate additional income on and off farm

The specific aims of this course are:

- Give individuals a good understanding of how to turn an idea into a viable business.
- Help provide a mentor individuals on their idea and help in the completion of a business plan.
- Introduce individuals to other agencies/parties who may be able to offer tangible assistance for their specific project.

Some of the topics covered will be:

- Assessing your enterprise
- Developing your idea
- Food enterprise possibilities
- Energy crops
- Forestry
- Renewables
- Organic opportunities
- Rural Tourism
- Marketing and direct selling
- A business plan - the basics
- Applying for grant aid
- Family farm finance
- Business supports
- Succession

Network with local agencies such as:

- Local Enterprise Offices
- Local Development Companies
- Education and Training Boards



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www.teagasc.ie/ruraldev

ORGANIC DEMONSTRATION FARM WALK, DAIRYING, OFFALY

- 7 February 2018.
- Event time: 12pm.
- Venue: Grennan's Organic Farm, Clara, Co Offaly. Eircode: R35 CK20

OPTIONS WORKSHOPS

Options workshops

Date	Location
Wed, Jan 24th 2018	Teagasc, Ballymote, Co. Sligo Paul Rigney (071) 9189406
Thur, Jan 25th 2018	Teagasc, Enniscorthy, Co. Wexford Margaret Cullinan (059) 9183522
Thur, Jan 25th 2018	The Westlodge Hotel, Bantry, Seamus Lordan (026) 43517, Co. Cork Aine Galvin (026) 43512
Wed, Jan 31st 2018	Teagasc, Clonminch, Tullamore, Bernard Doorley, Co. Offaly (057) 9329439
Wed, Jan 31st 2018	Teagasc, Castlemeadows Sean Cooney, Thurles, Co. Tipperary 087 9159927
Wed, Jan 31st 2018	Teagasc, Longford Francis Bligh, Co. Longford (043) 3328519
Wed, Feb 7th 2018	Teagasc, Kells Road, Donal Mc Cabe, Navan Co. Meath (046) 9068139

NATIONAL TILLAGE CONFERENCE

- 31 January 2018.
- Registration 9.30am, 10am start.
- Venue the Lyrath Hotel, Kilkenny.
- Conference fee €35 for Teagasc clients, €55 for non-clients and €20 for lunch
- Conference will be opened by Minister for Agriculture, Food and the Marine Michael Creed.

Building a more resilient tillage industry

Building a more resilient tillage industry is the theme of the upcoming Teagasc National Tillage Conference being held in the Lyrath Hotel, Kilkenny, on Wednesday 31st January. Against a background of good yields but challenging markets, a range of topics will be presented such as:

- New markets for crops and the use of Irish cereals in food and snackbars
- The need for more resilient production methods to cope with challenging disease and pest issues
- Research update on aphid insecticide resistance and improving Irish cereal varieties
- Soil compaction, disease forecasting and six-row winter barley management
- Targeted and precise crop nutrition

This year an innovative SMART, online, audience participation facility will allow those attending to drive the afternoon panel discussion. The panel will address the results of a survey, dealing with key industry challenges, carried out during the conference.

TEAGASC WINTER CROP WALKS

February Teagasc crop walks

Date	Location	Time
Tues 13 February	Teagasc, Oak Park, Carlow	2pm
Wed 14 February	DAFM farm, Ballyderown, Fermoy, Co Cork	11am
Thurs 15 February	Wexford	11am
Fri 16 February	Teagasc, Kildalton, Piltown, Co Kilkenny	11am

Upcoming Teagasc tillage seminars

Date	Location
Mon 22 January	Arklow Bay Hotel, Wicklow
Mon 22 January	Teagasc office, Clonmel, Co Tipperary
Tues 23 January	Teagasc office, Navan, Co Meath
Wed 24 January	Munster Arms Hotel, Bandon, Co Cork
Thurs 25 January	Mount Wolseley Hotel, Tullow, Co Carlow
Thurs 25 January	Teagasc office, Dungarvan, Co Waterford
Thurs 1 February	Ballyroe Heights Hotel, Tralee, Co Kerry
Mon 5 February	Teagasc office, Drogheda, Co Louth
Mon 5 February	Teagasc office, Nenagh, Co Tipperary
Tues 6 February	Kettles Hotel, Swords, Co Dublin
Tues 6 February	Teagasc office, Athenry, Co Galway
Wed 7 February	Teagasc office, Kilkenny
Wed 7 February	Teagasc office, Portlaoise, Co Laois
Tues 13 February	Tullamore Court Hotel, Tullamore, Co Offaly
Wed 28 February	Radisson Blu Hotel, Letterkenny, Co Donegal

All seminars start at 8pm | IASIS credits available

TEAGASC SPRING TILLAGE SEMINARS

Topics covered at the Teagasc spring tillage seminars will include:

- Crop planning and margins for 2018.
- Spring cereal varieties and sowing rates.
- Crop nutrition to achieve savings.
- Pest management in the light of resistance.



As PastureBase Ireland and AgriNet Grass are joining forces, we are delighted to invite you to an information meeting at Teagasc locations nationwide.

These meetings will cover the new PastureBase Ireland grassland programme and answer any queries you may have on the merger.

Date	Location	Time	Contact
Fri 19 Jan	Teagasc, Kilkenny	11am	056-7721153
Tues 23 Jan	Teagasc, Tullamore	11am	057-9321405
Wed 24 Jan	Teagasc, Clonakilty	11am	023-8863130
Thur 25 Jan	Teagasc, Athenry	11am	091-845200
Fri 26 Jan	Teagasc, Ballinrobe	11am	094-2541125

Meetings will take place from 11am to 1pm or 2.30pm to 4.30pm

Contact local Teagasc office to book your place.
www.teagasc.ie @PastureBase



Teagasc
AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

National Sheep Conferences 2018

Tuesday, 30th January, 2018
 Lough Rea Hotel, Co. Galway

Thursday, 1st February, 2018
 Nuremore Hotel, Carrickmacross, Co. Monaghan

National Hill Sheep Conference 2018

Wednesday, 21st February, 2018
 Knockranny House Hotel, Westport, Co. Mayo
www.teagasc.ie/sheep

grass focus

Two programmes become one for the benefit of the grassland industry

The merger of AgriNet and PastureBase Ireland will bring benefits for all. In this Q and A some potential queries from AgriNet members are addressed by **Micheal O'Leary**, PastureBase Ireland, Teagasc Animal and Grassland Research & Innovation Programme

I am an AgriNet Grass user. What do I need to do to join PBI and what are my log-in details?

You should have received a letter from AgriNet Grass and Teagasc outlining the merging of the two programmes. On the second page, there is some information that we need in order to transfer your information to PBI. This section needs to be filled out and sent back using the pre-paid envelop attached as soon as possible. Once we receive your details, the PBI help centre will make contact with you and explain the transfer process. When transferred, you will be given log in details to PBI.

I have been using AgriNet Grass for four years. Are all my historical records gone?

Of course not. This data is very valuable to you. Every record that you have entered into AgriNet Grass will be transferred to PBI. However, it is important to note that the calculations used to generate the annual tonnage report are slightly different. If you have questions about your data we are more than happy to help.

In AgriNet Grass, I am part of a discussion group where I can see other farmer's details; will I be connected to these farmers in PBI?

This option of creating a link with other farmers will be available in PBI from mid-January. When you join PBI you will have to recreate these links with the farmers you want to share data with. If you want to share data with another farmer you will have to enter their email address or contact number in order to send an invitation. All research and demo farms will be available to all farmers.

Q&A

I like using AgriNet Grass and have found it very useful. What are the advantages of using PBI?

By using PBI we are building the world's first National Grassland Database. From this information researchers in Teagasc will be able to see the level of grass production in any part of Ireland at any time. There is a lot of valuable data in the AgriNet Grass database that is not being analysed effectively from a national or industry point of view that can now be analysed. The centralisation of bovine data in ICBF over the past 20 years has created significant gains for farmers. Centralisation of grass data in PBI will help create similar gains in terms of breeding and evaluation of new grass varieties and the management of grassland.

Is there an app for PBI?

Currently, there is no app available for PBI, but you can open PBI on the browser on your smartphone and all functions are available to you. So if you can make a call on your phone you can use PBI.

Will there be a charge for PBI?

The use of PBI is covered in your annual Teagasc subscription.

Who do I contact if I want more information?

Please contact the PBI help centre by email – support@pbi.ie or by telephone – 046 – 9200365. The help centre is open from 9am to 9pm, Monday to Friday, or contact your local Teagasc office. We are also running information sessions across the country in January where will be advertised in local press.



2017: a good

This year, dairy farms grew 650kg more grass compared to 2016 (14,355 v 13,703kg DM/ha). On the one side, the average grass production was good but it was not without its challenges. Weather conditions in August and September became very difficult, especially on the western seaboard, but in the east of the country drought was not an issue and this led to steady growth throughout the summer and autumn.

Spring growth (1 January to 10 April) was up 30% in 2017 when compared with the same period in 2016. This was largely driven by the mild winter and favourable growing condi-



year for grass growth on dairy farms

tions, especially in March.

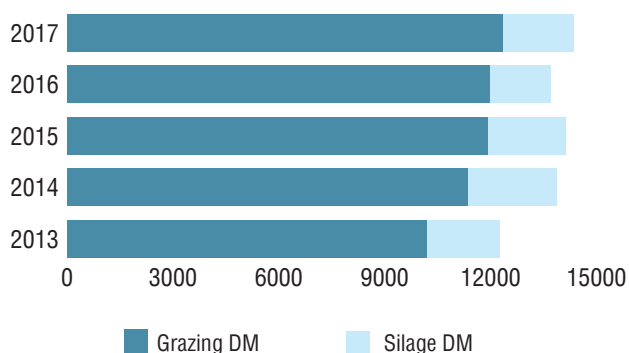
Taking a look at the main grazing season (11 April to 10 August) growth in 2017 was 10% greater than 2016.

Autumn grass production (11 August to 31 December) in 2017 is down 12%, but we cannot forget the excellent autumn we had in 2016.

In 2017, there was an increase in the number of grazings. It is well known that the number of grazings achieved per paddock is a major driver of grass production; every extra grazing is worth 1,385kg DM/ha. In 2016, dairy farms achieved 7.2 grazings per paddock while in 2017 this increased to 7.8 grazings.

Figure 1

The annual dry matter production on PBI dairy farms from 2013 to 2017 in kg DM/ha



This analysis was extracted from PBI dairy farms which recorded 30 measurements on PBI in 2016 and 2017. Also please note that the pool of farmers in 2017 is bigger than 2016 (+35 farms).

Big cash gains from spring grass

Emma-Louise Coffey

Dairy Specialist, Teagasc Animal and Grassland Research & Innovation Programme

The benefits of spring grass in the dairy cow diet include: improved animal performance, lower feed costs and reduced workload all of which add up to extra profit of €2.70/cow per day.

The spring grazing season starts in the previous autumn, early October to be precise, when paddocks are closed for the winter to ensure there is adequate grass on farms for the following spring. This is certainly the case for dairy farmer, Noel Hurley, who farms in Kildorrery, Co Cork.

"I place a huge emphasis on spring grass," says Noel. "It's certainly the most valuable feed for freshly calved cows in February." Noel is set to calve more than 150 cows this spring, with over 70% (100 cows) calving in the first three weeks. With a stocking rate of 3.3 cows/ha on his milking platform, there is a high feed demand from the onset of calving.

With that in mind, Noel closed his farm in mid-November with a farm cover of 700kg DM/ha. On 29 December, farm cover was 842kg DM/ha. Noel says: "If the grass continues to grow at 4kg to 5kg DM/day, I expect to open with a cover in excess of 1,000kg DM/ha." Noel will use the Spring Rotation Planner to budget this grass during the first two months of the grazing season.

Approximately 25% of Noel's farm is classified as heavy so spring and autumn can prove difficult grazing periods on the farm. Despite this, cows get out to grass in early February. When conditions are poor, Noel adopts on-off grazing and back fencing to minimise poaching damage.

"I aim to get cows out full-time in February. I have seen benefits in terms of milk quality and cow condition in early lactation," says Noel. "When I look back at co-op figures for the month of February, the advantage

of grazed grass in the diet is clear."

February co-op reports from 2015-2017 are presented in Table 1. Fat has increased by 0.18% (4.50% in 2015 to 4.68% in 2017) and protein has increased by 0.09% (3.40% in 2015 to 3.49 in 2017), while SCC has declined (278 in 2015 to 201 in 2017) over the last three lactations.

On Noel's farm, on-off grazing is considered an effective strategy to get cows out to grass during the spring on heavier soils and during periods of inclement weather.

Emer Kennedy carried out a comprehensive investigation of the effects of on-off grazing on production, feed intake and grazing behaviour over a 31-day period in early lactation at Teagasc Moorepark.

In short, cows were assigned to one of four treatments:

- Grazed full-time (22h).
- 4.5 hours access to grass after each milking (2x4.5h).
- Three hours' access to grass after each milking (2x3h).
- Three hours' access to grass after each milking plus 4kg silage by night (2x3h + S).

Feed allowance and grass intakes are presented in Table 2. Cows are able to graze as much during 2x4.5h or 2x3h as with full-time grazing (22h). This was evident from the similar levels of grass utilisation (grass intake ÷ grass allowance) in the 22h, 2x4.5h and 2x3h treatments.

Where grass supply is sufficient on farm, like in this experiment, there is no justification for feeding silage to cows when they return indoors. In this experiment, the inclusion of silage in the diet (2x3h + S) had a negative effect on grass utilisation, reducing utilisation by 20% compared with the other treatments.

Silage is a bulky fibrous feed that results in high degree of rumen fill, depressing the cow's appetite during grazing. Furthermore, silage is an inferior feed compared with spring grass and therefore, its inclusion reduces the overall quality of the diet.

If we consider the feed costs for the





Teagasc advisor Sean Cooney and Noel Hurley discuss fertiliser planning.

Table 1: February co-op milk fat %, protein % and SCC from 2015 to 2017

	2015	2016	2017
Fat %	4.50	4.47	4.68
Protein %	3.40	3.47	3.49
SCC (,000)	278	266	201

Table 2: Feed allowance and grass intake over a 31-day period in early lactation

	22 h	2x4.5h	2x3h	2x3h + S
Feed allowance (kg DM/cow per day)				
Grass	14.6	14.0	14.6	14.5
Concentrate	3	3	3	3
Silage	0	0	0	4
Grass intake	11.8	11.7	12.2	9.6
Grass utilisation (%)	81	84	84	66
Feed costs (€)	1.77	1.73	1.77	2.37


Continued on page 12

The breeding season for 2018 starts now...



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» From page 11

four treatments (valuing grass at 7c/kg DM, silage at 15c/kg DM and concentrate at 25c/kg DM), the inclusion of silage in the 2x3h + S treatment increased the cost of the diet by 61c/cow per day (+35%) compared with the grass and concentrate diets.

Despite the 2x3h + S cows having a higher feed allowance, no additional milk production was achieved. There was no difference in daily milk yield (28.3 kg) or milk fat (4.17%) across the four treatments, while protein % was greater for cows that grazed full-time (22h; 3.37%) compared with the cows that had silage in the diet (2x3h + S; 3.22%).

Spring

According to Noel, "spreading fertiliser in January has been the driver of spring grass growth. I have seen a huge response to nitrogen in the early months of the year." Critically, Noel already has the fertiliser in the yard, ready for the spring. Early fertiliser application helps to kick off growth in the spring once soil temperature hits 6c.

Slurry at a rate of 2,500 gallons/acre, should be targeted at 30% of the farm with the lightest covers. Twenty-three units of urea should be applied to the remainder of the farm. Urea is the cheapest source of nitrogen available and typical spring weather (damp and overcast) presents ideal conditions for application.

Slurry can be spread on the first paddocks grazed, allowing sufficient time for nutrient uptake before the beginning of the second rotation. A further 40 units of urea should be spread in early March.

Spring Rotation Planner

Noel uses the Spring Rotation Planner to track the area of the farm grazed at various time points during the spring. "The Spring Rotation Planner sets out the area of the farm to graze weekly. From this, I can identify the feed deficit and I can supplement," he says.

Spring rotation grazing targets include:

- **1 March:** 30% grazed.
- **17 March:** 66% grazed.
- **5 April:** start second rotation.

It isn't easy for Noel to comply with the targets due to the high feed demands of his compact calving herd: "We can get tight on grass at the end of March on this farm. I supplement cows with up to 6kg concentrate to get through this period and I have a reserve of high-quality bales that I can use at this time." It is important to hit 30% of farm area grazed target by



Emma Louise Coffey and Noel Hurley study his Spring Rotation Planner.

1 March to allow paddocks adequate time to regrow for the start of the second rotation in early April.

Let's take a step back and look at Noel's grass story. Noel began grass measuring in early 2016 and consequently achieved a more intensive level of grassland management on his farm. "At that time, I became actively involved in two grass discussion groups, one of which was a Teagasc grazing coaches group, and gained the confidence to make decisions around the grass wedge."

In the last two years, the farm has grown in excess of 14 tonnes of grass DM/ha. According to Noel, "the farm is capable of growing more grass. Soil fertility is currently below optimum. I am spreading lime, P and K to correct this, but it's a continuing effort."

Through knowing the amount of grass the farm is capable of growing, and improving grassland management and soil fertility, Noel has been able to increase cow numbers from 114 in 2015 to 145 in 2017 while maintaining high milk output (455kg MS/cow, 1,500kg MS/ha) from the same annual concentrate (1t/cow).

More significantly, Noel has produced an additional 250 surplus bales as well as closing 15% of the milking platform for first-cut silage. The story doesn't stop there. "I'm sure we can do even better," concludes Noel.

- If you would like to meet Noel there is a Grass 10 Event (a spring grass walk at his farm on Wednesday 24 January at 11am.

Grow more, graze more, earn more

Increasing the level of grass eaten/ha by 1t DM on Irish farms would benefit livestock farmers by over €500m. Therefore, pursuing a more comprehensive and focused campaign on improving the level of grass grown and utilised at farm level would have a substantial economic impact. That is Grass10!

John Maher
Teagasc Animal and Grassland
Research & Innovation Programme
Moorepark



Grazed grass is the cheapest and most widespread feed available for animal production systems in Ireland. Grass enables low-cost animal production and promotes a sustainable, green and high-quality image of milk and meat production across the world.

Recent industry reports (FoodHarvest 2020 and FoodWise 2025) have highlighted the important role grass can play in an expanding milk and meat production industry. Through a combination of climate and soil type, Ireland possesses the ability to grow large quantities of high-quality grass and convert it through the grazing animals into high-quality grass-based milk and meat products.

Environmental sustainability (carbon footprint, nutrient use efficiency) is also improved by increased grass utilisation.

Earn more

Our competitive advantage in milk and meat production can be explained by the relative cost of grass, silage and concentrate feeds. Grazed grass is about five times cheaper than meal and three times cheaper than grass silage as a feed.

Therefore, increased focus on grass production and efficient utilisation of that grass should be the main driver for improving efficiency and expansion of the livestock sector.

An analysis of farms completing both grassland measurement and financial farm analysis demonstrated extra profit of €181/ha for every 1t DM/ha increase in grass utilised on dairy farms and an extra €105/ha per tonne increase on drystock farms.

So there are major improvements possible in grass production and utilisation. While every farm situation is different due to varying soil types, local climatic conditions, stocking rates and farmer management capabilities, many Irish farms are only producing 50% of their grass growth capability and, therefore, grass production is limiting output on most farms.

Increases in animal output production must come from utilising more grass and not from importing supplementary feed.

How are we doing?

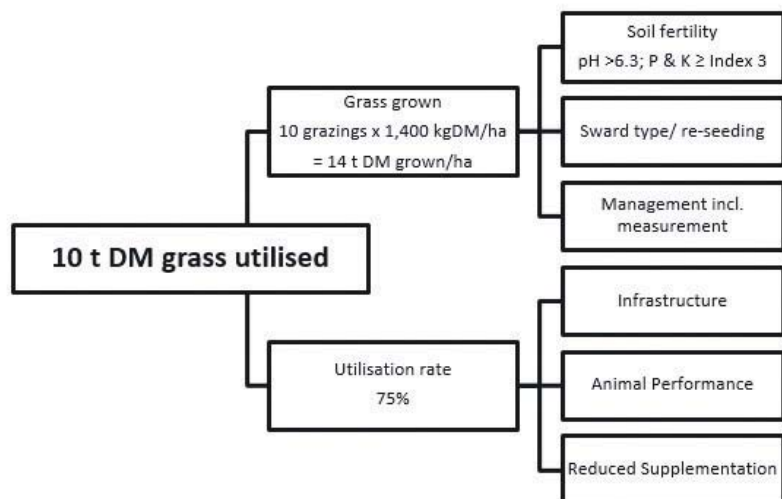
Based on National Farm Survey data, we estimate that about 5.5t of grass DM/ha/year is eaten nationally on drystock farms; 8.8t on dairy farms.

However, results from the best commercial grassland farms show that the level of grass utilised can be increased significantly on all livestock farms. Greater than 10t DM/ha utilised – ie 14t DM/ha grown and 75% utilisation – is realistic.

Grass10 campaign

Grass10 is a new a four-year campaign recently launched by Teagasc to promote sustainable grassland excellence.

The Grass10 campaign will play an important part in increasing grass growth and utilisation on Irish grassland farms, thereby improving profitability and helping to ensure the long-term sustainability of Irish



dairy, beef and sheep production.

The objective of the campaign is to achieve 10 grazings/paddock/year, utilising 10t grass DM/ha. In order to achieve this objective, we will need to achieve significant changes in on-farm practices, specifically:

- More grass measurement and use of PastureBase Ireland.
- Enhanced grassland management skills.
- Better soil fertility management.
- Upgraded grazing infrastructure.
- Improved sward composition.

Number of grazings/paddock

There is a strong relationship between the number of paddocks per farm and the total number of grazings achieved per farm. PastureBase Ireland (PBI) data has identified that creating one new paddock on a farm will give five extra grazings from the farm annually.

The creation of additional paddocks makes management of pasture more streamlined and leads to better control of grass, especially during periods of high growth.

A key finding from the grazing performance of dairy and drystock farms recording on PBI showed the greater the number of grazings achieved, the higher the level of grass DM production produced.

Every extra grazing achieved increased annual grass DM production by 1.5t DM/ha.

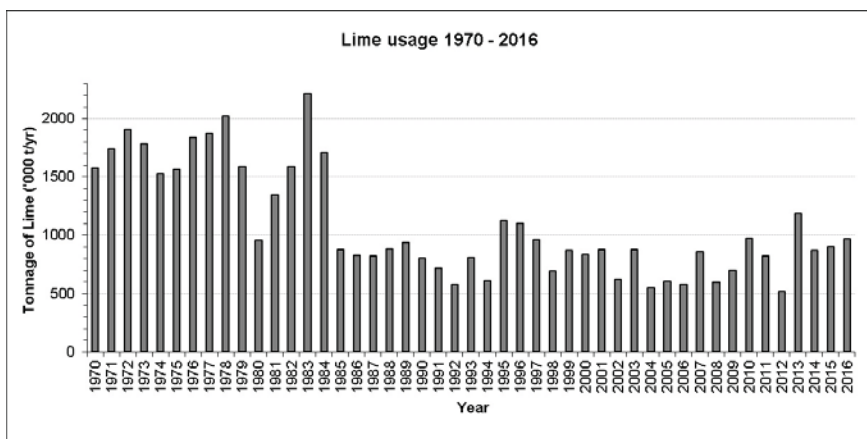
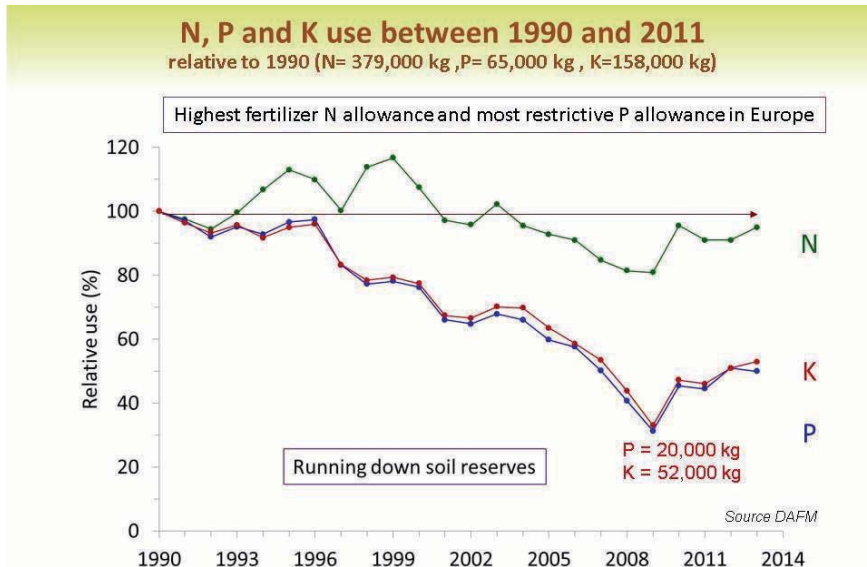
Taking a more in-depth look at why some farms are able to produce high quantities of grass, it is clear that achieving more grazings from each paddock during the season is a key driver of success.

The average number of grazings achieved per paddock/year on dairy farms is over seven and on drystock farms it's around five. Maximising the number of grazings achieved on each paddock is a very effective way of increasing farm grass utilisation. Paddock residency should be no longer than three or four days on drystock farms during the mid-season. So, grow the grass in three weeks and graze it in three days.

Grazing infrastructure

Effective grazing infrastructure is central to optimising grazing management and animal performance at grass. Implementing a rotational grazing system is essential to ensuring the availability of leafy high digestibility grass.

Rotational grazing needs to be in the form of a paddock system, with fixed or flexible paddock sizes. A good farm roadway and water supply allows great flexibility in grazing management. In times of difficult grazing conditions, a good grazing infrastruc-



ture in place on the farm is essential.

Unfortunately, grazing infrastructure is often not adequate or requires re-investment on both drystock and dairy farms. This is particularly true on the extremities of grazing platforms. Yet these parts of the farms are often grazed at the very start and very end of the grazing season when grazing conditions are often at their most challenging.

Soil fertility management

Good productive soils are key to growing sufficient high-quality grass to feed the herd. A recent review of soils tested at Teagasc indicates that the majority of soils in Ireland are well below the target levels for pH (i.e. 6.3) or P and K (i.e. Index 3) and will respond very well to applications of lime, P and K. On

many farms, sub-optimal soil fertility is reducing potential output and income.

Lime, P and K fertiliser usage has dropped by over 50% over the last 25 years (see Figure 1 and Figure 2). It comes as no surprise that most of our soils are now deficient in lime, P and K.

The soil P, K and lime status continues to deteriorate, yet we are trying to grow more grass to produce extra milk and meat and carry more animals. The net result will be increased use of imported or higher-cost feeds, such as concentrates or silage.

The level of lime usage must at least double to return the soil to its correct pH. Doing that will:

- Increase soil P and K availability.
- Increase nitrogen fertiliser efficiency.



PastureBase Ireland: Technologies to assist grassland management

Technologies which enable data-informed decision-making on the farm can help to increase farmers' confidence and greatly improve grassland management. Huge leaps have been made in developing decision support tools to improve resource farm efficiency, profitability and sustainability.

Teagasc launched PastureBase Ireland (PBI) – an online grassland management decision support tool – in January 2013 and Grass10 will see the roll-out of the new PastureBase Ireland website as a key component of the campaign. PastureBase Ireland is informing us that farmers need to have a good control of current grass supply in order to manage grass well.

Grass cannot be managed correctly without a good knowledge of farm covers, grass demand and grass growth. The crucial point on any farm is utilising the feed resource produced inside the farm gate. Any farm that is dependent on imported feed is exposed to the current volatile market environment.

To achieve greater change in the level of grass utilised, farmers will need to build their grazing management practices. This means regular measurement of grass cover, using specialised grassland focused software to analyse grass production and making and implementing grazing management decisions.

These are key drivers to increasing grass production on the farm. New technologies are now available which make grass cover assessment and the decision making process much easier. It is important to recognise that improvements in the level of soil fertility, grazing infrastructure and level of reseeding are also important to achieving higher levels of grass production and utilisation.

The role of stakeholders

Significant change is required in the grassland management practices of Irish livestock farmers to ensure that Irish grassland farming systems remain competitive and sustainable.

Teagasc recognises that the co-operation and collaboration of a range of organisations and stakeholders is required to achieve the changes required right across the industry. This approach will ensure that the messages from the campaign, and the support offered by those involved, will have a greater reach.

Grass10 wishes to acknowledge the support of our industry stakeholders in this new campaign.



Grassland Farmer of the Year competition

With 2017 designated as the Year of Sustainable Grassland, and the link between increased grass utilisation and increased profitability clearly proven, the Department of Agriculture, Food & the Marine, in collaboration with numerous industry stakeholders including Teagasc, launched a competition in 2017 as part of the Grass10 initiative to find the Grassland Farmer of the Year. The objective of the Grassland Farmer of the Year Competition is to promote grassland excellence for all Irish livestock farmers.

The seven winners of this competition are reaching the grass production and utilisation targets set by the Grass10 campaign. These farms have been generous in allowing Grass10 hold events on their farms in 2018. See <https://www.teagasc.ie/news-events/> for details.

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sheep

The last straw

Due to poor harvest conditions the price of straw has risen to such an extent that it is now difficult to justify its use as animal bedding. But there are alternatives

Michael Gottstein

Head of Teagasc Sheep Knowledge Transfer Programme, Animal and Grassland Research & Innovation Programme

Bedding in non-slatted floored sheep housing helps to store faeces/urine, keep the sheep clean, reduce the spread of potentially harmful organisms and, not least, to provide the animal with a bit of comfort.

The amount of bedding required will depend on diet type (in particular its dry matter), floor type (gravel v concrete), ventilation and issues such as leaking water troughs and leaking eave chutes and down pipes. For a 12-week housing period, budget for between 0.4 and 0.7 of a 4x4 round bale per ewe. The lower usage levels will be most likely achieved in well-ventilated gravel-floored sheds where sheep are fed hay or haylage.

While straw is the most popular bedding option for housed sheep there are alternatives available. It is important to note that currently there has been very little research work done on alternative bedding materials in sheep systems so there will be a degree of trial and error for flock owners.

Woodchips, chopped miscanthus, peat and sawdust are probably the best options but wood shavings, paper, sand and other tillage by-products also have potential. Each material



has advantages and disadvantages and the cost of these materials will be very much influenced by transport costs. Local availability is often a key factor in the total cost.

Woodchip

In the UK, a number of on-farm demonstrations were carried out to look at the effectiveness of woodchip as an alternative to straw bedding on sheep farms. In general, it was found that woodchip was a suitable bedding material for both ewes and fattening lambs with high levels of animal welfare and cleanliness recorded. A few pointers to keep in mind:

- To be effective, woodchip must be made from timber that has a moisture content below 30%. The type of wood used had no effect.
- Woodchip, when used as bedding, requires a lot of handling and con-

sequently is only suitable for use in buildings with machinery access to bring the chip near to its ultimate destination.

- Woodchip was not able to cope with stock on low dry matter diets as effectively as straw – this is probably a bigger issue for cattle than sheep.
- Woodchip needs to be ploughed in the following year or composted for two to three years to allow it to break down fully before being land-spread.
- Woodchip is voluminous and requires dry storage which can be a problem on some farms.
- Chip generated from untreated, recycled, wood must be free from nails, glass, etc, which could cause injury to the animals. Chip from treated wood is not recommended.
- Apply woodchip to a depth of 10cm and replenish with 5cm at intervals as required.



The amount of bedding required will depend on diet type, floor type and ventilation.

Key messages

- There are a number of alternative bedding materials.
- Woodchip is the material that appears to be most frequently used, but this product may present challenges with disposal as it will have to be ploughed in.
- Regardless of which product is used flock owners should take stock of what they have on the farm (both in terms of fodder and bedding).
- A minimum amount of straw will be required in most cases for bedding in lambing pens.
- If in doubt, contact your local advisor who will be able to assist you in working out what you need.

ish with 5cm at intervals as required). However, as peat is very absorbent, animals would benefit if the bedding could be rotavated at intervals.

Peat is a versatile product when it comes to land spreading and does not have the same limitations as woodchip. On the negative side, however, it would appear difficult to see how ewes could lamb on peat bedding but that is more a gut feeling rather than based on any research information.

Flock owners who plan to use peat as bedding should consider having some quantity of straw available to bed the sheep at the point of lambing and for use in lambing pens. You will need about four to five round 4x4 bales of straw per 100 ewes for lambing pens.

Sawdust

There appears to be very little work done on using sawdust as sheep bedding. Sawdust is very absorbent – the challenge appears to be to prevent a dusty environment and dust getting stuck to fleeces. In a Spanish study, sawdust was found to be a suitable (but expensive) method of bedding fattening lambs. Sawdust can be used under straw bedding to extend the working life of the straw.

Out-wintering

Keeping sheep out at grass for longer periods will reduce the amount of bedding required. Important points to keep in mind when out-wintering sheep are:

- Move feeding points regularly to avoid poaching and listeria.
- Avoid causing rutting/poaching with machinery.
- Do not graze grass that you have closed for the spring as you will need this after lambing.

• As a rough guide, the cost of wood chip works out at around €20/m³ to €25/m³ excluding transport costs.

Miscanthus – elephant grass

Miscanthus is a tall stemmy grass which is grown as a fuel (bio-energy) and is also being used to bed horses. Again, depending on geographic location miscanthus is worth considering. It can be purchased in bales (typically 8x4x3) which makes transport and storage relatively



straightforward.

On the down side, to be effective the miscanthus should be chopped or shredded before being used as sheep bedding which requires access to such equipment.

Peat

Peat appears to be a useful alternative and while commonly used on cattle farms there is very little work done on its effectiveness in sheep housing. From a practical point of view, I recommend similar applications of peat as with woodchip (ie apply to a depth of 10cm and replen-

Feeding ewes during

This article outlines why feeding ewes in late pregnancy is a key factor in flock profitability

Tim Keady
Animal and Grassland Research & Innovation Programme, Teagasc, Athenry, Co Galway

Management during this critical period influences lamb weight and vigour at birth, and colostrum production by the ewe. These influence lamb viability; the number of lambs reared per ewe joined; and the labour requirement around lambing. Undernutrition during late pregnancy results in poor ewe body condition at lambing and lambs of low weight and poor vigour.

Over-nutrition results in lambs that require assistance at birth. Therefore, inadequate nutritional management increases labour requirement and lamb mortality. Each additional 0.1 lamb reared per ewe joined is worth approximately €10/ewe. My aim is to summarise results from the many studies at Athenry on the effects of the nutrition offered to ewes during late pregnancy on ewe and lamb performance.

Lamb birth weight

Why is lamb birth weight important? Research at Athenry has shown that each 0.5kg increase in lamb birth weight increases subsequent weaning weight by around 1.7kg. Each kilo that a lamb is heavier at weaning reduces its age at slaughter by approximately one week.

Birth weight is a major factor influencing lamb mortality at, or during the days which follow, birth. Regardless of litter size, as lamb weight increases mortality declines initially but levels out around the optimum



birth weight. The optimum birth weight varies by litter size.

As birth weight increases above the optimum, lamb mortality increases again – probably reflecting difficulties immediately prior to, and during, delivery. The optimum birth weight, based on lamb mortality, for cross-bred lambs born as singles is 6kg, for twins 5.6kg, and for triplets 4.5kg.

Effect of grass silage feed value

Digestibility (DMD) is the most important indicator of the feed value of grass silage for ewes. The average DMD of silage produced in Ireland is 70% but can be anywhere from 52% to 82% on farm, so a key message is to have your silage analysed.

Studies undertaken at Teagasc Athenry have shown that increasing

silage DMD increases ewe liveweight and body condition at lambing and increases lamb birth and weaning weights (Table 1). Each five percentage-point increase in silage DMD increases ewe weight post-lambing by 6.5kg and lamb birth weight by 0.25kg.

Another way to evaluate silage feed value is to determine how much concentrate is required to yield lambs of a similar birth weight. At Athenry (Table 2), ewes offered a high feed value (high DMD) grass silage and supplemented with 5kg concentrate (soya bean meal plus minerals and vitamins) during late pregnancy produced lambs that were heavier than lambs from equivalent ewes offered a medium feed value silage supplemented with 20kg concentrate.

The high feed-value grass silage enabled concentrate supplementation to be reduced by at least three quarters.

Table 1: The effects of grass silage feed value in late pregnancy on ewe and subsequent lamb performance

	Silage feed value	
	Medium	High
DMD (%)	70*	77
Ewe weight post lambing (kg)	58.7	66.7
Lamb – birth weight (kg)	4.4	4.7
– weaning weight (kg)	30.5	31.7

*Average DMD of silages in Ireland is 70% DMD (Keady and Hanrahan 2009, 2010, 2012a).

Silage feed value and concentrate requirement

For ewes offered silage with 70% DMD, increasing concentrate feed level allowance above 25kg yielded no real gain in lamb birth weight (Table 3) but the ewes were clearly fat-

late pregnancy



Tim Keady, Peter Connelly and Tom Kane at Teagasc Athenry.

Table 2: The effects of grass silage feed value and concentrate feed level in late pregnancy on ewe and subsequent lamb performance

	Silage feed value		
	Medium	5*	High
Concentrate (kg/ewe in late pregnancy)	20	5*	20
Silage DMD (%)	73	79	79
Ewe weight post lambing (kg)	61.4	70.4	73.6
Lamb - birth weight (kg)	4.6	4.9	5.1
- weaning weight (kg)	32.9	34.0	34.7
- gain - birth to weaning (g/d)	292	301	306

*5kg of soyabean plus minerals and vitamins (Keady and Hanrahan 2009).

Table 3: The effects of concentrate feed level in late pregnancy on lamb birth weight and ewe body condition score (BCS)

Concentrate offered in late pregnancy (kg/ewe)	Silage DMD (%)	
	70	75
5	-	4.8 (3.4)
15	4.7 (3.1)‡	5.0 (3.7)
25	5.2 (3.3)	5.1 (3.8)
35	5.4 (3.5)	-
45	5.3 (3.8)	-

‡BCS of the ewe (Keady and Hanrahan 2010)

Table 4: Effects of supplementing high feed-value silage quality with soya bean or concentrate in late pregnancy

Supplement type	Soya bean		Concentrate	
	5*	15	25	25
Supplement (kg/ewe in late pregnancy)	5*	15	25	25
Ewe weight post lambing (kg)	69.6	71.5	72.8	72.8
Lamb - birth weight (kg)	4.8	5.0	5.1	5.1
Lamb - weaning weight (kg)	32.4	33.2	33.3	33.3
Feed cost per ewe in late pregnancy (€)	2.60	4.05	6.75	6.75

*Ewes received mineral and vitamins daily (Keady and Hanrahan 2009, 2010).

ter (higher BCS). The same is true for ewes on 75% DMD silage – increasing concentrate allowances above 15kg yielded a minimal change in lamb birth weight. The increased energy intake from feeding excess concentrate to ewes during late pregnancy is converted to body fat.

Two studies have been undertaken at Teagasc Athenry to evaluate the effects of replacing concentrate with low levels of soya bean meal (5kg) during late pregnancy of ewes offered high feed-value grass silage.

In these studies, the DMD of the grass silages were 75% and 79%, respectively. In each study, the ewes were supplemented with either 5kg soya bean meal plus minerals and vitamins, or with 15kg or 25kg concentrate during late pregnancy (Table 4).

Increasing concentrate feed level from 15kg to 25kg during late pregnancy had little effect on lamb birth or weaning weight. Reducing supplementation from 15kg concentrate to 5kg soya bean meal reduced lamb birth weight by 0.2kg, weaning weight by 0.8kg, and supplement cost by €1.45 but increased lamb age at slaughter by approximately one week, silage

requirements by 9% and thus silage cost by approximately €0.80.

The difference between reduced concentrate cost and increased silage cost is small. So with high feed-value grass silage it may be more prudent to offer concentrate during late pregnancy rather than supplementing with lower levels of soya bean meal.

Level of concentrate to offer

The effects of silage feed value on the concentrate requirement of twin-bearing ewes in late pregnancy are presented in Table 5. It is assumed that the silage is being offered using good feeding management, i.e. ewes have access to fresh silage 24 hours daily and that any silage residue is removed twice a week.

Concentrate requirement is influenced by both silage DMD and

Table 5: Effects of silage quality on total concentrate requirements (kg) of twin-bearing ewes during late pregnancy

	Silage DMD (%)		
	79	72	64
Precision chopped	10	17	25
Big bale/single chop	13	24	35

harvest system (chop length). The main factor influencing concentrate requirement during late pregnancy is silage DMD. For example, for silages at 79% and 64% DMD an additional 3kg and 10kg concentrate, respectively, are required for long-chop silages, compared with precision-chop silages, respectively.

The concentrate requirements per ewe presented in Table 5 can be reduced by 5kg in the case of single-bearing ewes, while concentrate supplementation should be increased by eight kg for ewes carrying triplets.

Concentrate protein

For prolific flocks the concentrate should be formulated to contain 19% crude protein (190g of crude protein per kilo as fed) as the grass silage on many sheep farms has a low protein concentration.

Some personnel within the industry suggest formulating low and high protein concentrates for feeding to ewes during weeks six to four prior to lambing and weeks three to lambing, respectively.

» Continued on next page

» From page 19

Considering the size of most sheep flocks in Ireland and the fact that ewes require low levels of concentrate during the first two to three weeks of supplementation, together with the low protein concentration of grass silage on most sheep farms the savings from using two different concentrates is, at best, marginal.

For example, while relative to a 19% crude protein concentrate the cost of formulating a 14% crude protein concentrate is lower by approximately €25/t. This equates to only 0.5c and 1c per ewe daily when ewes are offered 0.2kg/day and 0.4kg/day during the first few weeks of supplementation.

For every 100 ewes in a flock, one tonne of concentrate will last for 50 and 25 days, respectively, when ewes receive a daily concentrate allowance of 0.2 and 0.4 kg/head.

For most farms there is no benefit to animal production, logistics or financial outcome from offering a low-protein concentrate during the first weeks of concentrate supplementation.

Where maize silage is offered as the forage during late pregnancy concentrate crude protein should be increased to 23% and mineral and vitamin supplementation should be increased by approximately 50%.

The effects of concentrate protein source offered during late pregnancy on the performance of ewes and their progeny were evaluated at Athenry and are presented in Table 6. Two concentrates were formulated to have the same metabolizable energy (12.4 MJ/kg DM) and protein concentrations (18% as offered). The protein sources in the concentrates were either soya bean meal or a mixture of by-products (rapeseed, maize distillers and maize gluten).

Lambs born to ewes that had been offered the soyabean-based concentrate were 0.3kg and 0.9kg heavier at birth and weaning, respectively, than lambs born to ewes offered concentrate that contained by-products as the protein source.

The increased weight of lambs at weaning from ewes offered the soyabean-based concentrate in

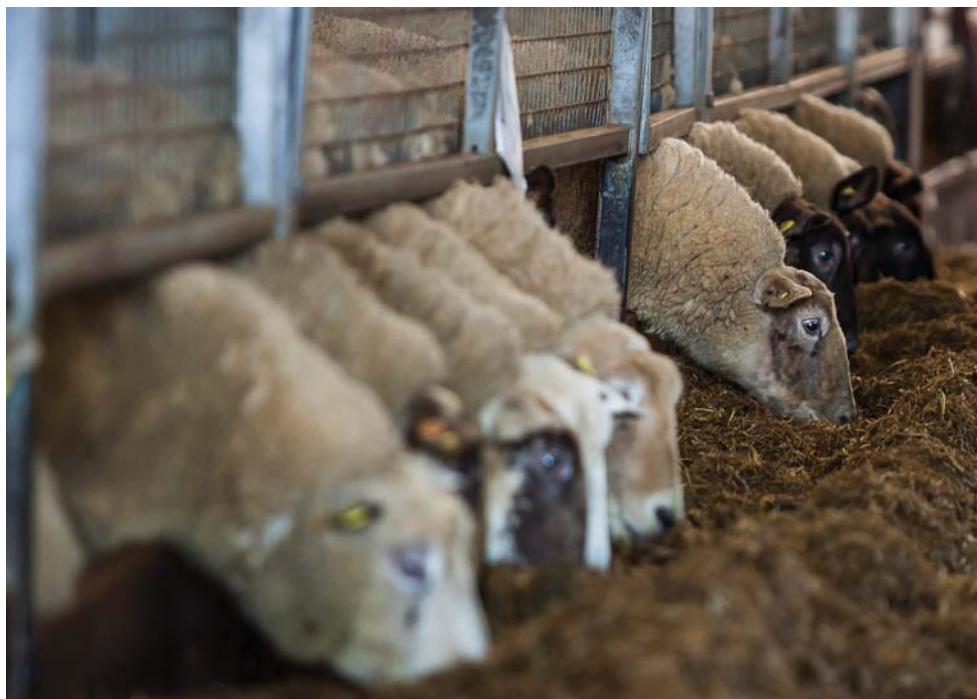
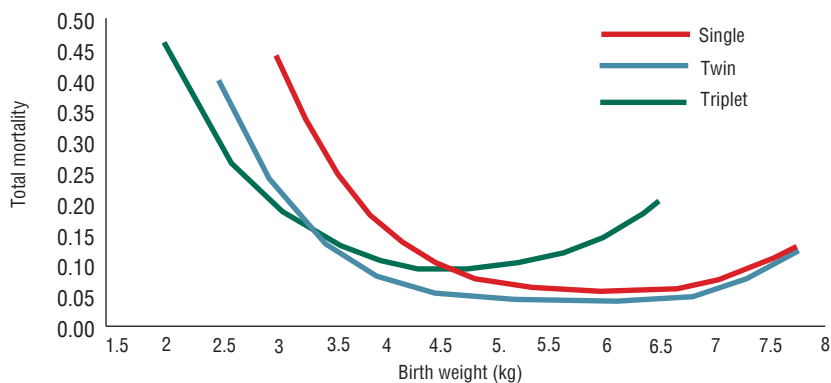


Figure 1

Relationship between lamb birth weight and total mortality for lambs born as singles, twins and triplets



(Keady and Hanrahan, 2013)

late pregnancy (extra cost ~ €0.60/ewe) is similar to the response obtained from offering each lamb 6 kg of creep concentrate until weaning (cost ~ €3.50/ewe per set of twins).

It is more cost effective to offer concentrate formulated with good ingredients (e.g. soya, cereals, pulps) to ewes in late pregnancy than supplement lambs to increase lamb weaning weight.

The ingredient composition of the

concentrate I formulated and offered to ewes during late pregnancy at Athenry is presented in Table 7. The concentrate was formulated to contain 19% protein using good protein (soya, rapeseed), energy (maize, barley) and fibre (beet pulp, soya hulls) sources.

Soya bean meal should form the main protein source for concentrates offered to ewes during late pregnancy. When offering similar levels of con-

Table 6: The effects of concentrate protein source on ewe and subsequent lamb performance

	Protein source	
	Soya bean meal	By-products
Ewe weight post lambing (kg)	53.2	51.4
Lamb – birth weight (kg)	4.0	3.7
Lamb - weaning weight (kg)	30.9	30.0

(Keady and Hanrahan 2012)

Table 7: Ingredient composition of the concentrate that will be offered to ewes at Athenry this year

Ingredient	kg/t
Soya bean meal	200
Maize meal	200
Barley	160
Soya hulls	145
Beet pulp	100
Rapeseed	80
Maize distillers	40
Molasses	50
Minerals and vitamins	25



Each five percentage-point increase in silage DMD increases ewe weight post-lambing by 6.5kg and lamb birth weight by 0.25kg.

IN SUMMARY

- Management during late pregnancy can have a major effect on labour requirement around lambing and on flock profitability.
- High feed-value silage reduces concentrate requirement and cost. Each five percentage-point increase in silage DMD increases ewe weight post-lambing by 6.5kg and increases lamb birth weight by 0.25kg.
- Optimum birth weight influences lamb vigour, viability and performance to slaughter. Each 0.5kg increase in birth weight increases weaning weight by 1.7kg.
- The level of supplementation offered to ewes in late pregnancy should be based on lambing date, forage quality and expected litter size.
- Minimise concentrate usage by penning ewes according to expected litter size and lambing date.
- As the demand for nutrients increases in late pregnancy supplementation should be stepped up weekly over the weeks immediately prior to lambing.
- Buy concentrate on the basis of ingredient composition, not solely on price.
- With high feed-value grass silage, it is more prudent to feed concentrate than low levels of soya bean meal (5kg).
- High-concentrate diets are an option but require good feeding management. Ensure that ewes are grouped by expected litter size and expected lambing date.

concentrate to ewes during late pregnancy as is offered at Teagasc Athenry, a reduction in concentrate price of €20/t equates to a saving equivalent of only 44c per ewe.

Therefore, when purchasing concentrate it is very important to be aware of its ingredient composition rather than basing the decision on price alone.

Concentrate feeding management

To optimise the use of concentrate, ewes should be grouped according to predicted litter size (based on ultrasonic scanning) and expected lambing date (mating date – raddle colour). As lamb weight increases by 70% during the last six weeks of pregnancy the demand for nutrients increases substantially. Consequently, supplementation should be stepped up weekly over the period immediately prior to lambing. The objective is to produce lambs at the optimum birth weight (so will not require assistance during delivery), and ewes with adequate supplies of colostrum.

The feed schedules required to deliver different concentrate feed levels, varying from five to 45kg per ewe in late pregnancy, are given in Table 8. During the week prior to lambing ewes receive up to 1kg daily, clearly illustrating the benefits of penning ewes according to expected lambing date as well as expected litter size.

For example, for each extra week ewes are on the high level of concentrate supplementation they would consume ~7 kg concentrate – thus dramatically increasing concentrate usage and cost, and potential assistance (labour) required at lambing.

Table 8: Daily concentrate allowance (kg) per ewe required for different total concentrate inputs per ewe during late pregnancy

Week prior to lambing	Desired total concentrate input prior to lambing (kg)						
	5	10	15	20	25	35	45
8							0.4
7						0.4	0.6
6			0.2	0.3	0.4	0.5	0.6
5			0.2	0.3	0.4	0.6	0.8
4	0.1	0.2	0.2	0.4	0.6	0.7	0.9
3	0.1	0.2	0.3	0.5	0.6	0.8	1.0
2	0.2	0.4	0.5	0.6	0.7	1.0	1.0
1	0.3	0.6	0.75	0.8	0.9	1.0	1.1

High-concentrate feeding systems

Due to the poor weather conditions which prevailed in 2017 some producers who are short of forage, or have low feed-value forage, are considering high-concentrate systems for their ewes during late pregnancy.

A previous study at Athenry, which evaluated high concentrate and conventional silage-based diets during late pregnancy, concluded that both types of diet produced lambs which had similar levels of performance.

When feeding high concentrate diets the objective is to offer adequate quantities of concentrate to meet energy and protein requirements. Thus, as litter size increases and lambing approaches concentrate feed level must increase.

Proposed concentrate feed levels for ewes during the final eight weeks of pregnancy are presented in Table 9. The data presented in Table 9 show that ewes carrying singles, twins and triplets require 64kg, 74kg and 81kg concentrate, respectively, during the final eight weeks of pregnancy.

To ensure the success of high-concentrate systems during late pregnancy:

- Make sure that all ewes have adequate space to eat together.
- Build up concentrate feed level daily for the first week after housing and slowly reduce forage.
- Provide roughage and ensure that all ewes can access it at the same time.
- Feed the concentrate twice daily to reduce the risk of acidosis.
- Provide clean water.
- Group the ewes according to expected lambing date. If the ewes are offered the high levels of concentrate specified for the week prior to expected lambing date for a number of weeks, more assistance (labour) is likely to be required at lambing due to over-sized lambs, potentially increasing mortality.
- Group by expected litter size.

Table 9: Proposed concentrate supplementation level for high concentrate diets during late pregnancy (kg/day)

Litter size	Weeks prior to lambing			
	-8 to -7	-6 to -5	-4 to -3	-2 to -1
Single	1.0	1.1	1.2	1.4
Twins	1.1	1.2	1.4	1.6
Triplets	1.2	1.3	1.6	1.7



Martin Murphy with Teagasc advisor Damian Costello.

FARM FOCUS

Sheep farmer Martin Murphy from Co Galway outlines the management plan for his flock during the critical final eight weeks of pregnancy

Damian Costello
Teagasc advisor, Athenry

Martin and Christina Murphy from Ballyglass, Turloughmore, Co Galway, run a March lambing ewe flock on their fragmented holding. This is a sheep-only farm with the outfarm located over 10 miles from the home farm. Their son Thomas is also actively involved in the day-to-day running of the farm and is currently completing his formal agricultural training at Teagasc, Athenry. I asked Martin to outline their management plan for the flock during the critical last eight weeks of pregnancy.

• **Housing:** “The 170 ewe flock are due to start lambing in mid-March,” says Martin. “The lambing date has been pushed back slightly in recent years to coincide with grass growth in the area. We are preparing the winter housing as the ewes will be scanned and housed in mid-January. The

winter housing is straw-bedded and ewes are fed hay or haylage supplemented with concentrates.”

• **Scanning:** When scanning is completed, ewes will be penned in groups as per litter size. The single-bearing ewes remain outdoors until nearer lambing and will only be supplemented with concentrates for the last four weeks pre-lambing. Concentrate feeding of twin- and triplet-bearing ewes commences immediately after scanning.

“ Final preparation for lambing on the Murphy farm includes stocking up on the essential supplies

• **Concentrate feeding:** A compound nut is purchased from a local supplier. “I look for a 19% protein ewe and lamb nut with soya bean as the main

protein source,” says Martin. This will be introduced to the triplet- and twin-bearing ewes immediately after scanning. Twins start at 0.25kg/head/day and are stepped up gradually to about 1kg/head/day in the weeks before lambing,” explains Martin. “Triplets get a little bit more – starting at 0.3kg rising to 1.2kg pre-lambing.”

• **Flock health:** Ewes have already been treated twice for liver fluke outdoors and will receive a further treatment four weeks after housing. Martin says that given the very wet second half of 2017, he is not taking any chances with liver fluke. “Ewes will also receive their annual booster shot against clostridial diseases at the beginning of February.”

• **Lambing:** Final preparation for lambing on the Murphy farm includes stocking up on the essential supplies and having lots of individual pens ready well in advance of the first arrival. “You have to prepare carefully even for the most simple and obvious things,” concludes Martin.

Driving grass production

Alan Dillon
Teagasc Cattle Specialist,
Teagasc Nenagh,
Co Tipperary

One of the larger holdings in the third phase of the Teagasc/*Irish Farmers Journal* BETTER farm beef challenge is that of Dwayne, Raymond and Gilbert Stanley, a son, father and uncle team who farm 123ha at Brittas, Thurles, Co Tipperary.

“Prior to joining the programme in 2016, the farm was achieving a gross margin of €649/ha,” says Raymond. “Fixed costs are low on the farm so we were generating a positive net margin but with Dwayne joining the team in the last year a third income must be derived from the farm.”

Driving the gross margin to more than €1,000/ha, while controlling fixed costs, is the main aim of the team. “Traditionally, we ran 100 suckler cows with stock slaughtered at 24 months of age,” says Gilbert. Included in the herd are a number of pedigree Hereford cows with male progeny sold as bulls to dairy farmers in the region at 18 to 20 months.

Teagasc Thurles B&T advisor Michael Daly has been working with the Stanleys through their discussion group for a number of years and saw potential in the farm to increase production through utilising more grass in the diet.

“The farm, in 2016, consisted almost exclusively of old pasture laid out in large fields – some were larger than 35 acres with little in the way of water troughs,” says Michael, “so there was scope to increase grass production and utilisation through more intensive field management.”

Raymond, Gilbert and Dwayne met Michael Daly and the BETTER farm management team in April 2017 to develop a farm plan to drive profitability. From this meeting, a number of ideas crystalised and are now being progressed:

- Increase suckler cow numbers to 120 and continue to finish progeny at two years of age as steers and heifers.
- Purchase 120 dairy-bred calves,



Overview of the field prior to paddocking.

splitting purchase over spring and autumn to make use of housing, with all calves slaughtered as steers and heifers at two years of age.

- Examine option of purchasing “short-stay” store bulls at around 450kg to 500kg with the aim to slaughter indoors after 100 to 120 days.
- Revamp grazing infrastructure. Establish a new water and paddock system. Invest in reseeding and P&K to improve weight gain from grass.

While the suckler to under 16-month bull system has shown the highest level of profit per hectare in previous BETTER farm programmes, and there are undoubtedly merits to this system, it was felt given the scale of this farm that a system producing beef predominantly from grass was more suited to the Stanleys.

“Running a suckler to under 16-month bull system would require an increase to over 200 cows to utilise grass in the system and leave a satisfactory margin,” says Michael Daly. “This would require significant investment in new housing. The two-year-old steer and heifer finishing system leaves more scope for utilising the land available to the farm while not requiring major building investment.

Raymond says: “In future years, we may consider adding a store bull-to-finish system from April to July as



Continued on page 24



The farm had potential to increase production by utilising more grass in the diet of cows

» From page 23

sheds are empty at this time of year anyway.”

One of the major problems faced with expanding on a farm of this size is financing the operation. The Stanleys have decided to cut all unnecessary spending on fixed costs for the next two years at least.

“We chose to prioritise investment in increasing stock and grass immediately,” says Dwayne. “In March 2017, we targeted a 42ac block of ground across from the main farm yard for levelling, paddocking and correcting soil fertility. Soil index on this block of land was similar to the rest of the farm at index 1 for P&K, along with a requirement for lime.”

Water troughs were installed across the farm. Terra Services was employed to run one-inch pipe underground to service over 114ha. Utilising some existing water troughs and moving them to more central locations helped cut costs. The total bill for the looped water system installation including all materials such as troughs, piping and fittings came to €15,000 plus VAT or €52/acre.

“We decided to split the reseeding into two sections with half of it sprayed off in April, power-harrowed twice and seeded a few weeks later,” says Raymond. “Three tonnes of lime per acre was spread along with three bags per acre of 10-10-20. A post-emergence spray was applied six weeks later.”

As this half of the 42 acres was run as one large field, five paddocks were created with centrally positioned water troughs allowing the paddocks to be split easily again with a strip wire. A roadway was fenced along the bottom of the paddocks to allow safe movement of stock by one man and each paddock has a gap handle at either end of the paddock to make daily movement from the paddock easier. The total cost of fencing this 21ac block was €6,000.

All of the work, apart from rolling and spreading fertiliser, was carried out by a contractor.

Table 1: Cost of reseeding and infrastructure on 21ac (8.5ha) block

Item	€ cost (total)	€ cost per acre (hectare)
Spraying (contractor)	210	10 (25)
Round up	275	13 (33)
Tilling	735	35 (88)
Sowing	1,135	54 (135)
Fertiliser	1,197	57 (142)
Lime	950	46 (114)
Post-emergence spray	390	19 (46)
Spraying (contractor)	210	10 (25)
Water troughs	280	13 (33)
Water pipes (including installation)	1,100	53 (131)
Fencing	6,000	286 (714)
Total	12,492	594 (1,487)

Reseeding

The second half of the land block was reseeded in early September and a post-emergence spray applied in October. This block will be fenced into paddocks once weather allows in spring. In the meantime, the land will be grazed by light stock using temporary reels and pigtail posts.

“In previous years, this land would have been grazed extensively with little fertiliser applied, growing in the region of five to six tonnes of dry matter per hectare,” says Raymond. “With a newly reseeded sward

dry matter, this block of land should carry three livestock units per hectare at its ease.”

While the costs of reseeding and infrastructure on this land is significant as outlined in Table 1, if the land grows almost 10t dry matter per hectare more than in previous years at 80% utilisation, this equates to 8t DM/ha utilised.

At an average value of €105/t DM utilised, this equates to a gain of €840/ha or €7,050 on the 21ac block of land reseeded per year. Within two years, this investment will have paid for itself. Not many other investments on farm have the potential for such a fast payback.

The Stanleys will be increasing their stocking rate over the next number of years to around 2.5 LU/ha, so will have a demand for this extra grass and can justify the investment. There isn't any incentive on farms to grow more grass unless the stock will be on farm to eat it.

“The Stanleys will be increasing their stocking rate over the next number of years to around 2.5 LU/ha

receiving adequate nitrogen, paddocked and soil fertility rectified, the team reckons this land is capable of growing 15t dry matter per hectare,” says Raymond. “That’s a three-fold increase in production over previous years. Given that each livestock unit requires roughly five tonnes of

The Stanley farm hosted a Grass10 autumn closing walk in September 2017 and will host a Grass10 early spring grazing walk on Wednesday 28 February at 11am.

FUTURE PLANS

The plan for 2018 is to continue to reseed and put more land in paddocks as stocking rate increases. “The first step has to be installing a more extensive

water system,” says Dwayne. “Without this, it would be impossible to manage splitting paddocks. Positioning of water troughs is important with the centre of the field under a paddock wire allowing the greatest amount of options when using the strip wire.”

The eventual plan is to have the suckler herd and the dairy calf to beef herd producing a target of 1,000kg of liveweight per hectare from a grass-

based system, leaving a gross margin of €1,000/ha while keeping fixed costs at around €400/ha.

Another option being looked at for 2018 is to plant a kale crop to graze weanlings over the winter period. Dwayne Stanley is very impressed with this ideas given the expected thrive for stock, the health benefits and also that it will fit in with a reseeding programme on the farm.



Alan Dillon, Teagasc, with Gilbert, Dwayne (front) and Raymond Stanley.

Take the Tullamore bypass and watch the cattle thrive

Mark Coyne, Bernard Doorley, Paul Fox and Mark Gavin
Drystock advisors, Teagasc Tullamore

Conor McGrath has a 23ac outfarm on the busy N52 Tullamore bypass. Conor farms a calf-to-store system, purchasing Angus and Hereford cross heifer calves and selling them live at 18 to 20 months of age. He also operates a midseason lambing flock of 100 ewes on the home farm.

Having increased cattle numbers in recent years, Conor needed to grow more grass on the overall farm to keep up with herd demand. This prompted him to meet his Teagasc advisor in December 2016 to discuss how he could grow, and indeed utilise more grass on his outfarm.

The advisor saw huge potential with this field. Firstly, it has the ability to grow far more grass than it had been doing in previous years. Secondly (because of the field's prominent location), it was clear that any improvements in grassland management would be visible to thousands of

people who drive by the field each day.

With Conor's approval, the advisor spoke to the full drystock advisory team in Tullamore with a view to setting up a grassland demonstration for the 2017 grazing season. The aim was to graze 50 yearling cattle on this field and achieve a liveweight gain of 0.9kg per day. Our target was to have cattle averaging 500kg by their sale date. Conor felt that our targets were overly ambitious but was willing to trust our advice.

In January 2017, the drystock team visited the field. A map outlining suitable grazing divisions and location of water drinking troughs was prepared. The team met Conor and the plans were discussed and approved. The 9ha (23ac) field was divided into nine permanent 1ha grazing divisions.

Water troughs were placed so that each paddock could be subdivided into smaller areas, in effect creating 18 individual 0.5ha paddocks. The cost of the grazing infrastructure is outlined in Table 1.

Soil samples were taken and it was established that overall soil fertility was good with a soil index of 3 for both P and K and a pH of over 7. In February 2017, 23 units of nitrogen (a half bag of urea) was applied. The grazing infrastructure was installed and grass measuring began with data being recorded on the PastureBase Ireland system.

Twenty-five of Conor's yearling cattle were turned out to grass on 11 March with 50 heifers on site by the end of the month. The average weight at turnout was 297kg. This equates to an initial stocking rate of 1,650kg of liveweight per ha, but increased to 2,500kg of liveweight per ha at peak



Aerial shot of grazing divisions.



Having increased cattle numbers in recent years, Conor McGrath needed to grow more grass on the overall farm to keep up with herd demand.



The Tullamore drystock advisory team: Mark Coyne, Bernard Doorley, Paul Fox and Mark Gavin.

Table 1: Grazing infrastructure costings

Five water troughs (90 gallon)	€625
Water pipe(1/2 inch) and fittings	€375
Fencing 1,078m @ €1.40/m	€1,510
Total	€2,510

grass growth; when silage paddocks were removed from the rotation.

Weather conditions were excellent at turnout but deteriorated badly during March. Ground conditions were challenging with some light poaching evident. Despite this hiccup, Conor followed the plan with the first rotation ending on 15 April. Paddocks recovered very well for subsequent rotations.

Grass growth was monitored each week by the drystock team. Management decisions, such as applying more fertiliser or closing additional paddocks were made based on PastureBase reports. Surplus grass was conserved as silage during the summer and cattle continued to enter leafy grazing covers of 1,200kg to 1,400kg DM.

Cattle were moved to a new grazing paddock every two to three days ensuring excellent cattle performance was maintained. “I was surprised by how much grass this field could grow,” says Conor. “And the paddocks meant that we were able to keep fresh grass in front of the animals. You could really see that they were thriving more than before.”

In addition to maintaining the 50 cattle for the grazing season, over 80 bales of surplus grass were conserved as silage. Total nitrogen usage on this field during the year was 128kg N/ha (103 units/acre).

Benefits for Conor

In 2016, this 9ha field grazed 30 yearling heifers. In 2017, this same field maintained 50 similar cattle, almost doubling the stocking rate. Cattle performance was excellent throughout the year. In 2016, cattle achieved 0.7kg of daily liveweight gain. Improved grassland management led to daily

liveweight gains increasing to 0.92kg in 2017.

Heifers at sale were 40kg heavier when compared with previous years, and, in 2017, averaged 497 kilos. Improved weight gain and increased cattle numbers has resulted in an additional €6,500 of gross output value being generated on this field alone.

The grazing season was also extended by 30 days compared with 2016 with the help of the Teagasc spring and autumn rotation planner. The last cattle left the field on 23 November. Having seen the benefits of this grassland management technology, Conor is now in the process of installing paddocks on the remainder of his farm.

Benefits for farmers

There have also been many benefits to local discussion groups and individual farmers. Due in no small part to Conor’s generosity in allowing visitors, the field has become an excellent resource for the drystock advisory team to demonstrate best practice in grazing management and driving maximum output from cattle farms.

Teagasc grassland management demonstration farms are not unusual as the organisation has been involved with many farmers on grass projects over many years.

What makes this project unique is the field’s location with over 10,000 vehicles passing its “doorstep” every day of the year.

A quick glance into this elevated field as you drive by and you can see best grassland management practice and cattle performance without leaving the comfort of your car. So, next time you are in the area, just take the Tullamore bypass and watch the cattle thrive.

tillage

Malting barley

Ciaran Hickey
Teagasc tillage advisor,
Enniscorthy, Co Wexford

'Double Diamond works wonders, works wonders...today!'

If you're old enough you might remember this unforgettable slogan for a beer which was big in the 1980s. This deviation down memory lane was prompted by the fact that one of Ireland's premier malting barley areas, Ballycarney/Castledockerell, located halfway between Bunclody and Enniscorthy, forms a diamond shape out to the edges of Kiltaley.

It's the soil that works wonders for malting barley growers in the area. The Soil Survey of Ireland 1966 noted: "The soils of the Clonroche series have a wide use range, they are excellent for tillage and especially noted for their ability to produce high yields of good-quality malting barley. It is primarily these soils which have earned for Wexford the title of the 'Model County' and the reputation it enjoys for good tillage land."

Joseph Warren, Springvale, Ballycarney, farms 425 acres of owned/leased land and provides a stubble-to-stubble contracting service on another 500 acres. "We grow malting barley and seed malt barley 70%,



winter barley 5%, spring oats 5%, maize 5% and fodder beet 15%," he says. "Malting barley has traditionally been our largest crop but with the introduction of the BPS in 2015, crop diversification and greening has caused us to add other crops to the rotation.

"We grew beet for many years but with the demise of the sugar beet industry in 2006 we changed to fodder

beet and developed a good customer base for quality washed beet. There is a lot of work with the crop but it is showing good returns per hectare and also serves as a great break crop when you have seed crops on the farm."

Joseph is a member of the local tillage discussion group who are participating in the Knowledge Transfer scheme. "I find it to be a good source

Agricultural Catchments Programme

The area is participating in the Agricultural Catchments Programme where the focus is to monitor the effects of farming in that catchment and provide detailed analysis of the area. Farmers are learning a lot from it and get valuable information back from the catchments team.

It is a good farming area, as Eddie Burgess of the Catchments team puts it: "Farmers in this area always understood the value of soil fertility, especially lime, and didn't need to be told to use it."

Why is the area such a strong Till-

age area? A good place to start is the soil, the physiographic description is "rolling lowland", with a soil classification of acid brown earth which are generally referred to as the Clonroche series. The A horizon (0-6in cultivation layer) is loam to clay loam, a dark reddish brown in colour, medium crumb structure and very friable. This is the most extensive soil type in the county covering 40% of the area,

A desirable structure with good drainage characteristics which accounts for the fact that they are among the most often cultivated soils,

but they can be intensely leached and a characteristic feature is a sub-surface horizon of strong red brown colour enrichment by iron oxides leached from the upper horizons.

Summary of 2014 LPIS crop descriptions for Castledockerell

- 90.13% of the total catchment area IS covered by Land Parcel Identification Scheme (LPIS) parcels.

Of this LPIS area;

- 69.42% is tillage.
- 49.32% is spring barley – ie 71.05% of the tillage ground is in spring barley.

KEY TIPS

To achieve low-protein malting barley, the crop must be managed differently to normal feed crops. While seasonal factors such as an early or a late spring or rainfall are outside of your control there are husbandry factors which, if practised, will give the best chance of achieving the low protein specification.

- Management of the crop for high yield: achieving low protein requires a large dilution effect. The higher the yield of the crop, the more the protein will be diluted by crop yield.
- Field selection: a field in long-term tillage, with a history of low grain protein, that is capable of giving high yields is the obvious choice. Good fertility is essential with pH, P and K at optimum levels. Free-draining medium-textured soils produce the best combination of yield and quality such as the Clonroche series found in Wexford, Kinsale and Louth. Lighter soils, such as the sandy loam soils derived from sandstone in east Cork, are also suitable for producing low-protein barley. Heavier soils with higher soil nitrogen should be avoided.
- Nitrogen level: the more nitrogen available to the crop, the higher the protein in the barley will be.
 - Applied nitrogen: protein increases by 0.2% for every 10kg N/ha. Research from Teagasc Oak Park suggests that once you go over 120kg/ha the chances of achieving distilling specification drops off. It should be noted that there can be large variations and field history is the best guide.
 - Organic manures: avoid fields where organic manures were applied recently.
 - Previous cropping: it is difficult to predict the amount of nitrogen in the soil after a break crop, or from crops produced close to grass, in the rotation so these fields should be avoided if possible. Also avoid fields that had legumes in cover crop mixes.
- Sowing date: sow early but in good conditions. An added benefit of early sowing is that skinning is less likely to occur in susceptible varieties. Skinning can be a reason for rejecting a load.
- Husbandry: make sure disease and weed control are adequate and trace elements are supplied where required or as recommended after a recent soil test.

– **Ciaran Collins,**
Teagasc tillage specialist



ABOVE: the flat stones underlying the Clonroche series can lead to rapid movement of water through the soil profile.

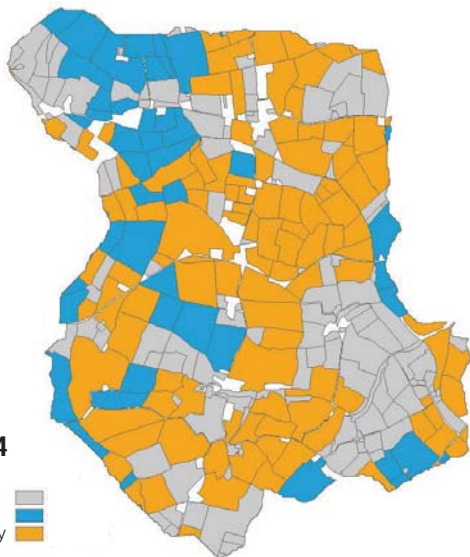
LEFT: Ciaran Hickey of Teagasc and Joseph Warren conduct plant counts in malting barley.

of technical information and completing a Machinery Cost Calculator and Profit Monitor has helped us to get an accurate picture on our costs and returns.”

Joseph has managed to achieve a very good handle on machinery costs per acre with the two main challenges being combine capacity during tight harvest periods, evident in 2017, and labour at busy times also. “The

machinery cost calculator is a valuable asset to look at different options for solving these challenges as any purchase of equipment in these times needs careful evaluation.

“We have found in the group that the variable costs – what most growers are spending on seed, fertiliser and sprays – are largely fixed and the fixed costs such as machinery are highly variable.”



LPIS 2014

Non-tillage
Other tillage
Spring barley

MALT PRODUCTION

100

Boortmalt malt growers in the area

15%

of total Boortmalt barley growers

14%

of overall tonnes of malting barley

equine

From paddock to podium

Crea English

Equine specialist, Teagasc Rural Economy Development Programme

Eamonn Murphy from Thomastown, Co Kilkenny, is a small horse breeder enjoying his retirement who saw a product of his breeding programme travel from paddock to podium in 2017. His breeding strategy to produce a horse of international fame came to fruition when a mare he bred, and jointly owned, Columbcille Gipsy, won the gold medal in the six-year-old class at The WBFSH Championships in Lanaken, Belgium, ridden by Gerard O'Neill.

Eamonn's enterprise of two brood mares and followers is a family affair with daughter Cynthia keeping the show on the road. Cynthia grew up jumping ponies and young horses, and studied Equine Science University of Limerick. She completed the National Stud course and was broodmare manager in Darley for four years. She then worked at Emirates Park as foaling manager. More recently, Cynthia moved home to care for her late mom, Ann, and focus on the family breeding enterprise.

Partnership

Eamonn and Cynthia have a long-term partnership with rider Gerard O'Neill. "Ger used to come to us in Columbcille to ride his ponies a few nights a week and from there we have developed a partnership where we invest in horses together," says Eamonn. The aim is to bring his homebred horses to a level where the return on investment is much greater than could be achieved if working in isolation.

Ger's international status in the saddle brings clients into his yard. Eamonn affirms that Ger has had a positive influence on his breeding programme also, as he is fully involved in the critique of mares and their progeny. Ger will come and look at Eamonn's young horses, give them a jump and together they make a decision whether to produce them up the grades or sell them.

Columbcille Gipsy

The story of Columbcille Gipsy began when Ger and Eamonn went to Holland to look at horses. They came

upon an 18-year-old Holstein mare – Gipsy III – which caught their eye.

Her pedigree showed promise. She was by the thoroughbred Grundyman out of a mare by Flamingo. Her progeny included one approved stallion by Casall that had competed to 1.40m, and a mare who is dam to another 1.40m horse. She was purchased for €1,600, considered worth the "dabble" given they liked her type and display of athleticism despite her age.

Eamonn and Ger decided to focus on embryo transfer as the means of reproduction. Two embryos were taken the first year, the second of which turned out to be the champion Columbcille Gipsy by Toulon a successful 1m60 performer himself.

“ We tend not to rush the horses – Columbcille Gipsy was out a few times in 2016 at the end of her five-year-old year, and then campaigned in 2017 with Lanaken in mind

Even though Gipsy III is now 26 and not breeding, it was always the intention to sell Columbcille Gipsy as her other daughter and Columbcille Gipsy's full sister is now aged three years. "We hope to take embryos off this filly in 2018 and then let her compete up the grades. She has the potential to be a good broodmare, all going well," Cynthia commented.

Columbcille Gipsy was lightly jumped as a four- and five-year-old. "We tend not to rush the horses – Gipsy was out a few times in 2016 at the end of her five-year-old year, and then campaigned in 2017 with Lanaken in mind," Cynthia said.

As a six-year-old she won four competitions, all prestigious events: the Pettitt's novice five- and six-year-old championships at Bannow and Rathangan show, the Horse Sport Ireland six-year-old class, the Breeders' Classic and, finally, the gold medal at Lanaken. In all, she won around €30,000 in prize money over six months.



Embryo transfer

Given Gipsy III's age of 18 years, she was inspected by a veterinarian and her reproductive tract proved healthy and fertile.

Embryo transfer is an expensive option given that a single flush and transfer can cost in the region of €1,500 and multiple flushes may be required to achieve pregnancy. It involves removing a fertilised embryo from the donor mare and transferring it to a surrogate, thus allowing the donor mare to produce more than one foal per annum.

It is preferable to work with mares between four and 16 years of age that have previously carried a foal themselves. Intensive veterinary work is involved as the recipient mare must ovulate one day before – to three days after – the donor mare, while the donor mare is flushed at 6.5 to eight



Cynthia Murphy (left) and Crea English with Gipsy III.



Crea English, Eamonn Murphy and Cynthia Murphy.

CLEAR GOALS

Eamonn always had clear and ambitious goals for his breeding enterprise. Working in partnership with a competent rider who brings additional expertise and market insights allows the Murphy family to produce and market horses further along the value chain than would be possible on their own.

Having a female sibling to Columbcille Gipsy to continue the line is of utmost importance to the Murphys. Columbcille Gipsy's success to date and, hopefully, continued sporting career with her new rider adds value to the mare line. Despite the funds invested to get her to Lanaken, the financial dividend achieved from her sale reaped profit that can now be re-invested into the future development of the line. Cynthia, Ger and myself make a great team!" concludes Eamonn.

days after ovulation.

Eamonn and Cynthia have used embryo transfer a number of times and find it works well for them. "There are pros and cons as with most things. I see the value of embryo transfer but I also believe that surrogate mothers have an influence on the foals they carry. I have followed the scientific research and my own experience suggests foals pick up traits from their mothers, nurture certainly plays a role in the development of the foal," Cynthia said.

World Championships – Lanaken

The FEI WBFSH World Breeding Jumping Championships for Young Horses is held annually at Zangersheide, Lanaken, Belgium, where horses from around the world showcase their talents and compete for medals over three days. This prestig-

ious competition of 837 combinations representing 44 countries, the Belgian Championships and an elite foal sale with 61 foals for auction brings together breeders, competitors and buyers from across the globe, providing a great stage for trade and entertainment for 80,000 spectators.

Columbcille Gipsy jumped two challenging rounds over two days against 262 other competitors in her class at 1m 30 level that earned her place in the final. After a rest day, the final course proved much more technical and higher at 1m.35. The initial 262 competitors were whittled down to just 40 and she was 15th to jump. She jumped clear and won on a time of 38.38 seconds, the fastest by over two seconds.

Eamonn could not attend but was ably represented by Cynthia: "To be in the centre of such a good win and

achieving your dream of breeding 'the good one' is phenomenal. There is no one else you would want on a horse's back for those big pressure days than Ger O'Neill. We are very grateful to him."

Gipsy's extraordinary record ensured her subsequent sale to Paul Schockemöhle the world renowned rider, coach and "high-end" horse dealer giving her a place in Schockemöhle's exclusive Performance Sales International (PSI) auction. In December 2017, 53 individually picked horses, 26 dressage and 27 showjumping horses were auctioned in Germany. A total of 47 horses sold generating €14,635,000m. The top-price dressage horse was sold for €850,000 and jointly top-priced show jumping horse was Columbcille Gipsy who sold for €700,000.

Challenges and opportunities in

Mary Ryan
Rural Development Programme
Coordinator, Teagasc Rural
Economy Development Programme

Now that the economic crash is behind us, people are seeking opportunities improve their household income. This article presents some of the opportunities available to farm families.

Challenges

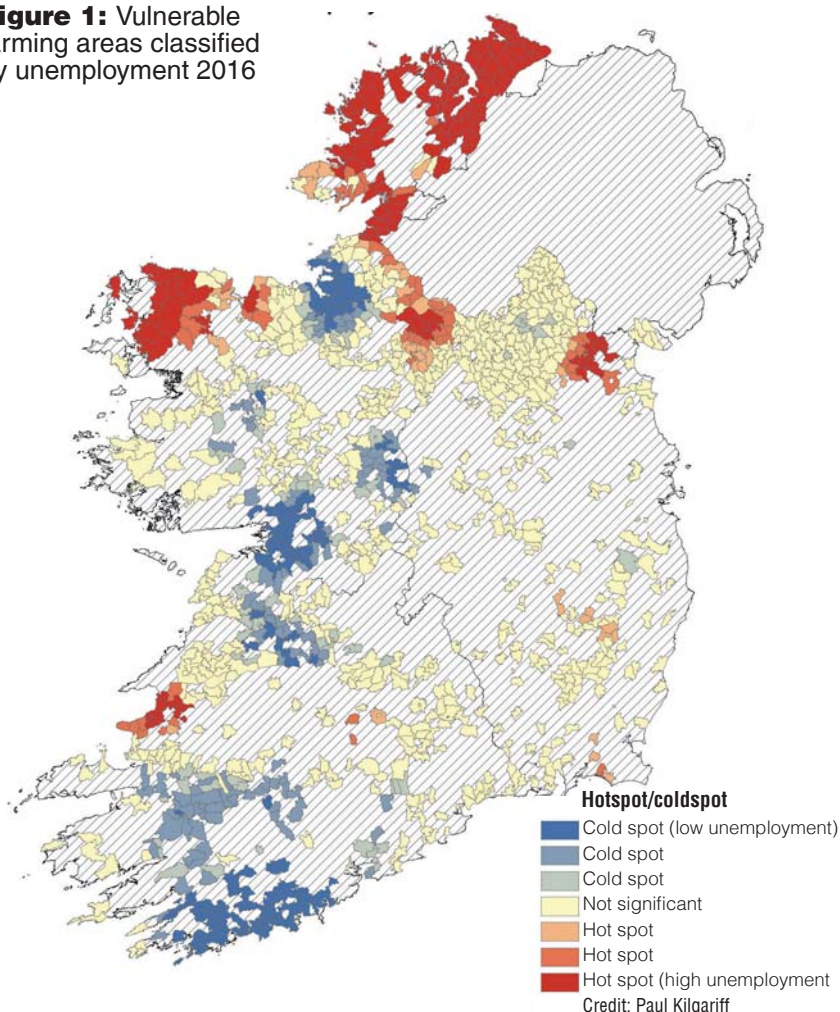
Impact of the crash: the impact of the economic crash was greatest outside of the main cities. Concern around the increasing divergence between urban and rural areas led to the establishment of the Commission for the Economic Development of Rural Areas (CEDRA) to investigate the effect of the crash and the economic potential for recovery in rural Ireland.

The CEDRA 2014 report highlights the effect on rural areas. Unemployment increased by 192% compared with 114% in urban areas, with the largest declines in small and medium sized towns. The report noted that construction-related employment for farmers and rural dwellers disappeared almost overnight, with employment in rural areas remaining concentrated in declining sectors.

Urban and rural recovery

- Since 2011, the economy has seen significant recovery. Recent data made available by the Central Statistics Office has allowed researchers in Teagasc and NUI Galway to study how the economic recovery has affected urban and rural areas. The main points of the report (O'Donoghue, C, Kilgarriff, P, & Ryan, M (2017) *The Local Impact of the Economic Recovery*, Teagasc, Oak Park) are:
- Since 2012, employment growth has been localised in Dublin (16% growth in employment) and in surrounding regions (midlands 19.3%; southeast 18.2%). At the other extreme, economic activity in the border was still 32% lower than peak levels. Household income per person in 2014 had improved most in Dublin, increasing by 5% relative to 2011, with the next highest improvement of 3.9% in the southeast. However, in both the west and the border area, average disposable incomes were lower than in 2011.
- The 2016 census shows that Ireland is still a very rural country with 36% of the population living in cities, 34% living in rural towns and 30% in the

Figure 1: Vulnerable farming areas classified by unemployment 2016



countryside and there is clear evidence that the recovery is progressing at different speeds in urban and rural areas.

• One of the areas of concern arising from the research report is evident when we map the areas of low employment opportunities, as we see that these areas coincide with areas where farm income is also low. From Figure 1, we see that the greatest challenges exist in the west and north-west, in marginal farming areas with low employment opportunities due to the distance from rural towns.

In summary, the gap in household income in Dublin relative to the rest of the country has been widening. The lowest growth occurred in the west (6.1%) and live register statistics indicate that, in general, the unemployment rate tends to be higher in rural towns than the cities and is higher again in the most remote rural areas.

Education levels tend to be lower in rural areas with a higher share of graduates in the cities. However, ru-

ral towns are young places with more under-15s living there than in the cities, due in part to the large migration to these towns during the last boom.

Opportunities

On a positive note, employment has increased in the agriculture, construction, technical, industry and hotel and food sectors and many of these opportunities are located in rural areas. Teagasc is working with rural development and training agencies to improve farm viability and quality of life in rural areas.

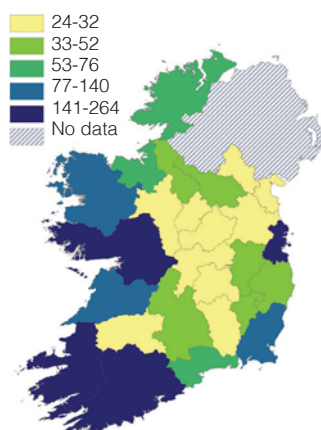
The Teagasc farm management and rural development department runs an annual programme of events in conjunction with rural agencies to help farm families to avail of opportunities for on- and off-farm diversification and training opportunities for off-farm employment. This information is all available on the Teagasc rural development website: www.teagasc.ie/ruraldev

Since 2011, over 1,500 farm families have availed of regional Teagasc op-

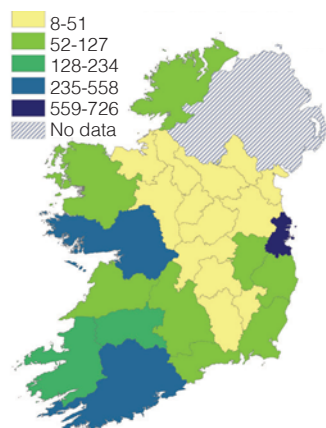
rural Ireland

Figure 2: Domestic and foreign tourist spend by county

Millions (€) Domestic tourist income 2015



Millions (€) Foreign tourist income 2015



tions workshops covering a range of diversification opportunities including tourism, food, organics, goats, forestry, renewable energy and much more. Tourism is seen by farm families as having the greatest potential with a high proportion of foreign and domestic tourism spend in rural areas that may not have other employment or income opportunities.

Figure 2 shows the high proportion of tourist spending along the west coast, in particular.

In 2015, Teagasc produced a very useful and user-friendly *Handbook on Rural Tourism*, which is distributed at Teagasc Options workshops and can be downloaded from the Teagasc Rural Development website.

There is also growing interest in developing artisan and farm food businesses, particularly in strong tourist areas. In recent years, the Teagasc Rural Development Unit teamed up with the Food Programme and agencies such as Bord Iascaigh Mhara and Fáilte Ireland, to provide food product development and food production

USEFUL LINKS

- www.teagasc.ie/ruraldev
- <https://www.teagasc.ie/news--events/news/2017/impact-economic-recovery.php>
- <https://www.teagasc.ie/rural-economy/rural-development/options-programme/>
- <https://www.teagasc.ie/media/website/publications/2016/Rural-Tourism-Booklet.pdf>
- <https://www.teagasc.ie/rural-economy/rural-development/expand-your-horizons/>

Organics

- <https://www.teagasc.ie/rural-economy/organics/>

Equine

- <https://www.teagasc.ie/rural-economy/rural-development/equine/>

Renewable energy

- <https://www.teagasc.ie/rural-economy/rural-development/energy/>

Goats

- <https://www.teagasc.ie/rural-economy/rural-development/goats/>

Other diversification opportunities

- <https://www.teagasc.ie/rural-economy/rural-development/diversification/>

Household budgeting

- <http://interactive.teagasc.ie/Open/HouseholdBudget>

Coping with pressures of farming

- <https://www.teagasc.ie/media/website/publications/2017/Coping-with-the-pressures-of-farming.pdf>

Start a new business

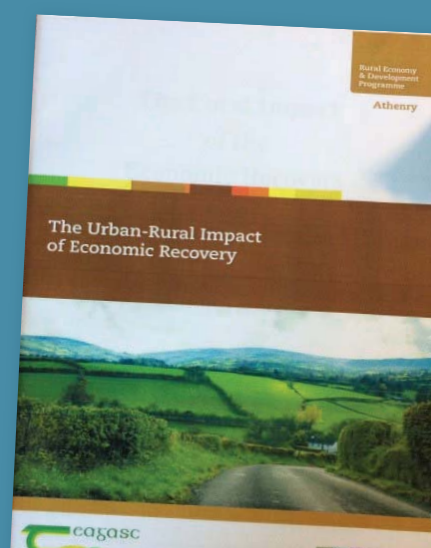
- <https://www.opt-in.ie/entrepreneurship>

Collaborative farming

- <https://www.teagasc.ie/rural-economy/farm-management/collaborative-farming/>

Succession and inheritance

- <https://www.teagasc.ie/rural-economy/farm-management/succession--inheritance/>



training courses.

Also on the food front, Galway and the west of Ireland has been designated as the European Region of Gastronomy for 2018. Teagasc and Galway County Council are two of the four key partners leading this designation, working closely with Galway City Council and GMTI.

In addition, a new food centre will be built at the Teagasc campus in Athenry.

The BIA Innovator Campus CLG, supported by Teagasc and Galway County Council, which has been awarded funding as part of the Enterprise Ireland Regional Development fund, will create more than 360 jobs in over 40 businesses across the west of Ireland, providing much needed facilities to help the food industry in the west.

A range of facilities will be available to businesses across the western corridor including short-term-use innovation laboratories, incubation hubs for longer stages of product development and high-potential startup

units for businesses getting off the ground.

Many rural agencies also provide training, up-skilling and financial supports to farm families. The Expand Your Horizons seminars, organised by Teagasc and the National Rural Network, brought these agencies together in 26 rural locations in 2017 to provide information to farm families. It is now clear that the Food Wise 2025 strategy for the food sector and initiatives such as the Wild Atlantic Way for tourism, can deliver for rural areas.

The establishment of a Department for Rural and Community Development, the appointment of a senior minister and the rollout of the Action Plan for Rural Development and the regional Action Plans for Jobs, are also positive developments. However, more concentrated efforts are required particularly in the west and northwest, where private sector job creation efforts and opportunities are substantially more challenging than in the rest of the country.

An environment success story thanks to farmer engagement



Farmers have shown that they are keen to farm sustainably, while improving farm safety and water quality

Tim Hyde
Environment Specialist,
Teagasc Crops, Environment and
Land Use Programme

The Farm Hazardous Waste (FHW) collection scheme has been operating on a pilot basis since 2013 led by the Environmental Protection Agency (EPA) in collaboration with Teagasc, the Department of Communications Climate Action and Environment (DCCA), the Department of Agriculture Food and the Marine (DAFM), and local authorities.

- Some facts and figures:
- 46 collection days.
 - 9,000 farmers safely disposed of nearly 1,000t of hazardous wastes including old-legacy chemicals DDT, cyanide, strychnine and other nasty persistent organic chemicals (POPs).
 - Also included in the 1,000t were, waste oils and oil filters, pesticides, animal remedies, batteries and electricals, paint and other wastes (empty contaminated plastic containers).
- The average weight of per farmer was 84kg of FHW and 63kg of waste electricals and batteries.

Why do farmers use the waste collection centres?

- Health and safety.
- Tidy their yards.
- Compliance with DAFM and Bord Bia Audits, inspections.
- Protecting the environment.

Quantities and types of hazardous waste collected 2013-2017

- The main hazardous waste types were:
- 359t of waste engine and hydraulic oils.
 - 70t of pesticides (which includes 1,1700 kg of POPs).

- 54t of paint (water, lead and solvent base).
- 52t of vet medicines and needles.
- 46t of contaminated empty containers.
- 28t of oil filters.
- 7t of corrosives such as acids and bases.
- 226t* of WEEE and batteries.
- 12t of other hazardous wastes (biocides, aerosols, adhesives, coolant, grease cartridges, household chemicals and medicines, waste petrol/diesel, creosote, expanding fillers, solid tar and silicone).

*2017 WEEE and battery figures were not available at the time of publication

What do farmers think of the FHW collections?

- Pdraig Forde, Galway: “The collection centres are a ‘gift’ to clean up stuff lying around.”
- Robert Coughran, Galway: “Great service.”
- Pat Cormican, Galway: “Delighted to come here, wanted to get rid of the waste, but where do you bring it to?”
- Brian Curran, Galway: “Third collection centre I have been to, very happy. My main aim is to clear out the shed and get the proper paperwork.”
- Charlie Russell, Kildare: “Good to get this stuff off the farm, it’s been there for years.”
- Tom Dillon, Kildare: “Mighty! Wish these centres were run more often and it would become something you do every year, like the IFFPG collections. They are well run, but could be a bit cheaper.”

The future for such schemes

This pilot scheme has confirmed the necessity and feasibility of a scheme for the collection and safe disposal of



Farm Hazardous Waste

COLLECTION CENTRES & LOCATIONS OCTOBER & NOVEMBER 2017



Low cost disposal of your hazardous waste is in the follow counties...

Mayo/Sligo
Mayo/Sligo Co-Op, Ballina
Friday, 17th November

Galway
Athenry Mart
Friday, 24th November

North Tipperary
Nenagh Mart
Wednesday, 25th October

South Tipperary
Cahir Mart
Tuesday, 14th November

Kerry
North Kerry - Listowel Mart
Saturday, 4th November

Cork
Bandon Recycling Centre
Wednesday, 18th October



For further information...

LoCall: 1890 33 55 99
www.epa.ie

Meath
Kells Recycling Centre
Tuesday, 28th November

Offaly
Tullamore Mart
Tuesday, 21st November

Kilkenny
Kilkenny Mart, Cillín Hill
Wednesday, 8th November

Wexford
WFC Enniscorthy Mart
Friday, 27th October

A big thank you to all the farmers, site owners, local authorities, waste contractors and other local groups who supported the campaign between 2013 and 2017

FHW. The challenge of dealing with FHW has two distinct components:

- Wastes routinely generated through agricultural activity which will continue to arise at some rate into the future.

- 'Legacy' waste consisting of substances stockpiled in farmyards, often for decades, which require urgent removal from the rural environment.

The pilot programme has demonstrated that it is logistically possible to operate such schemes and some additional insights are listed below:

- Significant quantities of legacy agricultural chemicals such as DDT, gamma HCH, Cyanide, Agent Orange and Strychnine were presented for disposal at the centres. The poor condition of the containers holding these highly toxic substances is a particular concern.

- 46t of contaminated empty containers were collected over the four-year period which indicates that farmers are not engaging with triple-rinsing of containers on farms and deposit at IFFPG bring events for empty triple-rinsed containers. All organisations and farmers need to promote the wise use of farm chemicals and the triple-rinsing of empty containers.

- The inter-agency and cross-department collaborative model has worked well and should continue, assisted by all relevant stakeholders including those already involved such as the farm organisations and Bord Bia. The extensive range of agri-businesses across the country should be engaged in future collaborative approaches.

- The FHW collections underpin many national legislative priorities and policy ambitions relating to the agricultural industry and environmental protection (such as Origin

Green; Food Wise 2025, the National Hazardous Waste Management Plan; National Implementation Plan on POPs and the Water Framework Directive).

- The current estimate for hazardous waste stockpiled on farms across Ireland is 7,378t. Often these substances are highly toxic (with many now banned) and are stored in deteriorating containers. There is an urgent need to tackle this issue – both for environmental and farm-safety reasons.

- Approximately 50t of waste pesticide and 24t of veterinary medicine waste is generated annually. This figure includes waste packaging, which is significant particularly for biocides and veterinary medicine waste.

- Over 80% of the farmers surveyed would use a FHW collection centre on an annual basis, if made available, with 83% willing to travel up to 40km one-way to such a collection point.

Success

The pilot scheme has been a great success due in large part the active engagement of the farmers and their desire to ensure that these wastes are stored safely, removed from farms and disposed of in a safe and environmentally sound manner.

Farmers have demonstrated that they are keen to farm sustainably, while improving farm safety and water quality. The initiative also demonstrated how effective the pooling of resources, collaboration and collective expertise can be in achieving real environmental protection. Removing FHW from farms makes the farming environment a safer place for human and animal health and also potentially improves water quality.

Recommendations for future collections

- A long-term and affordable national scheme for the collection of FHW should be established. Various models of operation should be considered including the campaign approach trialled in this pilot; permanent bring-centres; or direct collection from farms.
- Leadership on this issue is required at Government level and there is an urgent need for one government department to assume primary responsibility for FHW.
- A working group made up of the current project partners with other relevant organisations should be established without delay to develop and implement a national scheme.
- To assist in the establishment and ongoing operation of a national scheme, an advisory and monitoring group made up of current project partners, local government, farming organisations and relevant industry representatives should be established to provide expertise and advice.
- The farming community has contributed significantly to operating costs and has shown a willingness to pay for such a scheme. While the amounts charged at collections were at a subsidised rate, records show that farmers nonetheless paid €500,000 towards disposal of these wastes over the four years.

Forestry at heart of multi-faceted farm enterprise

Michael Somers
Teagasc Forestry Development Officer

The area surrounding Lough Derg is one of Ireland's most scenic areas. It's been a focus for culture and innovation from pagan times to the start of the Christian era and right up to the early modern industrialisation of Ireland with the Shannon Hydro Electric scheme.

The area where the lake kisses Co Tipperary inspired the poetic genius of one of Tipperary's most favourite artists, Shane McGowan.

*"So I walked as day was dawning
Where small birds sang and leaves
were falling*

*Where we once watched the row boats
landing*

By the broad majestic Shannon"

Nestling among the windy roads of north Tipperary, between Ballinderry and Coolbawn, lies Brookfield Farm.



Ailbhe Gerrard, right, hired a contractor to cut and extract trees by chainsaw and horse.

Its owner is Ailbhe Gerrard who started farming there in 2010 and has won many prestigious awards for her approach to organic farming, business and forestry.

Ailbhe is a farmer by choice. In 2010, after a very successful career in construction, which took her to many parts of the world, she settled near her home in north Tipperary. "I purchased a 30ha farm. Approximately 25% of the farm was under broadleaf forestry of which 4.5ha required thinning."

The forestry comprised ash, oak and sycamore with each species requiring a different thinning strategy. At the time, the broadleaf thinning grant was coming in but Ailbhe chose not to avail of it.

Having attended a number of field days she had accumulated knowledge of how to assess a stand and she personally marked the potential crop trees (PCTs) and also those to be removed. At this stage, she hired a contractor to cut and extract trees by chainsaw and horse.

At the time the firewood fetched a roadside price of €45/m³. However, the costs were high because of the method of harvesting. But the first thinning was done. "On the second thinning, I applied for the grant," says Ailbhe. This grant is €750/ha. "With the PCTs marked from the first thinning I again marked the trees to be removed. This was based on their competition in the crown."

Ailbhe's income and expenditure are shown in Table 1.

As the PCTs in her forest are getting



bigger, with the diameter now averaging just under 20cm, Ailbhe says there is an urgent need to look at new ways of utilising wood. To this end she is involved with a Teagasc and GMIT Letterfrack project to test the quality of Irish hardwoods.

Brookfield is also expanding its forest cover. "We're in the process of planting native woodland and agro forestry on the farm," says Ailbhe.

As well as this, she is also laying out a truffle orchard. "Farming is about food production, she says. In many parts of the world, food production and forestry are compatible with one another. I'm integrating the forestry with the other enterprises I have."

Bees

Bio-diversity is core to Ailbhe's philosophy of farming. "This is why I put bee hives on the farm," she says. Along with her background in rural development she set up the "hive share project". This is where people can buy part of, or a full, bee hive.

For that, they get a minimum of five jars of your own hive's honey, right

Table 1: Ailbhe Gerrard's income and expenditure

Sale of timber 4.8ha second broadleaf thinning. Inclusive of woodland improvement grant	
Approximately five lorries equivalent €1,500 each – average (25-30m ³ of firewood harvest per ha)	€7,500
Woodland improvement grant 750 x 4.8	€3,600
Total income grant plus sales	€11,100
Costs	€9,600
Total profit margin	€1,500
Approximate margin per hectare	€300 (€12/m ³ timber standing, 25m ³ /ha)



Ailbhe (with hat) is passionate about biodiversity and demonstrates desirable plant species to visitors.

up to at least 30 250ml jars from the whole hive, plus the candles and balm in a presentation tin. Participants also get regular updates on their hive, and an invitation to the farm's "Honey Celebration" after the harvest (August or September), when they can see their busy bees and collect honey.

"Forestry is very important to this," says Ailbhe. "Sycamore, in particular, is an exceptional pollen producer. That's the raw material. The bees do the rest."

Lamb

Lamb is the other big product sold at Brookfield. Lambs are bought in from organic farms and are finished on the farm. "The lamb is delivered straight to the customer from the butcher as a half or a whole lamb, generally cut to the customer's specifications," says Ailbhe. "My goal is to have my own breeding programme here in the next year or so.

"I feel that forestry can complement the lamb enterprise. In many parts of the world, wood is used for flavouring.



Above: Ailbhe says sycamore is an exceptional pollen source for bees.

This is something I'm investigating, especially in relation to small diameter material. It's all about finding innovative marketing techniques."

Direct selling

Ailbhe constantly emphasises the importance of branding. As an organic farmer, the level of record keeping needed is high. Even though Brookfield farm is not an open farm, Ailbhe encourages visits.

"Consumers can see how we produce our products," she says. Most products produced on Brookfield farm are sold directly to the customer. The only exception is the firewood which is sold wholesale.

"I'm fascinated by the products," says Ailbhe. "I'm as profitable as some of the most efficient dairy farms," she says, with an air of confidence that is far removed from arrogance.

"As farmers we're obsessed with income for product tonnes rather than on selling the link to production. I believe this is what farms need to look to if they want a fair return."

Why hedges are good



Most farmers take their responsibility as custodians of the landscape seriously and take great pride in the appearance of their farms. This sense of responsibility is integral to the advancement of Ireland's green image and how our agricultural industry is perceived globally

Deirdre Walsh
Teagasc College at the
National Botanic Gardens

Unlike native ancient forests, many hedgerows are a comparatively recent component (centuries rather than millennia) in the landscape. In England, hedges and fencing introduced during enclosures from the 1600s onwards were controversial as rural labourers lost access to commonage where they could graze some cattle or sheep. Partly due to this, millions of these labourers were forced to emigrate, greatly reducing the rural population there.

On the other hand, economists questioned: "Why are the cattle on a common so puny and stunted? Why is the common itself so bareworn and cropped so differently from the adjoining enclosures?" said William F Lloyd in *Two Lectures in the Checks to Population*, Oxford University Press, 1833 (published in *The Land: an occasional magazine about land rights*). His argument was that commonage did not encourage the best farming.

Today, we are in favour of hedges for very valid environmental reasons.

Increasing concern over the environmental impacts of agriculture in Europe has led to the introduction of agri-environment schemes – GLAS being one example.

GLAS targets areas of immediate concern such as the protection of wildlife, preservation of the traditional landscape, and traditional species.

“ Planting native trees is recommended and specifically included in GLAS scheme requirements

There are several requirements to follow under the GLAS scheme when considering hedge planting. These are as follows:

- 1) A continuous length of at least 10m of new hedgerow.
- 2) Planting distance: six plants per metre in a double row.
- 3) Plants must be any of the following varieties:
 - Whitethorn: *Crataegus monogyna*.
 - Blackthorn: *Prunus spinosa*.
 - Holly: *Ilex aquifolium*, or any mix of these.

4) Maintained as required and kept clean of competing vegetation.

Adding trees in the establishment of hedgerow also delivers many benefits. Not only will they provide shelter for livestock, screening of farmyard buildings but also play a significant role in improving local landscape quality.

For the best ecological value to the farm, planting native trees is recommended and specifically included in GLAS scheme requirements.

There are native trees to suit the majority of soil conditions, for example plant alder (*Alnus glutinosa*), willow (*Salix alba*) or mountain ash (*Sorbus aucuparia*) for wet soils and bird cherry (*Prunus padus*) and wild cherry (*Prunus avium*) for free draining fertile soils.

Overall, the prioritisation of hedgerow and tree planting delivers numerous benefits environmentally, ecologically and economically. There is no doubt that significant environmental challenges lie ahead of us but as an industry we can continue to strive and ensure the conservation of our agricultural landscapes for future farming and non-farming generations.

TEAGASC CALF REARING MANUAL



Best Practice from
Birth to Three Months



AVAILABLE AT TEAGASC OFFICES



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