TEAGASC

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Today's Farm

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Farm Gate Gastronomy 30

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Keeping up with new technology in Kildare
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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 | Teresa Roche is behind the creation of Kylemore Farmhouse Cheese, produced on her family's farm in Galway. An example of a thriving food culture which has gained Galway the European Region of Gastronomy Designation for 2018 according to Anne Kinsella (right) of the Teagasc Rural Economy Development Programme, Athenry.

COMMENT

Mark Moore
Editor,
Today's Farm

Marketing pays

The west coast scenery is spectacular and a little bit of marketing magic (Wild Atlantic Way) is ensuring that everyone benefits. Galway's European Region of Gastronomy 2018 designation should similarly gain attention for the food producers we feature in our cover story and who represent a burgeoning food culture. Innovative, local and excellent are their by-words, and as with the WAW, the wider community benefits.

Tá Tairbhe sa mhargaíocht

Tá radharcra chósta an iarthair thar a bheith mórthaibhseach agus cinntíonn beagán de dhraíocht na margaíochta (Bealach an Atlantaigh Fhiáin) go mbaineann gach duine leas as. Ba chóir go gcabhródh ainmniú na Gaillimhe mar Réigiún Gastranómachais na hEorpa in 2018 le haird a dhíriú ar an gcaoi chéanna ar na táirgeoirí bia atá faoi thrácht againn inár scéal clúdaigh, dream a bhaineann le cultúr bia beoga. Is iad nuálaíoch, áitiúil agus iontach na focail lena gcuirtear síos orthu, agus ar aon dul le BAF, baineann an pobal i gcoitinne leas as.

What you need to know when using pesticides

May sees peak usage of pesticides on farm with the months of June and July most popular for rush control. In recent years, however, the drinking water monitoring results for Ireland show a number of herbicides commonly used on grassland being detected in our drinking water. Farmers are reminded to abide by the regulations governing the purchase, storage and usage of pesticides in order to protect our environment and drinking water quality.

The main culprit leading to breaches in the drinking water standard is MCPA. Products containing MCPA are frequently used to control of rushes. Great care is needed when using MCPA as it takes several weeks to break down.

It is water soluble, it does not bind to soil particles and therefore is more prone to leaching and run-off to nearby water bodies causing pollution.

Add to this the fact that rushes thrive in poorly drained areas where the water table is near the surface and you can see why run-off can potentially occur. Remember, a single drop of pesticide lost to a water body such as a small stream (1m wide, 0.3m deep), for example, can be enough to breach the legal limit for pesticides along 30km of its length!

Whether you are weed licking with a glyphosate or spraying with MCPA it is advisable to cut the rushes one month in advance to promote fresh green re-growth capable of taking herbicide.

This also helps weaken the food reserves within the plant. Adding a wetting agent will help the spray stick to a slender rush target area. You should also consider using drift reducing nozzles to minimise the possibility of spray getting into watercourses.

In all cases, remember the following

- Don't apply if the soil is waterlogged
- Don't apply if rain is forecast in the next 48 hours.
- Don't apply in windy conditions
- Abide by buffer zones (stay 5m back from watercourses for MCPA).
- Don't fill the sprayer directly from a water body.
- Triple-rinse containers before recycling.
- Wash down the sprayer in the field well away from any water body.

In order to apply pesticides using a boom, knapsack or quad sprayer you must be registered as an approved professional user (PU) of pesticide. The DAFM will issue you with a unique PU number. This number should be quoted on all paperwork recording use of sprays on farm.

This paperwork was issued to every farm along with their BPS maps earlier this year and must be filled as part of cross compliance. All boom sprayers over 3m in width and over five years old must be

Listen to *The Dairy Edge* podcast

The podcast is one of the most useful tools in our digital world. It's basically a sound recording which you can listen to at a time that suits you. You can download it on to your smartphone and listen via your hands-free car stereo, the tractor cab or anywhere else that suits and is safe.

Teagasc launched a dairy podcast *The Dairy Edge* in January. *The Dairy Edge* is targeted at dairy farmers and people working in the dairy industry. The series of podcasts aims to provide up-to-date advice and insights to potentially improve the profitability of Irish dairy farms. You can go back and listen to any podcast you like, as often as you like.

Topics

Teagasc dairy specialists, advisors and researchers join presenter Emma-Louise Coffey for the weekly podcast to cover a variety of topics. During spring, *The Dairy Edge* has discussed spring grassland management, fertiliser, feeding the dairy cow, udder health and calf rearing, while also providing advice to farmers during the difficult spring weather conditions.

More recently, the podcast has focused on genetics and reproduction in preparation for the upcoming breeding season. In the coming weeks, the podcast will consider how to produce good-quality silage and also some technologies to reduce labour requirements on busy dairy farms such as contract rearing, automatic milking and once-a-day milking.

You can listen to *The Dairy Edge* on the Teagasc website or on podcast apps such as Apple podcasts on your phone. Join us each week for your dairy edge.

Rushes thrive in poorly drained areas where the water table is near the surface.

tested and certified for use.

Pesticides stored on farm should be in a dedicated locked store which is bunded and ventilated and have a prominent sign. Have a small bucket with sand or peat moss nearby in case of spills.

Always wear proper safety equipment whenever handling pesticides. If you have any queries relating to the use of pesticides on farm, contact your local Teagasc advisor for more information.

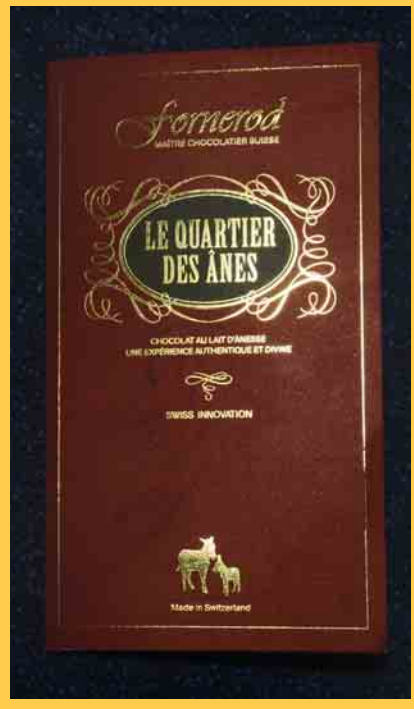
– Mary Roache, Teagasc, Westport, Co Mayo

The podcast is targeted at dairy farmers and people working in the dairy industry.

Swiss chocolate master creates world's first donkey milk chocolate

A Swiss company, Eurolactis, has created the first non-bovine chocolate using milk from donkeys. "This creation awakens an emotion in the palate while responding to the growing issues linked to cow milk protein allergies," according to the manufacturer.

"It's certainly innovative and pleasant chocolate, but it's high price of €9 for 50g, will ensure demand is limited," says Dr Maeve Henchion of the Teagasc Food Research Centre, Ashtown, who experienced the chocolate at a recent dairy innovation fair in Amsterdam.



Free sustainability support and advisory programme for farmers

This programme is a new approach to achieving improvement in water quality supporting the goals of the Food Wise 2025 strategy and the recently launched River Basin Management Plan which acknowledges that farmers, but also others, must play a role in improving water quality.

Pat Murphy, Teagasc Crops, Environment and Land Use Programme.

Through a commitment from the Departments of Agriculture, Food and the Marine and Housing, Planning and Local Government and support from the industry, 30 advisors will work within a partnership which encompasses Teagasc, the co-ops and LAWCO - the Local Authorities Water and Communities Office.

These new sustainability advisors will advise and work with farmers to protect and improve water quality. The programme will draw on the experience and resources of the two departments, the local authorities, the dairy co-ops, Teagasc, Bord Bia and the farm organisations.

Under the programme, the new team will promote on-farm sustainability best practice to all farmers. They will also deliver targeted advice to farmers operating in areas where water quality is at risk. (The local authorities– with the technical support of the Environmental Protection Agency – will identify risk areas at local level).

Teagasc and the co-ops, working with the farm organisations at local level, will provide advice and support to farmers in managing on-farm risks.

The co-ops will support sustainability best practice through their structures, promoting best farm practice and nutrient management processes across all their suppliers.

The programme has the potential to strengthen delivery of Ireland's obligations under the Water Framework Directive. It is part of a new approach to River Basin Management Planning for the 2018-2021 cycle.

This new approach will initially focus on water quality, and over time, will also address on-farm climate change and biodiversity strategies.

The programme will be jointly funded by both departments, Teagasc, local authorities and the dairy co-ops on a trial basis for four years to 2021.

The 20 Teagasc advisors will work primarily in the areas for action supporting farmers one-to-one to identify issues that could impact on water quality and to put in place a plan to improve practices on the farm. It will be a free service to farmers in the areas for action covering three main topics: nutrient management, farmyard management and land management.

The 10 dairy processor advisors will focus on suppliers that they have in the 'at risk' areas and will be putting in place a support structure for farmers, particularly where a significant amount of change is required.

PRIORITISATION EXERCISE

- A prioritisation exercise was carried out which identified 726 at risk water bodies in 190 areas for action between 2018 and 2021. These are shown in the interactive map located at: http://watersandcommunities.ie/areas-for-action/

In each of these areas:

- A Catchment assessment will be carried out to identify the risks for that catchment.
- Public and farmer engagement processes will take place.
- Advisors will provide support for farmers in the catchment to deal with specific issues identified and to improve practices.
- LAWCO staff will provide support to non-agricultural 'risk owners' to deal with issues identified.

events

TUESDAY, 08 MAY 2018

Forest Walk Limerick
- Tuesday, 08 May 2018
- Early management of Sitka spruce plantation
- **Meeting point:** Shanagolden Roman Catholic car park
- **Event time:** 7pm

Spring Crop Walks
- Get the latest information from Teagasc on fertiliser strategies, disease, weed and pest management and update on aphid, weed and disease resistance management.

Carlow
- **Venue:** Hugh McDonald, Muinebeag, Co Carlow, R21 NX38
- **Event time:** 2pm

Wexford
- **Venue:** Whelans Farm, Enniscorthy, Co. Wexford, Y21 H7D4
- **Event time:** 7pm

Offaly
- **Venue:** Michael Connolly, Tullamore, Co Offaly, R35 NW60
- **Event time:** 7pm

THURSDAY, 10 MAY 2018

Forestry and Environment Awareness and Careers Day
- **Venue:** Ballyhaise College, Cavan
- **Event time:** 10am - 3pm

SATURDAY, 12 MAY 2018

Young Breeders Training Day - Lissyegan Stables
- **Venue:** Lissyegan Stables, Ahascragh, Ballinasloe, Co. Galway
- **Event time:** 1:30pm

TUESDAY, 15 MAY 2018

Spring Crop Walk Kerry
- **Venue:** Michael O'Halloran, Kilmoyley Rd, Co Kerry, V92 N6P7
- **Event time:** 11am

Animal Welfare Officer Training
- **Venue:** Killeshin Hotel, Portlaoise
- **Event time:** TBC

WEDNESDAY, 16 MAY 2018

Spring Crop Walk Cork
- **Venue:** Calvert & Keith Smith, Bandon, Co Cork, P72 FD36
- **Event time:** 7pm

Organic Demonstration Farm Walk Cork
- **Venue:** Ballymounteen, Ballynoe, Mallow, Co Cork. Eircode: P51 DX08
- **Event time:** 12pm

Grass10 Farm Walk - Leinster winner
- A Grass10 Farm Walk will take place on May 16th on the Heffernan family farm in Dunnamaggin, Co Kilkenny. The Heffernans were the Leinster regional winners of the Grass10 Grassland Farmer of the Year Competition.
- **Event time:** TBC

THURSDAY, 17 MAY 2018

Spring Crop Walk Kildare
- **Venue:** Philip Harris, Clane, Co Kildare, W91 DR13
- **Event time:** 7pm

Spring Crop Walk Cork
- **Venue:** DAFM Farm, Fermoy, Co. Cork, P61 HN32
- **Event time:** 11am

Spring Crop Walk Waterford
- **Venue:** Tom Beausang, Glendine via Youghal, Co Waterford
- **Event Time:** 2:30pm

FRIDAY, 18 MAY 2018

Spring Crop Walk Kilkenny
- **Venue:** Teagasc, Kildalton College, Piltown, Co Kilkenny
- **Event time:** 11am

Grass10 Farm Walk - Connacht/Ulster Regional Winner
- A Grass10 Farm Walk will take place on Friday 18 May on the Payne Farm in Castlerea, Co. Roscommon. The Paynes were the Connacht/Ulster regional winners in the 2017 Grass10 Grassland Farmer of the Year Competition.
- **Event time:** TBC

WEDNESDAY, 23 MAY 2018

Spring Crop Walk Galway
- **Venue:** Gerry McGrath, Tuam, Co. Galway, H54 Y867
- **Event time:** 11am

Organic Demonstration Farm Walk Louth
- **Venue:** Andrew & Leonie Workman, Dunany Flour Organics Farm, Co. Louth Eircode: A92 T6CC
- **Event time:** 2pm

WEDNESDAY, 06 JUNE 2018

Organic Demonstration Farm Walk Kerry
- **Venue:** Kate Carmody, Beal Lodge, Listowel, Co. Kerry Eircode: V31 XA66
- **Event time:** 2pm

TUESDAY, 12 JUNE 2018

Teagasc Food Gateways event
- Beyond Brexit - Making Food Innovation Go Further
- Venue: Teagasc Ashtown Food Research Centre, Ashtown, D15 KN3K Dublin 15
- **Event time:** 10am - 3pm

WEDNESDAY, 13 JUNE 2018

Organic Demonstration Farm Walk Wexford
- **Venue:** Gavin Tully, Clonhenritte, Enniscorthy, Co. Wexford Eircode: Y21 H2R6
- **Event time:** 2pm

FRIDAY, 15 JUNE 2018

Grass10 Farm Walk - Beef Winner
- A Grass10 Farm Walk will take place on Friday 15 June on the farm of Ger Dineen, Kilnamartyra, Macroom, Co Cork. Ger won the Beef Enterprise Aware in the 2017 Grass10 Grassland Farmer of the Year Competition.
- **Event time:** TBC

SUNDAY, 17 JUNE 2018

- Talking Timber - timber marketing event
- **Venue:** Brandon House Hotel, New Ross, Co Wexford
- **Event time:** TBC

WEDNESDAY, 20 JUNE 2018

- Talking Timber – timber marketing event
- **Venue:** Mountbellew College, Co Galway
- **Event time:** TBC

MONDAY, 25 JUNE 2018

Young Breeders Training Day - Army Equitation School
- **Venue:** Army Equitation School, McKee Barracks, Cabra, Dublin 7
- **Event Time:** 1:30pm

TUESDAY, 26 JUNE 2018

Beef 2018, €nhancing Knowledge
- **Venue:** Teagasc, Grange, Dunsany, Co Meath
- **Event time:** 10am

Organic Demonstration Farm Walk Westmeath
- Venue: Frank O'Brien, Kilbeggan, Co. Westmeath Eircode: N91 Ay24

BEEF 2018 OPEN DAY

Arrive early to see it all

Pearse Kelly and Edward O'Riordan
Teagasc Animal and Grassland Research & Innovation Programme

Teagasc is delighted to invite all farmers and stakeholders in the beef industry to BEEF 2018, which will take place on Tuesday 26 June at the Teagasc National Beef Research Centre in Grange, Dunsany, Co Meath. It will be a major event with something to offer for everyone.

All of the main organisations associated with the beef industry will be present. The theme is "€nhancing Knowledge" with the emphasis on technologies, which will underpin the future profitability of the beef sector.

The most commonly expressed comment after BEEF 2016 was that visitors felt that they did not have enough time to see all that was on display. BEEF 2018 will be bigger again, with many different live demonstrations happening throughout the day.

Demonstrations will include the design and implementation of grazing infrastructure; selecting heifers as suckler cow replacements; the Derrypatrick Herd and the new dairy calf-to-beef demonstration herd in Grange.

In a series of interactive workshops, national experts will cover topics such as calf rearing, anti-microbial resistance, health and safety and many other practical areas of interest to beef farmers. Arrive early to give yourself enough time to see everything.

Infrastructure village

Poor grazing infrastructure is a limiting factor on a lot of beef farms. This significantly reduces the amount of grass that can being grown each year, and profitability suffers.

The infrastructure village at the Beef 2018 village will showcase the key areas that can be improved on beef farms such as fencing, water systems, roadways, drainage and reseeding. The village is situated at the start of the open day and is located in a field that Teagasc Grange has drained, reseeded, paddocked and put a new roadway and water system into during 2018.

Technology villages

These villages give visitors the opportunity to choose which areas of beef production they would like to focus on and view the most innovative technologies available. This year, these villages will have live demonstrations throughout the day. They will include:-

- **Grass 10:** All aspects of grassland management will be covered. Visitors can view grazing plots and engage with themes as varied as PastureBase Ireland; improving soil fertility; utilising white clover and grass fed beef.
- **BETTER farm beef programme:** This programme has been running since 2008 and Teagasc and the *Irish Farmers Journal* will have a joint village showcasing many different aspects including financial management, animal health, breeding and labour usage. The Newford Suckler Herd in Teagasc, Athenry, will also be presented in this village.
- **Dairy calf-to-beef:** Teagasc has established a dairy calf-to-beef demonstration herd in Grange and it also has the experience harvested in the Teagasc Green Acres Calf to Beef Programme. Information from these initiatives, along with all of the latest research at Teagasc Johnstown Castle on dairy calf-to-beef systems, will be on display.
- **Animal health and breeding:** This village will address many aspects of animal health and suckler beef breeding including teaser bull management, calving heifers at two years of age, Johne's disease, IBR, antimicrobial resistance, parasite control and many other areas. Animal Health Ireland will have a strong involvement in this village.
- **Feed and meat quality:** Areas covered will include grass silage, recent research on concentrate feeding, finishing rations and the most up-to-date research on meat eating quality.
- **Environment:** Producing beef sustainably is now a key requirement. Areas that are good for the environment are also beneficial to profitable beef production.

> "Kevin Dundon of Dunbrody House will demonstrate how versatile beef is, and the many different ways it can be incorporated into tasty and healthy meals

As in 2016, a large crowd is expected to attend BEEF 2018, with many different live demonstrations happening throughout the day.

• **Education:** Education experts will be on hand to discuss the many education options and career paths available. Graduates will be there to explain the route they chose.
• **Health and safety:** BEEF 2018 will have a substantial health and safety village including organisations and bodies involved in farm safety and also farmer wellbeing.

These will include An Garda Síochána to explain the new transport rules, mental health organisations and the Department of Agriculture, Food and the Marine, etc. There will be a quad bike safety demonstration and the opportunity for visitors to have their blood pressure checked.

Live heifer demo

The Irish Cattle Breeding Federation (ICBF), Bord Bia and the *Irish Farmers Journal* will have a live demonstration looking at selecting and managing heifers to be suitable replacements for the suckler herd. Potential markets for heifers "culled from the group" as unsuitable for breeding and destined for slaughter (poor docility, too well-muscled, poor figures, etc) will also be discussed. This demonstration will run a number of times during the day.

Cooking demonstrations

A new feature of this year's open day will be cookery demonstrations, which will take place a number of times during the afternoon. Kevin Dundon of Dunbrody House will demonstrate how versatile beef is, and the many different ways it can be incorporated into tasty and healthy meals.

Forum: 'Sustainable family beef farming businesses'

A key feature of all of our beef open days is the forum which takes place at the end of the day. This is an opportunity for farmers to express their opinion on issues facing the industry. Teagasc has put together a panel of farmers who are at the upper end in terms of profitability per hectare, and also expert industry analysts.

The Minister for Agriculture Food and the Marine, Michael Creed, TD will open the forum at 4pm and Richard Curran from the RTÉ Radio 1 programme *The Business* fame will chair this session. This promises to be an excellent discussion, not to be missed.

In short, BEEF 2018 is going to be bigger, better and more comprehensive than previous beef open days.

Again, it will take place on Tuesday 26 June in Teagasc Grange, Dunsany, Co Meath (EIRCODE: C15 PW93) and all are welcome from 9.30am onwards.

Sheep 2018 – the premier sheep event

Michael Gottstein,
Teagasc Animal and Grassland Research & Innovation Programme

Sheep 2018 – Farm to Fork will be the biggest joint industry sheep event held in Ireland in 2018. The event takes place at Teagasc, Mellows Campus, Athenry, Co Galway, on Saturday 7 July 2018.

Sheep 2018 is a continuation of the sheep events which are jointly run by Teagasc, the Department of Agriculture, University College Dublin, Bord Bia, Sheep Ireland and the *Irish Farmers Journal*.

The last comparable event was held on the same site in 2015. This year, to celebrate the designation of Galway, West of Ireland 2018, European Region of Gastronomy, Galway County Council will also be a partner for the event. Consequently, there will be a significant food element to this year's event, hence the title Sheep 2018 – Farm to Fork.

The event opens to the public at 10am and admission is free. It should be a great day for all sheep farmers and their families to attend.

What to expect

Technical aspect of event

There will be a series of villages and stands covering all aspects of sheep production.

Grassland Village

The Grassland Village will cover all aspects of grassland management through demonstrations, information boards, grass and grazing infrastructure displays. Advisory and research staff will be on hand to discuss soil fertility, fencing options, reseeding and seed mixture selection, as well as grass measurement and budgeting.

Environment Village

The Environment Village will focus on key aspects that affect our environment. Teagasc staff will discuss and demonstrate issues influencing water quality, rush management and the safe use of MCPA, as well as the requirements for the GLAS scheme and low-emission slurry spreading.

Hill Sheep Village

Hill sheep make up 25% of the national ewe flock and play an important role in maintaining our upland habitats and supporting rural communities. This year, this village will focus on key aspects of hill sheep management to optimise returns from hill sheep enterprises. In addition, there will be demonstrations and workshops on breed types, ram selection and key messages from the BETTER farm programme. There will also be a workshop on finishing store lambs.

Flock Health Village

Expenditure on flock health is the second-biggest variable cost on sheep farms. Also, flock health issues have significant negative effects on animal performance. Together with industry vets, DAFM staff and Teagasc research and advisory staff, this village will feature a host of information stands, demonstrations and workshops addressing key flock health issues such as:

- External parasites.
- Internal parasites.
- Infectious abortions.
- Lameness.
- Causes of sheep mortality.
- Vaccination and proper administration of health products.

Breeding Village

As the event is taking place just a few weeks before the start of the annual ram sales season and the breeding season for early lambing flocks, there will be a big focus on all aspects of sheep breeding.

From a technical point of view, there will be a large number of displays and workshops targeted at helping farmers to identify important aspects of both ewes and rams that will affect reproductive performance and ultimately profit.

This village will also feature information and sheep displays of the New Zealand, Suffolk and Texel ewes that Teagasc imported a number of years ago.

Teagasc Athenry staff preparing for the last comparable sheep open day.

Education Village

This village will contain a significant display of the education options for people interested in careers in agriculture. The displays will be staffed by staff from Teagasc and from universities and institutes of technology, who will be able to discuss the various options with interested parties. There will also be a number of workshops on skills and a young shepherd competition.

Health & Safety Village

Health and safety continues to be one of the major challenges facing the agricultural industry. This village will contain a number of information stands and demonstration-type events highlighting the risks and solutions available to people engaged in agriculture, not only from a safety point

of view but also looking at health issues.

Nutrition Village

Animal nutrition is a key driver of performance and variable costs on sheep farms. This village will focus on all aspects of sheep nutrition and will demonstrate to attendees how animal performance can be maximised.

Wool Village

Wool is often seen as a nuisance product on sheep farms, as the costs associated with removing the wool may not be covered by the market value of the fleece. The wool village will focus on the uses of Irish wool, sheep-shearing demonstrations, as well as wool-processing displays, which will be of interest to both farmers and members of the non-farming public.

BETTER Farm programme

Participants in the Teagasc BETTER farm programme will be present throughout the various villages sharing their experiences and showcasing how they have improved output and profitability on their farms through focusing on small but relevant changes to their farm management systems.

Processors and marketing

As in previous sheep events, there will be a significant focus on processing and marketing of both sheepmeat and live animals. Bord Bia will be co-ordinating factory displays of retail product and processors will have staff on hand to discuss market specifications and outlook.

Producer groups will be invited to display their wares and discuss with farmers and members of the public their marketing strategies or niches and the mechanics of operating these groups.

Teagasc and industry staff will be on hand to discuss topical and important information around areas such as:

- Clean Livestock Policy.
- Selecting lambs for slaughter.
- Tagging and recording requirements.

Sheep breed shows and displays

Planned for 18 April in conjunction with Sheep Ireland meeting. Similar to previous events, there will be a big focus on sheep breed displays and a number of societies are planning to have sheep shows taking place at Sheep 2018.

Food aspect of the event

This year, to tie in with Galway, West of Ireland 2018, European Region of Gastronomy designation, there will be a significant emphasis on all aspects of food. This designation focuses attention on the vital role of the food industry in the west of Ireland and how central it is to the economic wellbeing of the area.

The award also presents the region with a European platform to not only showcase Galway and its surrounding area and the wonderful food produced, but also provides an opportunity to welcome Irish and European food tourists to the region to sample the fine fayre. See also article by Anne Kinsella on pages 30-32.

Galway County Council and its local enterprise office (LEO) is partnering with Teagasc for this year's event. Activities will include:

- Food Science – The Teagasc Meat and Food Science and Food for Health programmes will present information and interactive displays.
- Cooking demonstrations – with emphasis on lamb dishes.
- Artisan food/food markets – many new and local artisan food companies will showcase and sell their produce.
- Family vegetable garden – demonstrating the diverse range of vegetables and fruit it is possible to grow in a small area.
- Bord Iascaigh Mhara – will exhibit the diverse range of local seafood products.
- Information on establishing a food company. Because of the current huge interest in establishing new food companies and the development of the BIA Innovator Campus at Teagasc Athenry, stands providing the full suite of information relating to establishing a food company will be available to assist new entrepreneurs.
- Galway has been named European Capital of Culture for 2020. Project Baa Baa, which is a central tenant of the planned year-long events, celebrates sheep in their entirety. Its first outing will be at Sheep 2018 and celebrates all aspects of sheep production from fabric to meat, cheeses, weaving, knotting, fashion and will be a major attraction at this year's event.

Therefore, Sheep 2018 – Farm to Fork is much more than just a sheep event. It will have major attractions for all family members and because of the significant food dimension, it is expected to attract many non-farmers.

The organisers of Sheep 2018 would like to sincerely thank main sponsor Irish Country Meats, in addition to other major sponsors MSD, Zoetis, Channelle, FBD Insurance, Germinal Seeds and Tuam Farm Supplies/Cormac Tagging for their kind sponsorship, without which it would not be possible to run an event of this scale.

Getting back on track

Ciaran Lynch
Sheep Specialist, Teagasc Animal and Grassland Research & Innovation Programme, Ballyhaise

Grazing

May, June and July typically deliver the highest grass growth. With focus, and a little luck, we still have time to maximise lamb performance and replenish forage supplies.

The grass supply targets for the coming months are outlined in Table 1. The days ahead guideline is an easy and practical way to manage supplies. A weekly walk of the grazing area taking note of this will provide a good estimate of how many days ahead there are on the farm.

The principle is simple. When the guideline figure is exceeded and growing conditions are good, you can afford to drop out paddocks for silage. When it's the opposite, apply additional fertiliser and/or reduce demand (eg through early weaning).

Table 1: Target grass supply on sheep farms

	Kg DM/LU	Days ahead
M Apr	300	20
E May	250	15
M May	250	12.5
E June	200	10
Mid June	200	10
E July	200	15
Mid July	200	15
Source Creighton 2016		

Pre-grazing

For May and June, aim for pre-grazing covers of 1,000 to 1,500kg/DM/ha (7.5cm to 9cm). Where possible, avoid grazing heavier covers of grass 10cm+ (2000 + kg DM/ha) as utilisation levels will be lower. These areas should instead be conserved as high-quality baled silage. A word of caution here would be to avoid leaving these closed for long periods as they will often be required back in the rotation at, or prior to, weaning – remember the duration from cutting until available for grazing!.

If the overall farm cover is very low, theses heavier covers may need to be grazed. If so, split the paddock and graze a section at a time.

Post- grazing

To maintain quality for the next rotation, graze down to a residual of 4cm in May, increasing to 4.5cm in June prior to weaning. However, continually grazing at low sward heights will reduce animal performance. It will also reduce overall grass production as it depletes the plant's energy reserves. To avoid setbacks in performance, we need to reduce the amount of time spent achieving this or the residency period (time spent in the paddock grazing).

Steps to reducing residency period

- **Reduce grazing area:**
  - Use temporary fences - approx. costs € 1 to 2.75 per m
  - oE.g. 2 ha division per 100ewes with the option to further divide
- **Increase grazing group size**
  - Batch up ewes

  - Group size according to handling yard capacity
  - Rotate other stock between grazing groups (cattle)

Data from PastureBase Ireland shows that increasing the number of paddocks available for grazing on drystock farms increases the number of grazings per year and overall grass production. Additionally, it will facilitate removal of surplus silage as it allows smaller areas to be dropped out of the grazing rotation at any one time.

Fertiliser

A key priority for this year should be to address soil fertility issues on underperforming fields starting with lime, where needed. Adequate nitrogen is also crucial. A nitrogen input of 11kg to 12kg N per ewe will meet grazing and silage requirements – either in chemical or organic form. The rates suggested in Table 2 are for a stocking rate of 10 ewes per ha.

Table 2: Suggested N application rates for sheep farms*

	April	May	June/July
Kg N/ha	25	17	17
(units/ac)	(20)	(13.5)	(13.5)
Source Creighton 2016			

If there are only 7 to 8 ewes/ha, reduce accordingly. However, rather than no N input during middle part of the grazing season, reduce the area spread – eg 50% early in the month and 50% in the latter half – thus balancing potential growth on the farm.

There is a case on a lot of farms to increase the amount applied in May to take advantage of better growing conditions, removing the excess as bale silage. Remember to replenish fields where silage was cut to account for offtakes of P & K.

Silage

Typically 80 to 90 units of N per ac should be applied to silage ground for the first cut. There may be a case to target a lower application rate eg 40 to 50units/ac on a proportion of the ground to allow it to be harvested in late May/early June, and meet some of the silage requirements early in the season. This ground should be available for a second cut later in the season.

Protect Your Valuables At Turnout

Protect for up to 12 months against 10 clostridial diseases with 2 doses* of TRIBOVAX10

TRIBOVAX 10

- MUSCLE - Blackleg - Gas Gangrene
- LIVER - Black Disease - Bacterial Redwater
- BRAIN - Tetanus - Pulpy Kidney
- GUT - Lamb dysentery - Diarrhoea^ - Struck - Braxy

^ *C. perfringens* causes diarrhoea in cattle and sheep
* Where 2 doses are part of a primary vaccination and are administered 4 to 6 weeks apart as recommended by SPC.
Tribovax 10 Suspension for injection for cattle and sheep contains *C. chauvoei* whole culture, and the following toxoids: *C. perfringens* type A (α), *C. perfringens* type B & C (β), *C. perfringens* type D (ε), *C. novyi, C. septicum, C. tetani, C. sordellii, C. haemolyticum.*
Always read the package leaflet or SPC before use.
Prior to first time use on a farm, it is strongly recommended that the advice of a veterinary practitioner is sought.
Withdrawal period: zero days. Legal category: LM

Use medicines responsibly.

For further information see SPC, contact prescriber or MSD Animal Health,
Red Oak North, South County Business Park, Leopardstown, Dublin 18, Ireland.
Tel: +353(0)1 2970220. E-Mail: vet-support.ie@merck.com
Web: www.msd-animal-health.ie

MSD Animal Health

IE/TV10/0215/0001 March 2015

A dreadful start but the game is far from over

Only 10% of grass is produced up to mid-April so a good main season growth will help compensate. Slurry and bagged fertiliser are key.

John Maher
Grass10, Teagasc Animal and Grassland Research & Innovation Programme

Weather conditions in the early part of the year have been unusually wet and cold. Grass production in mid-April had only reached 50% of normal (see grass growth curve). Grazing conditions were also poor. The pits are bare. So the race is on to rebuild silage stocks and hopefully some reserve silage too.

The good news from a grass production perspective is that only 10% of annual grass production occurs before mid-April. Fortunately, grass production picked up since then. About two-thirds (66%) of the grass produced for the year grows between mid-April and mid-August.

This is the time to metaphorically "make hay" and grow as much grass as possible so we can graze the animals and make more silage.

Slurry and fertiliser

If you want to increase both grass and silage production you must make efficient use of slurry and fertiliser. Too much slurry is being spread late in the year. This "fertiliser" is not being used efficiently as grass/silage production is lower later in the season.

Slurry should be applied to the ground directly after it is cut for silage in late May/early June.

Equally, grazing ground requires fertiliser P and K applications because:

- Our national soil fertility status is poor, and
- The grass plant had a difficult autumn (in 2017) and a difficult spring (2018) so the plant needs the nutrients to repair itself. P and K applications are essential for this recovery.

There will also be a much greater response to sulphur (S) application than in the past. So apply 15 to 20 units/acre of sulphur by July on grazing ground and about half of this on silage ground.

Extra grass

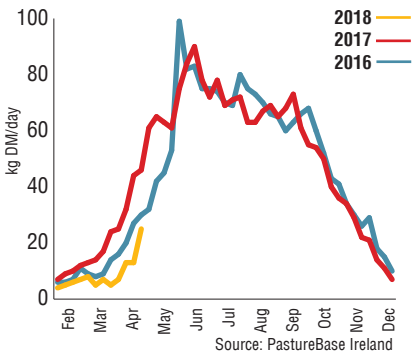
If we can grow extra grass on the farm, this can be harvested as surplus grass and made into silage (either pit or bales). For this to happen though, the level of grassland management needs to improve. Put huge effort into ensuring that animals are entering paddocks with covers of 1,300kg to 1,600kg DM/ha.

Ask yourself the question: if I am continually topping, am I wasting feed? If a paddock/field is too strong for grazing, skip it and use the next paddock. The paddock to be topped should be cut for round bales instead.

Increase in grass growth

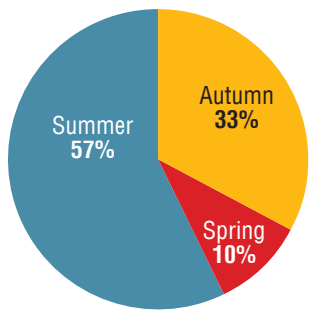
There is often a good recovery in grass growth after a slow spring. This happened in 2013 and again in 2016. Growths rates of as high as 100kg DM/ha/day were recorded on the grass growth curve from Pasture-

Figure 1
Grass growth curve for 2016-2018 inclusive



Source: PastureBase Ireland

Figure 2
The proportion of grass produced, by season



Source: PastureBase Ireland

If you want to increase grass production, you must make efficient use of slurry and fertiliser.

Base Ireland, as can be seen from the graph.

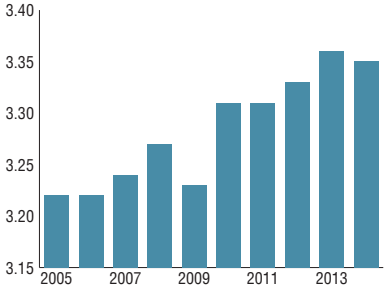
This was due to an improvement in the weather but also a response to fertiliser in the soil which had not been used in the early spring. Even though the growth of grass was poor during spring 2016, more grass was grown for the year as a whole than in 2015 and 2014.

Tight grazing: the benefits for grass quality

The spring of 2013 was similar to this spring. While not as much rain fell, it was colder particularly in April and grass growth was slow. A consequence of this was that every single blade of grass was needed during April and May of that year.

However, subsequent grass quality was excellent. This improvement in grass quality was reflected in mid-season milk protein content. Figure 3 demonstrates the milk protein content in the month of June for the 10-year period from 2005 to 2014 inclusive. It is clear that the highest milk protein was recorded in 2013.

Figure 3
Milk protein % in the month of June



Source: PastureBase Ireland

Too many animals on the farm?

Another way of increasing the amount of silage available next winter is to carry fewer animals into the winter.

In recent times, there has been expansion on many dairy farms and greater animal numbers. This increases the requirement for forage, so either more grass/silage must be grown or more land taken to increase fodder supply. Any farmer who was short of silage this spring must ask him/herself how many animals should I carry into next winter. Selling animals before the winter will also improve cashflow.

Dairy farmers, in particular, have been tight on feed this spring. Does it make sense to carry beef animals, surplus replacements, cull cows, poor performing cows, etc, into the winter if feed supply is tight with no reserve of silage?

If soil fertility is limiting on the existing farm, this will compromise grass/silage production. Investing in more P, K and lime to increase grass production will make more sense than renting additional land at great expense.

The average level of grass production on the best farms in the country is 14t grass DM/ha (according to PastureBase Ireland). This allows a stocking rate of 2.5 cows/ha (1 LU/acre) or 210kg organic N/ha to be carried on the whole farm without the need to purchase forage.

Any increase in stocking rate beyond this for the whole farm will require forage to be purchased assuming that 14t grass DM/ha have, indeed, been grown.

Key messages

- It's mostly still all to play for. Ninety per cent of annual grass production occurs after mid-April. So a lot of grass can still be grown for grazing and silage despite the slow start to the year.
- Make sure that paddocks are well grazed out and grass quality will be improved in subsequent rotations.
- Apply slurry to land after first cut silage to replenish P and K levels. Many farms did not get the opportunity to do this in early spring.
- The first step to ensuring you have adequate silage available for feeding next winter is to review the number of animals to be wintered.

Gearing up for grazing

Paddocks, roads and water are the foundations of profitable grass management

Catherine Egan
Grass10, Teagasc Animal and Grassland Research & Innovation Programme

At Beef 2018, farmers will experience a new feature: a grazing infrastructure "village". Teagasc research has shown that for every additional tonne of grass eaten/ha on a beef farm, net margin increases by €105/ha.

If we take a 40ha farm, that's €4,200 from 1t/ha extra. The village will feature live demonstrations on how you can implement fencing, water, roadways and drainage works to make that possible.

It will also illustrate how to turn a parcel of land from a set-stocking "free-for-all" grazing scenario into a paddock grazing system. A paddock system will allow you to grow and utilise more grass of higher quality. Teagasc specialists, researchers and advisors will give tailored advice on grazing infrastructure options on your farm.

Improving grazing infrastructure on farm allows better control of grass, increased grass growth and improved animal performance. This is particularly visible during poor weather conditions and in both the spring- and autumn-growing seasons.

Cattle are easier to manage and become more docile, which is particularly important in a one person operation. Grass utilised on farms can be increased by either growing more grass and/or improving the utilisation rate. As pointed out earlier, margins on beef farms could be increased considerably by growing and utilising more grass.

On many drystock farms, there are too few paddocks per grazing group. In most cases, fields are too large with set-stocking practised. As a result, cattle are grazing paddocks for too long. The productivity is then significantly reduced.

In this scenario, farmers often find that regrowths are not protected and are continually grazed hindering growth rates. On the other hand, cattle are grazing excessively high covers resulting in poor utilisation. As a result, fields have to be topped to clean off the heavy residual.

PastureBase Ireland figures show that there is a direct relationship between the number of paddocks on a farm and the number of grazings that take place. PastureBase Ireland also identified that creating one new paddock on a farm will give five extra grazings on the farm for the year.

As a consequence of sub-dividing a farm into paddocks of adequate area, the number of grazings will increase in conjunction with DM production. Dividing fields into paddocks need not be an elaborate or high-cost project.

In the majority of cases, reels and poly wire can be used to temporarily split fields for grazing. Having adequate drinkers in fields is very important to allow subdivision. All of these options will be demonstrated at the Beef 2018 open day.

Calculating paddock size

Stock numbers	Liveweight	Days	Total liveweight
Ten cows	650kg	3	19,500kg
Ten weanlings	200kg	3	6,000kg
			Total 25,000kg @ 2% body weight
		Intake per day	510kg
		Target pre-grazing cover	1,200kg
		510/1,200 = 0.50ha (1.25acre)	

Key steps when setting up a paddock system

1. Create a farm map with precise areas

The first step is create a map of the farm. Ungrazeable areas, walls, ditches and hedgerows will influence where paddocks and farm roadways will go. Talk to your advisor about developing a farm map or use your own paper map. There are also a number of free maps online and apps that can help to map the farm.

2. Paddock size

The aim on beef and sheep farms is to grow grass in three weeks and graze it in three days. Three-day paddocks are the goal. A common question is: How large should paddocks be?

As a rule of thumb, a group of 40 suckler cows and 40 weanlings grazing on free-draining, productive ground should be allocated a 2ha paddock.

The plan is to have seven to eight paddocks per grazing group.

Avoid creating long narrow paddocks to minimise poaching. Aim for a ratio of 2:1 so that paddocks are twice as long as they are wide.

3. Plan out drinking points when dividing fields

Trough location in the paddock is very important. Avoid locating troughs near gateways. Ensure to position water troughs in a central location in the field, which means

Teagasc research has shown that for every additional tonne of grass eaten/ha on a beef farm, net margin increases by €105/ha.

RETURN ON INVESTMENT

- Cost: €100/acre on average for fencing and water.
- Return: increase sward quality,
- More grass grown.
- More liveweight gain.
- Higher stocking rate.

The main return on investment comes in the spring and autumn time with up to 1t DM/ha extra grazed.

This extra growth alone represents a return of around 40%. The investment will pay for itself in about two years.

Up to €180/acre in one year from increase in animal performance and stocking rate.

each one can serve a minimum of two paddocks. Ensure the drinker is positioned on level ground and balanced with some hardcore where necessary. In some cases, splitting fields like the spokes of a wheel from the drinker will ensure that cattle continue to have access to water while getting regular allocations of grass.

Alternatively, you could divide larger, square fields, into four, with one drinker serving many paddocks. This option is shown in Figure 1. There will be a full live demonstration of various aspect of water troughs, size, fittings, piping and various options displayed at the open day.

4. Farm roadways

Roadways allow more efficient access to paddocks. They enable easier movement and management of livestock around the farm. Roadways also allow for easier management of grass during difficult grazing conditions.

Ultimately, farm budgets will determine which roadway type is chosen. Every farm budget will be catered for at the open day, from very low-cost livestock roadways to more expensive machinery roadway.

All options to meet your needs will be discussed.

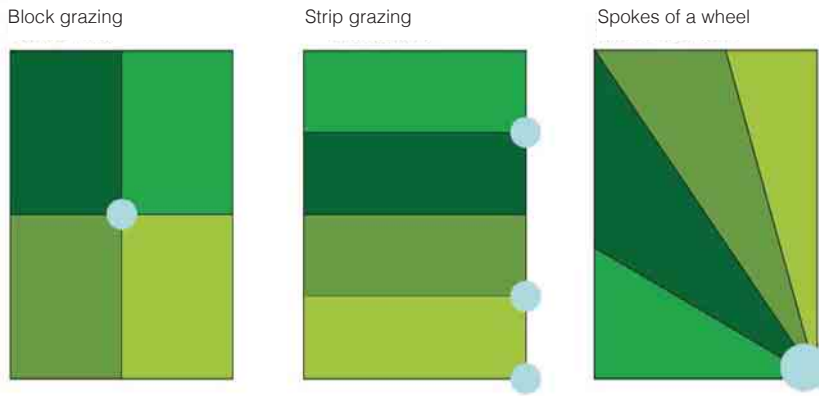
Pre-grazing grass height

The ideal pre-grazing grass height is 10cm to 12cm, which will be grazed tight down to 4cm. This will be demonstrated clearly at the Grass 10 village. Different grazing scenarios of different grazing heights will show what height grass should be grazed down to.

As the supply of grass this time of year exceeds demand, correct management is essential. Key tips on how to manage the excess supply of grass will be demonstrated on the day. This will be closely followed by discussions on all aspects of soil fertility.

You'll never get a better chance to see the range of infrastructure options assembled in one place. As well as seeing the demos you will have the chance to quiz independent experts on how to upgrade your own infrastructure. This is an opportunity not to be missed.

Figure 1
Paddock divisions



Derrypatrick Herd: 2017 in review

Matching last year's performance will be a challenge

John Heslin
Teagasc Animal and Grassland Research & Innovation Programme, Grange

The Teagasc Derrypatrick Herd comprises a 100 suckler cow-to-beef research demonstration herd located in Grange, Dunsany, Co Meath on 65ha with a stocking rate of 2.7LU/ha. The primary objective is to evaluate alternative suckler calf-to-beef production systems.

The herd consists of Limousin × Friesian and three-quarter beef-bred Simmental and Limousin cows. Over the previous three years, these cows have been bred to either Angus (early-maturing; EM) or Limousin/Charolais (late-maturing; LM) bulls.

Progeny have been finished as 16-month bulls, 20-month heifers and 24-month steers. As of 2018, all male progeny will be slaughtered as steers, to coincide with a grazing study, which will result in a higher stocking rate (3 LU/ha). Data collection of the grazing and breeding research projects will begin in 2018.

Calving

At the beginning of April 2018, 80% of the herd had calved. Following two sets of twins and a clean bill of mortality, there were 83 live calves from 81 cows. There were a number of assisted calvings following malpresentation but, thankfully, they were all successful. The average calf birth weight was 46kg, while the average calving score was two.

The cows were in a good condition, with an average liveweight and body condition score at calving of 657kg and 2.75, respectively. Target calving interval is 365 days, anything below this target figure is a bonus. At the time of writing, calving interval averages 356 days.

Winter 2017/18, as we all are well aware, was very challenging at farm level. While fodder was thankfully not an issue for the Derrypatrick Herd, housing arrangements were tested to the limit.

Make-shift creep areas were erected in the slatted shed as ground conditions delayed turn-out. With a good team in place, we were extremely vigilant with calf health this winter.

All calves were vaccinated against respiratory diseases from 10 days of age. At the first sight of dullness or calves off-form, temperatures were checked and the appropriate action taken. So despite remaining housed for an extended winter, the animals suffered no major health issues.

Breeding

Our 12-week breeding season began on 1 May. The breeding herd grazes in four groups of ~30 and each group is accompanied by a teaser bull. All breeding will be carried out using AI, and the AM:PM rule will be applied. The sires elected for breeding 2018 are outlined in Table 1.

Cows are bred to one of 12 (four from each breed) Charolais, Limousin and Simmental sires, whereas heifers are bred to one of four Angus sires. Aids to heat detection included teaser bulls with chin-ball, tail paint and visual observations (three times daily). The target for breeding 2018 is to achieve a pregnancy rate of at least 90% and to have all heifers in-calf in the first six weeks of breeding.

Animal performance 2017

A summary of 2017 calf performance is shown in Table 2. All male calves were castrated in mid-September. Gradual weaning began on 10 October. On average, cows weaned 43% of their body weight in calf-weight.

Due to poor weather conditions, cows remained indoors after weaning. Calves were offered 1kg/head/day of a barley-based concentrate ration from 10 days prior to weaning until housing, four weeks after weaning. Cow liveweight and BCS at weaning were, on average, 668kg and 3.0, respectively.

A summary of slaughter performance of 2017 is presented in Table 3. Having implemented the Teagasc 16-month bull beef system, all bulls were offered a barley-based concentrate ration (2kg/head/d) from weaning. When housed (11 November 2016), bulls were offered first-cut silage (72% DMD) ad-lib plus 2kg/head/d of concentrate.

Concentrate was gradually increased with all bulls receiving ad-lib by the first week of January. Bulls were slaughtered in mid-June 2017 at 16 months of age achieving a lifetime ADG of 1.35 kg with an overall concentrate input of ~1.3t/head.

Finishing heifers and steers were offered a barley-based concentrate from 1 September that gradually increased to 4kg/head/day over a two-week period. The aim was to finish all heifers from grass at 20 months and steers before the second winter. In total, 16 heifers and 12 steers were slaughtered following supplementation at grass.

Due to poor weather conditions, animals (17 heifers and eight steers) were housed on 1 November for a final

The Derrypatrick Herd gross margin for 2017 is €1,285/ha compared with the 2016 gross margin of €1,054/ha.

Table 1: Sires (2017)

Replacement sires			Terminal sires		
AI code	**Name**	**Breed**	**AI code**	**Name**	**Breed**
VMO	Voimo	CH	FSZ	Fiston	CH
CH2218	Bivouac	CH	SNZ	Sylvaner	CH
JSS	Usse	LM	LM4050	Wilodge Goldcard	LM
CWI	Castleview Casino	LM	LM4093	Mullary Intrepid	LM
QCD	Cloondroon Calling	SI	RWV	Raceview Van Halen	SI
SI2152	Curaheen Earp	SI	CQA	Curaheen Vio	SI
ZLL	Lanigan Red Deep Canyon	AA	ZEP	Hawkley Red Zeppelin	AA
RGZ	Tubridmore Gizmo	AA	ZHF	HF Rebel	AA

Table 2: Calf performance (2017)

	Birth WT, kg	Wean WT, kg	Wean age, d	ADG birth-wean, kg	Housing WT, kg	Value €
Heifers	41	275	213	1.11	285	725
Bulls	45	295	210	1.21	311	781

Table 3: Slaughter performance (2017)

	No.	Birth WT, kg	Wean WT, kg	Slaughter WT, kg	Life-time ADG, kg	Carcase WT, kg	Con-for.	Fat	KO%	Age, M
16m bulls										
EM	11	44	375	703	1.40	395	R+	3-	56	16
LM	9	53	352	682	1.30	403	U-	2+	59	16
Heifers										
EM	21	41	320	578	0.94	308	R=	4=	53	19
LM	19	51	326	601	0.92	334	U-	3-	56	20
Steers										
EM	10	46	364	651	1.00	354	R-	3+	54	20
LM	9	53	350	688	1.04	392	U-	3-	57	21
Cows	28	N/A	N/A	751	N/A	391	R-	3+	52	N/A

finishing period. Some animals were drafted for slaughter on 16 November whereas the remaining animals were slaughtered on 7 December with only a five-week indoor period required.

Steers achieved the targets required for a 24-month steer system, but did so three to four months early. In 2017, a total of 28 cows were culled with chronic lameness and poor performance being the main factors.

Arguably, the best cow in the herd was culled due to chronic lameness; first calving at 23 months, this nine-year-old cow produced seven calves resulting in 2,600kg of beef with an average calving interval of 365 days. At slaughter, this Limousin (Rocky sired) cow weighed 860kg and left a 467kg U-4- carcase.

Economic performance for 2017

The Derrypatrick Herd gross margin for 2017 is €1,285/ha compared with the 2016 gross margin of €1,054/ha. Despite purchasing 18 in-calf cows (to replace 18 cows not in-calf in 2016), gross output was higher in 2017 than 2016 aided by a positive inventory change (cow numbers).

In comparison to 2016, fertiliser costs were €65/ha higher and purchased feed costs were €146/ha lower, resulting in overall direct costs being €59/ha lower in 2017.

Increased fertiliser costs were due to investment in soil fertility by using more compound fertiliser. Lower feed costs were due to shorter finishing periods for cull cows, heifers and steers. Replication and improvement of the animal and economic performance outlined above is a key target for 2018.

Research

White clover (Chieftain and Aberherald) was incorporated into half the farm (every second paddock) during 2017. The aim is to evaluate the effect of incorporating white clover into perennial ryegrass swards on herbage production, utilisation, clover persistency and animal performance of a suckler-to-beef system.

Clover was over-sown into existing pastures at a rate of 5kg/ha (2kg/ac) after a tight grazing or silage harvest using an Einbock pneumatic seeder. Fertiliser (0:7:30) was spread at sowing at a rate of five bags/ha (two bags/ac).

To aid clover establishment, pre-grazing herbage yields were typically less than 1,300 kgDM/ha for the next three to four grazings.

Half of the cow herd and its progeny will graze perennial ryegrass-only swards, while the remaining animals will graze mixed swards consisting of white clover and perennial ryegrass.

Breeding 2017

Breeding 2017 was the first year of the high replacement index v high terminal index sire comparison. A team of sires, across breed, are being selected on high maternal traits and high terminal traits for the duration of this comparison.

The calves from these sires will be managed to slaughter in a 20-month heifer or 24-month steer production system. The aim of this study is to determine the effect of selecting high replacement sires in comparison to high terminal sires on animal performance and carcase output.

Within the replacement index, sires were selected on the following traits: milk yield, calving fertility, cow contribution to the replacement index, calving difficulty and overall reliability while maintaining a balanced terminal index. Within the terminal index, sires were selected on: carcase weight, overall terminal index, calving difficulty and overall reliability. Maximum sire calving difficulty used on the cow herd was 8%. All heifers were bred to Angus sires using high maternal and high terminal bulls with the same criteria as above.

Paddocks and animals involved in this programme will be on display at the Teagasc Beef Open Day on 26 June 2018.

Grass at last in Co

The McElvaney family is aiming for more grass and beef output

Shane Devaney
Teagasc, Longford

Sean McElvaney and his son Donal step forward to greet us. The two are clearly equal partners but Donal hangs back a bit, slightly embarrassed by the massive black eye acquired during a recent Gaelic football match. He has played senior for nearly 20 years at the local club and loved every minute of it – even when the player he was marking inadvertently stood on his face.

The McElvaney family farms in a partnership which includes Sean and Mary, Donal and their other son John. With 44 adjusted hectares in three blocks between Edgeworthstown and Granard, the farm is fairly typical of the county. And, like most farms, their land type is a mixture of dry free-draining and heavier, clay, soil.

"Until recently, we have run a mainly spring-calving suckler to weanling/yearling system from 45 cows running with a Charolais bull," says Sean. Their stocking rate on the farm in 2017 was 1.4LU/ha, which makes them comparable to many farms in the county. Their aim is to go higher.

Grassland management

"In the last few years, we have become more interested in trying to get more from our swards," says Donal. In 2014, they drained part of a 12ac field and reseeded the whole field which was then divided up into 10 paddocks.

"There was a permanent electric fence running down the middle and across the field, dividing it into four," he says. "The individual paddocks are made with reels and pigtail posts."

Water troughs and piping were installed at various locations along the fence to suit paddock layout. The paddocks range in size from 0.3ha up to 0.7ha. There will be a group of 20 cows on this block in 2018.

"Cows are moved every one to two days depending on paddock size," says Donal. Prior to this, the cows were strip-grazing on an out farm. "We would move the electric fence every day so that the cows and calves had enough grass.

"The calves were allowed to go under the wire to graze a head of cows. We found that we got very good clean outs but the cows were allowed to go back and eat the regrowths on ground which had already been grazed. This was defeating the aim of trying to grow extra grass.

"Since installing the paddock system, we find that we are growing more grass and can take out some of this extra grass as high-quality bales of silage. This has given us the confidence to install more paddocks on one of the out farms where 25 cows along with the stock bull will be rotated through 16 paddocks."

Financial performance

The McElvaneys are big believers in looking at the financial performance on the farm each year. "We have been completing a Teagasc Profit Monitor since 2011 and our gross margin for 2017 was €634 per hectare," says Donal.

"We hope to improve on that with higher stocking rates and better grass output.

"We are looking at the option of bull beef; keeping all bull calves up to around 18 to 19 months of age.

"All females will be kept up to between 18 and 20 months with the option of killing some off grass with the remainder sold live. When you're just selling weanlings you're at the mercy of the demand on the day you're selling."

Discussion group

The McElvaneys are members of a local grassland discussion group which

Longford

Shane Devaney, Sean McElvaney and Donal McElvaney.

was set up in 2016. There are currently 15 members in the group.

"The group met up 11 times last year," says Sean. "There is a mix of cattle, sheep and dairy farmers in the group which is a big advantage as there are different methods of grass management being used for each enterprise. Seeing what other farmers in the group are achieving has inspired us to be a bit more ambitious."

"We've gained a lot of knowledge from being in the group and this year we have started to measure grass growth," says Donal. "We've signed up to PastureBase which we hope will help make decisions such as when to take out paddocks for silage and when to apply there fertiliser, slurry, etc. easier."

"We have also invested in a weighing scales to monitor weight gain performance of stock. It has confirmed what we knew already – that this spring has been quite difficult with poor growth and difficult ground conditions."

Silage

"We place strong emphasis on producing good-quality silage," says Sean.

"We aim to cut pit silage at the start We tested last year's silage and it came back at 70 DMD which means it was of reasonably high quality. This is very important for achieving good weight gains on growing stock over the winter. We were lucky to have enough this year."

"You never know what's coming at you," says Donal, thinking perhaps of his rapidly healing eye. "But with an improved paddock system we definitely have more control."

Breeding and calving performance

The McElvaneys are participating in the BDGP scheme. The cows are a mix of all breeds but are mainly three-quarter contintental. AI is used on some of the cows while they are still in the shed.

Their most recent BDGP €uro-Star report shows that they have 42 four- and five-star female replacement currently in their herd.

Currently, they have more than double the number of four- and five-star female replacements needed by 30 October 2020. "Our aim is to breed replacements from within the herd. The Charolais bull has a terminal index of €127 and a replacement index of €-52," says Sean.

"Keeping replacements from this bull is not an option. So we have started to use AI bulls with good replacement indexes."

One AI Limousin bull that they have used a lot of is ZAG. He has a replacement index of €191 and is being crossed with the cows and heifers with the higher replacement indexes from within the herd.

The beef calving stats on the farm are very impressive. The calving interval on for 2017 is 357 days versus the national average of 400 days. The calf/cow/year is 1.04 compared with the national average of 0.85.

Calving beef heifers

As we strive to make our suckler herds more sustainable by reducing our costs and our carbon footprint, there is one area that many farmers fail to target: age at first calving

Aidan Murray
Teagasc Animal and Grassland Research & Innovation Programme

Why calve beef heifers at 24 months? You'll have:
• More calves from each heifer over her lifetime.
• Reduced stocking rate compared with calving heifers at older ages.
• The potential to reduce the number of stock groups.
• Reduced costs – research at Teagasc Grange shows that for a 50-cow herd with a 20% replacement rate, each additional month that calving is delayed costs €490 or €50/heifer per month.

Irish replacement heifers are currently averaging 31/32 months at first calving. Nationally, the target is to try to calve heifers at 24 months. Currently, only 24% are calving at 24 to 26 months, admittedly that's up from 18% four years ago.

Why are farmers reluctant to try it?

When asked at discussion group meetings as to why heifers are not calved at 24 months you typically get a number of reasons:

• Heifers aren't sufficiently well-grown at 15 months for bulling.
• It will stunt the heifers growth if they are bulled too early.
• They are too difficult to calve.
• They won't go back in calve again as second calvers.
• Heifers are not that saleable if things go wrong during calving.

Herds that do calf at 24 months seem to do so consistently which suggests to me that it is achievable if you set your mind to do it. Many of the arguments for not calving at 24 months are plausible but Table 1 dispels some of the arguments even if we do concede that heifers, irrespective of their age, will need more assistance at calving.

Table 1 shows that heifers that calved at 23-26 months had as good a calving interval, and calved down as soon again as a second calver, as heifers calving down in the older categories.

• The figures show that younger heifers do have slightly higher calf mortality. Heifers, irrespective of age, will be more difficult to calve and as the figures show will need assistance at calving. This could be reduced if we were more selective in the sires we put on heifers.

Even the younger calving heifers are being mated with sires with an average calving difficulty of 4.7%. Interestingly, our dairy counterparts try to mate their heifers calving down at two years with sires with a calving difficulty of 2% or less. We may never drop that low on the beef side but aim for 4% calving difficulty or less on heifers.

• Heifers that calved for the first time at 23 to 26 months had greater survivability in herds with almost 40% reaching fifth parity, compared with only 4% of those that calved for the first time at 31 to 35 months.

Table 1: Replacement females born in 2011 (ICBF figures total = 131,077)

Age at first calving (mths)	Avg calving interval Overall (days)	% Calving for a Second time	Avg calving difficulty of bulls used on heifers	Heifers Calving unassisted (%)	Mortality at first calving (%)	Reaching fifth parity (%)
23-26mths	383 days	82%	4.7%	50%	3.2%	39%
27-30 mths	394 days	83%	5.1%	53%	2.8%	20%
31-35 mths	392 days	87%	5.2%	58%	2.6%	4%
36 40 mths	386 days	86%	5.2%	57%	2.0%	0%

at 24 months of age

Heifers that calved for the first time at 23 to 26 months had greater survivability in herds with almost 40% reaching fifth parity, compared with only 4% of those that calved for the first time at 31 to 35 months.

Tips to achieve 24-month-old calving

1 **Identify your replacements early:** monitor all of your potential replacements as calves. By weaning time you should have identified the best performing heifers from your best cows and that have been sired by bulls that have good maternal traits.

2 **Feed appropriately over-first winter:** heifers should be 280kg to 320kg at weaning, which means that you will need them gaining a minimum of 60kg to 80kg over their first winter if you want them to reach the target bulling weight at 15 months.

Depending on your silage quality, this means that you will need 1kg to 3kg of a good-quality weanling ration/head/day over the winter to achieve 0.6kg gain/day.

Table 2 shows some of the key target weights needed at the various stages for 24-month-old calving.

3 **60% of mature weight at bulling:** if your mature cow weight is 700kg you will need your heifers to be around 420kg at bulling. Much lighter than this may mean some of the heifers are not cycling at the start of breeding. Heifers that are too light at bulling may well go in calf but they could struggle as first calvers to go back in calve again.

4 **Calving ease of sire used:** this is really a critical point irrespective of what breed you choose to use on your heifers. Selecting an AI or a stock bull with proven ease of calving is paramount. The target is to get these young heifers calved safely and give them every chance to go back in calve again as first calvers. Ideally, select bulls with a proven calving difficulty of 4% or less. Using a young bull with low calving reliability is high risk in this type of system.

5 **Pre- and post-calving care:** Once successfully bred, heifers need to be well managed to achieve 80% of their mature weight by the time of calving. So if they average at least 0.6kg/day throughout pregnancy they should easily achieve this target. Monitor heifer body condition to ensure they are fit, not fat, at calving.

The statistics clearly show that we need to be particularly vigilant at calving. Between 50% and 60% of heifers will need some level of assistance at calving.

> "Ideally, select bulls with a proven calving difficulty of 4% or less

Once calved, don't allow heifers to lose condition. A rapid turn out to grass after calving will help with this. Heifers that remain indoors for a month or more after calving should be supplemented with at least 2kg of concentrate/day on good silage. This will help to avoid excessive weight loss, which would delay their return to cycling and then rebreeding.

We could clearly be getting more of our suckler heifers to calve at 24 months. If it is to be achieved there are targets that need to be met regarding the weight of heifers at weaning, breeding and calving. We need to be extremely mindful of our sire selection to avoid calving difficulty.

If we are continually improving the heifers coming into the herd it makes absolute sense to get them into the herd as early as possible and give them every chance to stay there.

Table 2: Key weight targets

Mature cow weight	Weaning weight	Bulling weight	Calving weight
Target % of mature wt		60%	80%
600kg	260-280kg	360kg	480kg
700kg	300-320kg	420kg	560kg

Precision slurry application and the 'Lynx Effect'

There are important changes to slurry spreading rules for derogation farmers from 15 June

Joe Kelleher
Teagasc, Newcastle West, Co Limerick

Anyone with young male offspring will be familiar with the Saturday night "Lynx effect". The lingering aroma indicates that a good fraction of the aerosol propelled deodorant has missed its target. It's a bit like that with splash plate slurry application. But the consequences of propelling ammonia willy-nilly into the environment are a lot more serious. In both cases, a more effective delivery system will benefit us all.

Low-emission slurry spreading techniques have become increasingly popular. The Green, Low-Carbon, Agri-Environment Scheme (GLAS) started it off in early 2015 when it included the low-emission slurry spreading (LESS) option as part of the scheme. This was swiftly followed in late 2015 when the low-emission slurry spreading equipment grant scheme opened for applications as part of the Targeted Agricultural Modernisation Scheme II (TAMS II) programme by the Department of Agriculture, Food and the Marine.

To further reinforce the issue, a rule was introduced in late 2017 prohibiting derogation farmers from spreading slurry with a splash plate after 15 June annually from 2018 until 2021.

Why the need for LESS?

As part of the Paris agreement (an agreement between 197 countries aimed at combatting global climate change), Ireland signed up to reducing its greenhouse gas (GHG) emissions by 20% by 2020 and 30% by 2030. As agriculture accounts for one-third of all GHG emissions in Ireland, it was inevitable that agriculture was going to be asked to contribute to the reduction.

There are many types of GHGs including carbon dioxide, sulphur compounds, methane and many more. But as far as cattle slurry is concerned, ammonia is the main one that we are concerned with. Agriculture accounts for 98% of ammonia emissions in Ireland and land spreading of slurry accounts for almost half of this total.

Spreading slurry with a trailing shoe, dribble bar or injector system can reduce the ammonia emissions up to 97% of those emitted with a splash plate.

The trial work

To investigate the effect of application technique and climate on ammonia emissions, Teagasc Johnstown Castle carried out trial work spreading cattle slurry (dry matter at 8.3%) at 30t/ha (2,500 gallons/acre) grassland plots, using either the trailing shoe or splash plate methods. On average, the ammonia emissions were lower using the trailing shoe.

Six hours after slurry application, ammonia emissions were 58% lower with trailing shoe compared with splashplate application. However, because the trailing shoe applies slurry in lines/bands it dried out more slowly and emitted ammonia over a longer period. Therefore, a week after application, the emission reductions delivered by trailing shoe had decreased to 28.4%

The percentage reduction in total ammonia emissions delivered by the trailing shoe compared with splash plate also varied with the timing of application. In May, during sunny days, with high temperatures and windspeed, the trailing shoe reduced emissions by over 47% compared with splash plate. By contrast, April application (near impossible this year anyway), on days when conditions favoured low ammonia volatilisation (cloudy days with some rain), there was no significant difference in application method on emissions.

Other benefits

There are substantial additional benefits to using the LESS techniques for all farmers, regardless of whether they are participating in the schemes listed above or not;

- Switching from a splash plate to a trailing shoe or band spreader application process will increase the N value by approximately three units per 1,000 gallons.
- Improved flexibility with application as a result of reduced contamination of herbage, leading to a quicker return to grazing.
- The opportunity to apply slurry onto swards with larger grass covers.
- The odours released during and after application are also usually reduced when using a trailing shoe or band spreader method compared with a splash plate.

The challenges

One of the major challenges faced by farmers was the limited availability of these machines. There have been over 1,500 applications submitted under the TAMS II LESS scheme to date, meaning that these pieces of equipment should be readily available in almost all parts of the country.

Agriculture accounts for 98% of ammonia emissions in Ireland and land spreading of slurry accounts for almost half of this total. More effective LESS systems will help.

Another obstacle is cost. Where slurry is spread using one of the LESS technologies in tandem with the umbilical system, then the cost of spreading slurry can actually work out cheaper (depending on distance from yard and paddock sizes). Hourly rates for spreading slurry with LESS attachments mounted on the back of vacuum tanks are generally higher, but when the extra nitrogen available to the grass plant is taken into account, the cost differential closes somewhat.

Summary

LESS techniques are here to stay. The national herd has been increasing steadily since milk quotas were abolished in 2015. To offset the extra gases emitted by these additional animals, all techniques that will contribute to reducing our overall GHG emissions from agriculture have to be adopted. The use of LESS equipment appears to be a very effective way in achieving these reductions.

Summary of low-emission slurry systems

Dribble bar/ band spreading/slurry-spike

The dribble bar is the simplest low-emission method, and can be used in both grassland and arable crops. The slurry is deposited by pipes that are situated above the crop.

The ammonia losses and sward contamination compared with splash plate are reduced as the slurry is deposited in lines. The slurry spike is a relative newcomer to the market and operates the same way as the dribble bar except that it spikes the ground at the same time.

Trailing shoe

The trailing shoe is an adaptation of the band-spreader whereby each pipe has a "shoe" coulter attached at the base of the pipe.

These shoes separate the sward canopy and apply slurry at the soil surface. The advantage of this application method is that sward contamination, compared with the splash plate in particular, is minimised, thereby facilitating application to taller grass swards with minimal effects on grass quality due to herbage contamination.

The opportunity for spring application to grassland may be increased as a result.

Shallow injection

The shallow injection method involves discs that cut slits into the soil. The slurry is then placed into these slits. This is the best method for reducing ammonia losses, as the exposure of slurry to the weather is minimal.

However, shallow injection may not be suitable to all Irish soils due the soil variability of texture, stone content and topography. The shallow injection method also requires greater tractor power to pull the injection unit through the soil.

Umbilical systems

The umbilical slurry application system requires two tractors. One tractor operates a pump situated at the slurry storage tank. This pump sends slurry via a flexible pipe to an application unit (operated by the second tractor) in the field.

Umbilical systems help reduce soil compaction as heavy tankers full of slurry are not required. Slurry can be pumped to distances of up to 1km or more. Umbilical systems can be fitted with either splash plate or low-emission application units.

Summary of Department of Agriculture, Food and the Marine schemes

GLAS

Option: low-emission slurry spreading

- Farmers paid €1.20 per cubic metre of slurry per year.
- Must spread all slurry produced and/or imported using LESS techniques.
- Must provide documentary evidence to confirm.
- Must submit annual declaration identifying parcels where slurry was spread.

TAMS II

LESS equipment scheme

- Grant of 40% (60% for eligible young farmers) available to purchase LESS equipment.
- Investment of up to €40,000 (€60,000 for eligible partnerships) eligible for grant aid.
- Grant applies to umbilical systems or new tankers fitted with dribble bar, injectors or trailing shoe. Retrofitting of dribble bar to existing tanker also eligible

Nitrates derogation

Applies to all derogation farmers from 2018 to 2021

- 50% of all slurry produced on a derogation farm must be applied by 15 June.
- After this date, slurry may only be applied using low-emission equipment.
- If all slurry is spread before 15 June there is no need for LESS equipment.
- Soiled water can be spread using splash plate. However, soiled water mixed with slurry is defined as slurry.

Bird's eye view of the future

Drones are a great tool when planning a farmyard. But the basic principles remain the same

Patrick Gowing
Teagasc Dairy Expansion Service

Since quotas ended, the dairy industry has expanded rapidly. Some of the extra output has come from new entrants with new herds; more has come from increased performance per cow; but the majority of the extra output has come from additional cows in existing herds.

Now, many dairy farmers are investing in their facilities to handle the extra cows. It's crucial to get the design of your milking premises right to future proof your farm, improve cow flow and reduce the labour input on the farm.

Jim and Michael Walsh

Jim and Michael Walsh farm near Ballyroan, Co Laois. They operate the farm as a registered farm partnership and are currently milking 140 cows on a 48ha milking platform and hope to expand if land becomes available. They currently milk in a 12-unit herringbone parlour, which is no longer adequate.

When asked why they are looking to invest in their milking parlour, Jim replies: "The parlour has been on this site for nearly 30 years and has been added to over the years to go from a six- to an eight- and eventually a 12-unit parlour. While we have the units to milk the cows, all of the associated facilities around the parlour have not grown in line with the herd size.

"We now find we are out of the pit too often, trying to get cows in or out of the parlour which is adding to the milking time and makes it hard to get anybody to relief milk for us."

Jim and Michael decided to get professional assistance with a new design. "It's a very large investment" says Michael. "We wanted to make sure we were investing wisely. The last parlour lasted 30 years so we want to make sure we get this right for the next 30."

Michael engaged the help of the Teagasc Dairy Expansion Service and Carl Newell of Newell Consulting Engineers to help design the new parlour. The existing farmyard was surveyed and drawn out. The easiest option would have been to expand the dairy at the front and add additional units. This is often the first choice for dairy farmers. But additional units do not always result in faster milking.

In a larger parlour, it is essential that you stay in the pit while the cows move in and out of the parlour themselves. Every time you have to leave the pit you are reducing efficiency. Also, having to leave the pit to push a cow up or out can generate health and safety issues. See Figure 1 (before).

One option was potential extension of the existing parlour. While this would have increased the size of the parlour, all else would be the same, so we then had to examine whether the current site was adequate from a cow flow point of view.

If you follow the arrows the cows have to make four right-angle turns before they enter the parlour. This will slow the approach of the cows to the parlour as cows will only take a right angle turn in single file.

Before entering the parlour, the cows had to walk through the feed passage of the cubicle shed. This can create additional work in early spring as only the part of the herd that are calved are at grass. All other cows had to move off the feed passage to allow the milking cows in and out. The silage at the feed face will also slow cows down on the approach to the parlour

The exiting holding yard was designed for 70 to 80 cows. Additional cows would have to stand in the cubicle shed and would only go to be milked if somebody hunted them in.

If the proposed parlour was pushed forward to make the holding yard big-

Jim Walsh, Carl Newell, Patrick Gowing and Michael Walsh.

Figure 1: Before

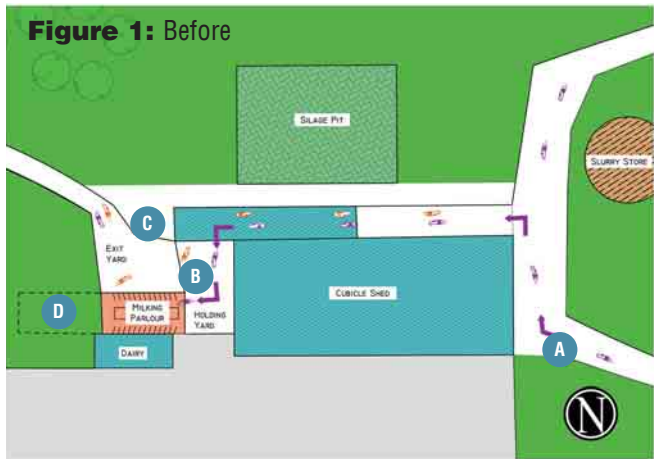
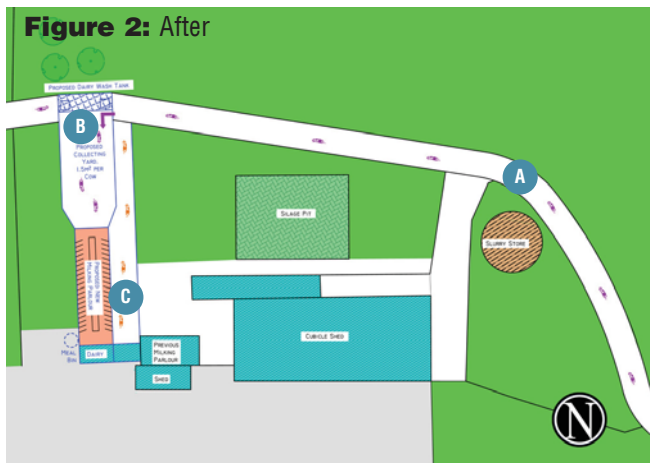


Figure 2: After



> The easiest option would have been to expand the dairy at the front and add additional units. But additional units do not always result in faster milking time

ger, it would still not address the issue of cows using the feed passage to enter the holding yard. It would also be restricted for future expansion.

For cows to exit, they had to go back through the feed passage. This means cows have to be held outside the parlour exit until there is enough space in the holding yard to allow them exit back to the shed. This requires somebody to leave the pit in order to open and close gates. It makes drafting of cows harder as the space on the exit is already being used up by waiting cows.

An alternative design was required to fix all the cow flow issues within the existing site.

When designing a new parlour, we try to follow these design criteria:

- There are three types of movement on a dairy farm: milk lorry, cows and machinery. These should not overlap. A simple flow diagram can check your design for you.
- Minimise bottlenecks and turns into the holding yard. This will speed up cow flow into the holding yard.
- It needs to have scope for expansion should future opportunities arise to grow your business.

By simply turning the parlour by 90 degrees, we were able to address all the criteria outlined above. See Figure 2.

A: A new road will be constructed around the slurry store and above the silage pit. This reduces the number of right-angle turns into the holding yard from four to one. It stops cows and machinery "crossing over" each other and it means milking cows are independent of the cubicle shed.

B: New holding yard constructed at 1.5m²/cow. Cows enter the holding yard over the new dairy wash tank and fill the yard from the back and all cows are then facing the milking parlour. This design will allow for a scraper type backing gate in future, if required.

The holding yard can be expanded if the herd grows as it is no longer "boxed-in" by other sheds.

C: Extra space is available at the front of the parlour for cow exit. Space has been left to construct a drafting area and handling facilities on the right hand side of the parlour. The cows can go back onto the farm road network or be diverted to the cubicle shed without having to be held up.

"As dairy farmers we spend a lot of time working in our own yards. We don't see all the potential cow flow issues as we know no better. It is critical you get an expert set of outside eyes to help design any investment you do on your farm to make sure you have it planned correctly for the future," concludes Michael.

Standard operating procedures

Well-crafted standard operating procedures will hugely benefit your business

Padraig O'Connor
Teagasc Animal and Grassland Research & Innovation Programme, Grange

It was a student who pushed Kells, Co Meath, dairy farmer Mark Cassidy over the edge. "They shall remain nameless," he says with a wry smile. "But after explaining something for the umpteenth time I decided I had to find a new approach to training new students or staff."

"Some dairy farmers do write down instructions, particularly if they use relief milkers, etc, but Mark has taken it to a new level," says his Teagasc dairy advisor, Vincent Treacy. "By labelling every piece of machinery and detailing exactly, step-by-step, what has to be done he has developed a virtually fool-proof system."

Mark says that buying a laminator, a cheap and simple device which allows him to print out instructions on waterproof sheets, was key. "The experts say you should never put more than about seven points on the page, and I find that to be about right," says Mark. "It doesn't mean you don't have to explain to someone what to do, but they have the advantage of being able to go back and check with the list that they are doing it right."

"Dairy farmers may list instructions for milking, say, but Mark has developed standard operating procedures (SOPs) for a range of jobs: calf care for example," says Vincent Treacy. "Farmers who don't have staff or students might feel they don't need well-crafted SOPs but if they become ill, or must be away from the farm for other reasons, SOPs are invaluable for the person taking over."

A standard operating procedure or SOP is a document consisting of step-by-step instructions on how to complete a particular job or procedure on the dairy farm. SOPs can be adopted for tasks such as milking routine, washing the milking machine, calf feeding, treating a cow for mastitis and many more tasks that farmers perform on a daily basis. They can be equally relevant on farms with other enterprises too.

Benefits of a well-written SOP

A well written SOP will:

- Provide direction.
- Improve communication.
- Reduce training time.
- Improve consistency.
- Allow somebody to help out in the case of an emergency.
- Support a more profitable business.

SOPs are an excellent tool for farmers and their employees to work towards common goals. It also creates a positive sense of teamwork.

SOPs, used in combination with planned training and regular performance feedback, lead to an effective and motivated workforce.

Steps to developing an SOP

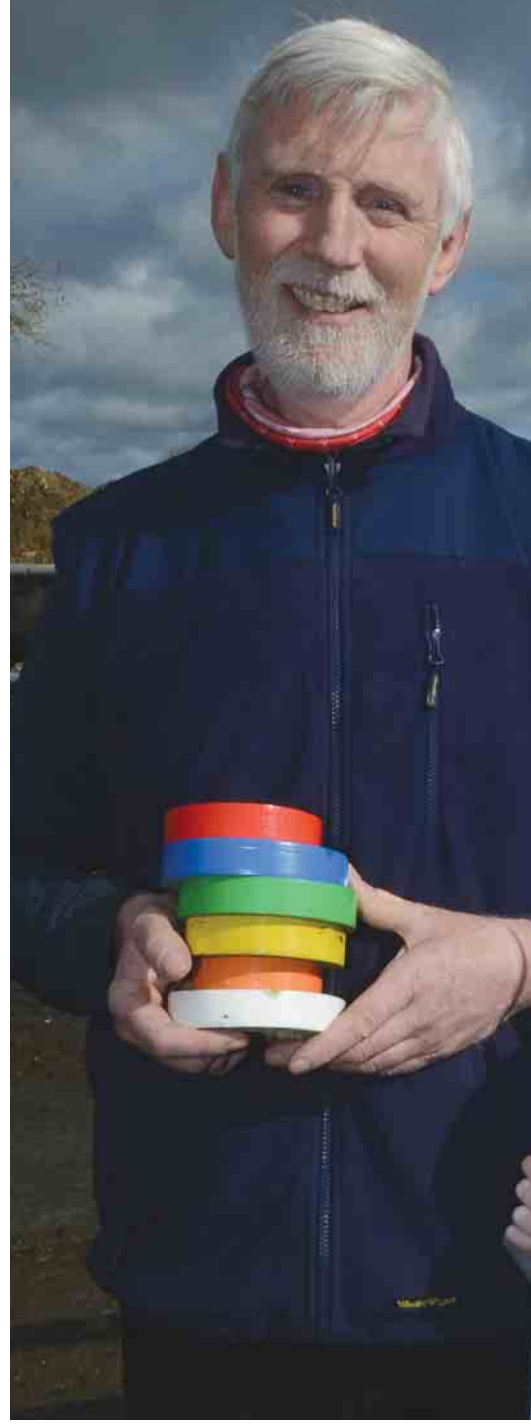
This should be an inclusive process. It should consider the input of everyone involved in the procedure. Dairy farmers/managers who consider the input from their workers will increase "buy-in" and produce a better SOP. People will support what they help create.

There are seven steps to producing excellent SOPs:

1. Planning.
2. First draft.
3. Internal review.
4. External review.
5. Testing.
6. Post.
7. Train.

1. Planning

The first step is to link the SOP with the business goal or goals that it will help achieve. The SOP can then be shaped from the beginning with steps that lead to achieving this goal. Goals do not work without measurements and feedback on performance. For example, an SOP on milking routine should tie in measurements such as somatic cell count (SCC), total bacterial count (TBC) and thermoduric bacteria levels in milk.

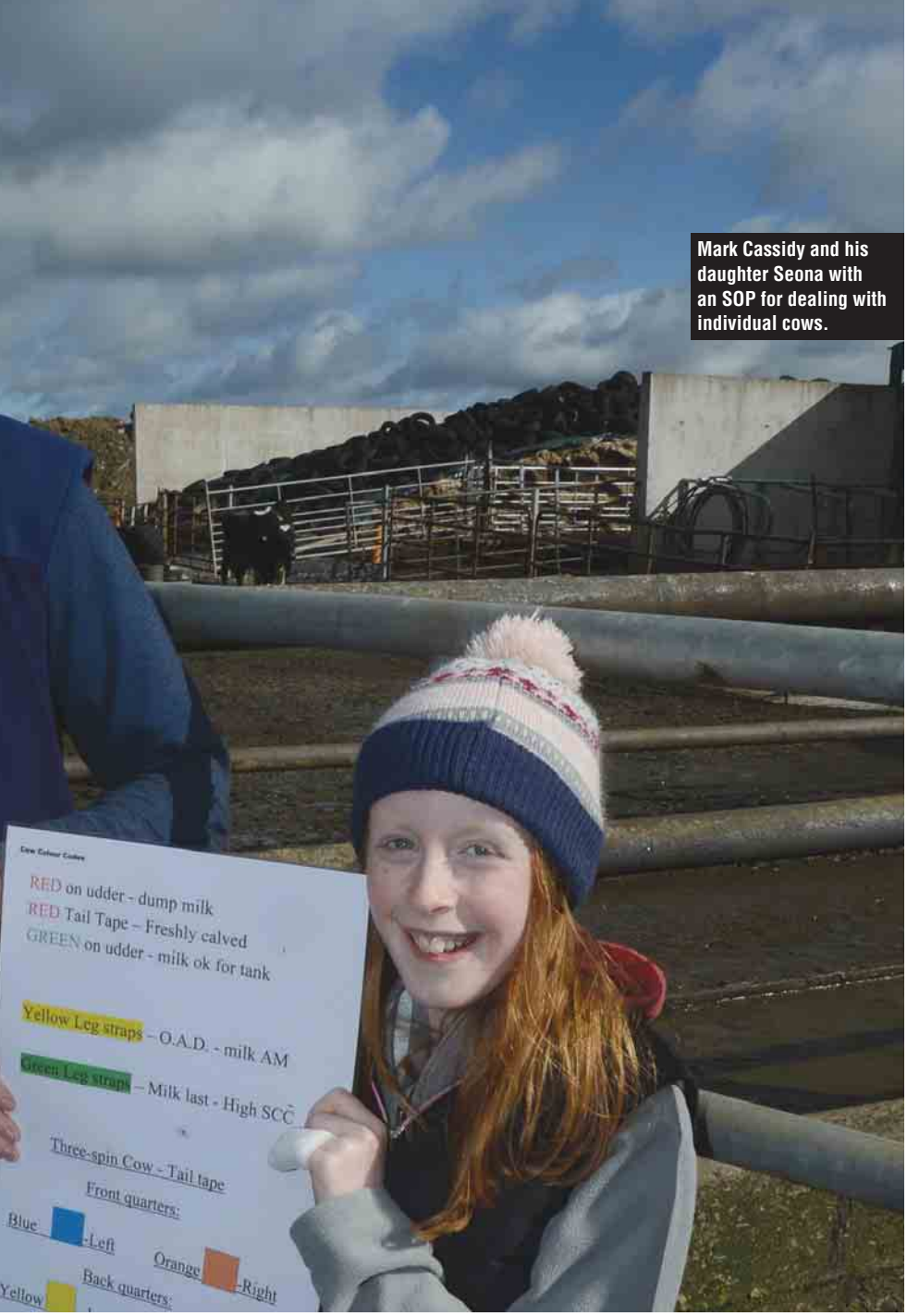


2. First draft

The next step is to make a detailed list of the steps in the order that they are done. Don't try to be perfect with the first draft because it is very likely that you will need to make changes. Writing a first draft provides a starting point for the review and discussion that will take place subsequently.

3. Internal review

Provide each employee who performs the procedure with a copy of the draft SOP. Ask them to review and suggest changes that are easier to under-



Mark Cassidy and his daughter Seona with an SOP for dealing with individual cows.

Key messages

SOPs should be:

- Written in a clear and readable style.
- Specific to your farm.
- Linked to business goals.
- Written logically.
- Located beside the workstation where they are needed.
- Laminated.
- With pictures where beneficial.
- Kept to a single page.
- Broken down into appropriate chunks. For example, milking can be broken into three stages: preparation for milking, milking routine and cleaning up after milking.
- Built on feedback from internal and external personnel.
- Created with input from staff. Get buy in from your employees by involving them in the process from the beginning.
- Measurable.
- Useful.
- Preferably tested by somebody unfamiliar with the task.
- Update and reviewed regularly.

stand, more accurate or will improve performance. Assure employees that their input is important and will be considered. Workers will feel ownership and commitment to an SOP if they believe that the owner or manager included their ideas during development. Many employees, or other family members, will have good ideas.

4. External review

Dairy farmers/managers should seek advice and feedback from people such as their advisor and other farmers when creating an SOP. Give them a draft of the SOP and ask them to suggest any changes that will make it clearer and more effective.

5. Testing

For procedures to be effective, they must perform in the workplace. There is only one way to be certain that a procedure is well-written and performs as expected. Have a person (preferably someone unfamiliar with the task) test the SOP by performing each step exactly as it is described. Any step that causes confusion for the test worker should be revised.

6. Post

Make a final draft of the SOP and display it in the appropriate location. A master SOP file should be kept in a central location where workers can review all SOPs when necessary. The workplace SOP should be laminated and printed in large text so that workers can review while completing their work. It is also essential to keep SOPs up to date.

7. Train

The last step in the SOP writing process is to train the workers to follow the procedure exactly. Otherwise, workers will interpret the meaning of procedures in different ways, leading to inconsistency in work routine and performance.

When training workers, share the reasons why procedures must be performed correctly – not just what to do or how to do it. Workers are much more likely to follow procedures exactly when they understand why they are important.

SOPs are powerful tools for bringing dairy farmers, managers and employees together to focus on improving dairy production tasks. When everyone gets involved, goal-setting is performed, monitoring is built in and feedback is provided. This will enable the business to become more successful and also encourage employees to perform at a higher level.

Farmgate gastronomy

Galway has been designated as the European Region of Gastronomy 2018 and food producers directly linked to farms have played a big part in this achievement

Anne Kinsella
Teagasc Rural Economy Development Programme

Galway and the west of Ireland is the first region in the country to attain the prestigious European Region of Gastronomy designation. It holds the title for 2018; as does the Noord Brabant area of the Netherlands. Gaining the title took an enormous amount of effort by a wide variety of stakeholders led by Galway County Council, Galway City Council, Galway-Mayo Institute of Technology and Teagasc. The overall theme is: ''From the Ground Up, Feeding our Future''. We visited three local food producers in the region but there are dozens more contributing to the growing food culture.

Food Works – creating food entrepreneurs

Food is an important part of the Irish economy, representing 12.3% of total export revenue. The industry is projected to be worth €19bn by 2025. Food Works supports the people and businesses creating our food future.

Food Works is a Government-supported accelerator programme, run by Bord Bia, Enterprise Ireland and Teagasc, who have worked together since 2012 to support innovative food businesses in Ireland. Each of the three agencies involved with Food Works plays a specific role in taking Irish food to global markets. Food Works helps to develop the next generation of scaleable and export-driven Irish food businesses, so far helping more than 70 Irish food entrepreneurs. See: http://foodworksireland.ie/

Key messages

Galway and the west produces enough food to feed over 1.5m people. It boasts over 12,000 farms, 689km of coastline, 52 islands and over 350 restaurants.

The European Region of Gastronomy 2018 designation aims to bridge the gap between food producers and consumers by creating a greater awareness of foods produced in the west of Ireland and making good food more accessible to all.

Food and associated culture will be explored across five key focus areas:

- Education and health.
- Linking urban with rural.
- Cultural diversity.
- Sustainability.
- Supporting SMEs.
- Working to enhance the region and to work collaboratively to provide a better future for the next generation is a key goal.

Kylemore Farmhouse Cheese

The Roche family has farmed in the historic and rich landscape of Abbey, southeast Galway, for almost 200 years, converting the Kylemore House farm into a dairy enterprise in the 1960s. Bertie and Julie Roche, along with their son Brian, run a herd of 97 Holstein-Friesian crosses supplying Arrabawn Co-op.

Daughter Teresa Roche (pictured left) is behind the creation of Kylemore Farmhouse Cheese. Although a relative new comer to cheese-making, she is already causing a stir with her unique offerings of Swiss-inspired cheese, which is the only Irish-made Swiss cheese available in Ireland. Teresa won a National Enterprise Award 2018, Local Enterprise Office (LEO) Galway Best New Business.

"I have worked as a nurse in Australia, New Zealand and the United States," says Teresa. "But I always had the notion of returning to develop a business on the home farm. While in New Zealand, I spent some time working with the Maori farming community in the Waikato region. While there I got a great insight into how to develop a business in food production on a farm."

A two-week holiday home in 2015 turned into two years of preparation, studying cheese production in Switzerland and completing various mentoring and business courses run by Galway Local Enterprise Office and Musgrave's Food Academy Programme.

"Once I decided to develop a cheese I got great help and support from our neighbour, and cheesemaker, Marion Roeleveld." Marion has won awards for her Killeen cheese brand. Indeed, over the past 12 years, the Roche farm has been supplying Marion with milk for her cheese production.

Low-carbon

"I think the low-carbon footprint of our production is a great selling point," says Teresa. "We produce the cheese in a dedicated building located just beside the milking parlour. And we only make cheese with milk from grazed grass.''

Over 50 litres of milk are required to produce each 5kg wheel of Teresa's Swiss-type cheese. Appenzeller cheese is the main product but Teresa also produces a Gruyère Beaufort style of cheese. Both are long maturing, from a minimum of three months up to 18 months.

"My current stock is maturing now at six months, producing a nutty, creamy, buttery flavour cheese. We are producing a high-quality milk product which is fully traceable and Bord Bia Origin Green-approved.

"Developing a new product, and new skills, requires an awful lot of training and research into production and marketing," says Teresa. "Getting hold of funding for a new initiative can be difficult and time-consuming too."

Marketers always say you should find your market niches before producing and Teresa has done just that: "We've had excellent interest from people at home and abroad who have tasted the cheese," concludes Teresa. "You'll meet with some scepticism when you start something from scratch, but if you keep at it and produce a quality product you'll get there. Tenacity is probably what you need more than anything else."

Continued on next page

McGeogh Connemara Fine Foods

In a purpose-built unit in Oughterard, Co Galway, James McGeough and his son Justin produce speciality meats which are unique in the country. In fact they are one of only four producers of air-dried lamb in the world.

Raised in Oughterard, where his father owned a butcher shop, James followed his inclination for innovation by moving to Germany. During six years there, he trained and qualified as a German master butcher and is the only Irish butcher to have this respected qualification.

"When I was back home in our family butcher shop, I began to experiment with local ingredients, including Connemara lamb, to produce products that could be described as inspired by products of German-Swiss origin," he says.

His son Justin, who is completing an apprenticeship in butchering in Ireland explains the process: "We always start with top-quality locally sourced meat. We start the process by marinating the de-boned meat in its own juices with garlic, rosemary, juniper berries and curing liquid."

Justin McGeough with air-dried lamb.

After a number of weeks, the meat is removed and enclosed in a tight net (which helps to form the desired shape) and hung in an air-drying facility. The climate is carefully controlled and the racks of beef, pork and lamb are surrounded by bay leaves and heather which infuse the meat with local flavours.

"The meats and salamis take up to six months or more to cure," says Justin, who monitors the meat several times each day. Production is tightly controlled but has its own unique character. During the hay-making season, for example, outside air is filtered through the drying room to further infuse the meat with local aromas.

Result

The result is a fabulously flavoured savoury meat frequently featured as a starter by Irish celebrity chefs. In particular, legs of boned Connemara lamb, cured and air-dried, have huge potential. "It is particularly good for export markets," says Justin.

"The meat will lose up to half its weight during the air-drying process, and that concentrates the flavour of the meat in an easily transportable product."

McGeogh's unique products have been winners in the internationally renowned Great Taste Gold Awards.

Castlemine Farm

The Allen family has been farming Castlemine Farm for five generations. The 250ac farm, located at Four Mile House in Co Roscommon produces pasture fed beef, lamb and free-range pork. Brothers Derek and Brendan now run the farm. Derek qualified and worked as a carpenter and part-time farmer while Brendan became a scientist. The recession beginning in 2008 swept away both off-farm jobs.

"We quickly recognised that rearing and selling beef, lamb and pork to the factory was not going to generate enough income," says Derek, who spends much of his time running the farm but is also involved in the farm shop they developed to boost income.

"We have sheep, free-range pigs and Black Angus and Hereford cattle," says Derek. "The aim was always to "sell all of the farm produce direct. The shop has outgrown our own production, so we also buy in animals from neighbouring farms."

Initially, the farm shop was located across the road from the farmhouse but due to increased demand they opened a farm shop in Roscommon town. There, they make their own sausages, dry-cure their own hams and bacon and dry age their own farm Angus beef and lamb.

"One of our newer products is Pastrami, an Italian-inspired silverside of beef," says Derek. "The beef is brined, partially dried, seasoned with herbs and spices, then smoked and steamed."

In 2013, a production kitchen was built at the rear of the farm shop, which has increased the range on offer to include cooked products such as ready meals, cooked hams, sausage rolls and Castlemine pies, famous in the town and beyond. They also stock a wide range of other suppliers to give customers a greater range of products. "You have to make it convenient for customers," says Derek.

Larder360, delivering fresh local produce direct to the consumer's door, is another initiative that Castlemine Farm has become involved in, in association with other producers such as organic producers, fish mongers, cereals and sauce-makers. This initiative is managed by local producers to connect with consumers."Local consumers want the best fresh produce available at competitive prices while the local producers want to be fairly compensated, as well as having a closer connection to their consumers following seven years of research and development." With others, Brendan initiated Larder360 using the latest technology to advance the current food system and complete the local consumer-producer connection.

"Our first love is practical farming, but there's also great satisfaction in delivering top-quality produce to consumers," says Derek.

Derek Allen in the family farm shop with Anne Kinsella.

Website: http://www.galwaygastronomy.ie and follow the team on Twitter, Facebook and Instagram @gastronomy2018

Don't miss out, Opt-In

A new web portal, Opt-In, offers farm families access to a range of training opportunities. Once registered they will be automatically informed of courses they have expressed an interest in

Barry Caslin
Teagasc Energy & Rural Development Specialist

Farm families are incredibly versatile. On an average day a farmer uses the skills of an engineer, electrician, builder, entrepreneur, delivery driver, fencer, farm self-catering cottage rental, tree surgeon, etc.

Any recruitment agency will tell you that people who get jobs, and have the most successful careers, are those who invest time and effort in their personal development. These are people who steadily enhance and nurture skills they already possess at some level. Over the past decade, the agricultural industry has introduced many new courses.

Often, these courses are free of charge and successful participants earn qualifications. Local educational training boards (ETBs), LEADER companies, local enterprise offices (LEOs), Skillnet providers, etc, are all delivering excellent courses which may not currently be on your radar.

Improving skills and job potential

Opt-In is one output of the Commission for Economic Development of Rural Areas (CEDRA) implementation programme funded by the Department of Agriculture, Food and the Marine.

The portal (a one-stop shop for training courses, accessed via the internet) was commissioned following concerns in rural areas that people were not being informed about upskilling and development opportunities.

The web portal links the regional training service providers with the variety of learning and information opportunities provided by other agencies including the ETBs, LEOs, LDCs, third-level institutions, social welfare, Skillnets and Teagasc, etc.

What exactly is Opt-In?

The Opt-In web portal is an innovative communication tool linking the services provided by the various skills and training stakeholders to rural dwellers.

> It is straightforward to register with Opt-In and view training opportunities with the various training agencies across Ireland

The training providers update the calendar page on a daily, monthly or yearly basis with details of planned courses. These courses can be linked back to a training provider's website.

The primary objective of Opt-In is to present information digitally in a visually attractive format. The web interface has been designed so that it can be printed out as a wall calendar in partner agency offices. This allows the various agencies to see what's happening within their own functional area.

It also fosters sharing of information between agencies that otherwise might not have any level of contact.

The system includes in-built monitoring and reporting on the uploading of content by partner agencies. This will mean that when the general public registers on Opt-In they can nominate skill or training areas which they are interested in.

They will be notified via social media channels such as Twitter, Facebook, email or text, when and where a course is taking place. The notifications will only relate to subjects the person has expressed an interest in.

Registering

It is straightforward to register with Opt-In and view training opportunities with the various training agencies across Ireland. It is also possible to receive notifications by email, Facebook or Twitter on course categories which are of special interest.

To find out more about Opt-In, log in to www.opt-in.ie

Only change doesn't change

Keeping up with new technology and business structures, as well as high production performance, is the key to success on this tillage farm in north Kildare

Ivan Whitten
Teagasc, Naas

Bart Maertens' farm is located at Loughanure Clane. Since completing his Green Cert in 2000, Bart has farmed with his mother Noella and, until two years ago, his late father Noel. The family came from Belgium in 1986, when Bart was four, and have built a substantial tillage enterprise, virtually from scratch.

Bart's wife Maura works part-time on the farm, allowing for a better quality of life with their two young sons David (two) and Brian (four). Their 200ha+ tillage business grows high-yielding winter wheat, winter barley and spring barley in rotation with potatoes and beans.

Bart Maertens.

Company structure

Setting up the company structure MTS Farms in 2012, on the advice of IFAC and Teagasc, was a key decision. "The company structure helped with succession planning; allows my mother to have an ongoing interest in the business and has enabled us to grow the assets of the business, be it machinery or land, in a tax-efficient way," says Bart.

"Incorporation means you are not paying tax at the higher rate on any profits, which have admittedly been greatly reduced in recent years. Tax and levies on income can be up to 55% compared with 12.5% in the company. The company structure is also a good way to contribute to a pension.

"I'd advise anyone contemplating this move to consider it during a quiet time of the year as there are a lot of hurdles to jump and critical decisions to be made involving the accountant, solicitor, agricultural advisor, bank manager and even your agri merchant."

Changes to long term land leases: The Finance Act for 2015

The introduction of tax exempted income thresholds of €18,000 to €22,500 (value of rent and entitlements) on five- to seven-year land leases and permitting company structures to act as lessee was very beneficial for MTS Farms.

"It means we are not taking land for 11 months but have a more stable tillage land bank, allowing us to put a long-term crop rotation plan place. Longer leases also allow us to address soil fertility and grass weed issues in the knowledge that we will be farming the land for a number of years."

Soil sampling and nitrates

The Maertens family base all their crop nutrition applications on soil samples taken every three years. "We draw up an annual fertiliser plan each January with Ivan," says Bart. "The plan is to maximise crop yields and grow them as profitably as possible. With this in mind, we are always trying to balance the off-takes from our yields.

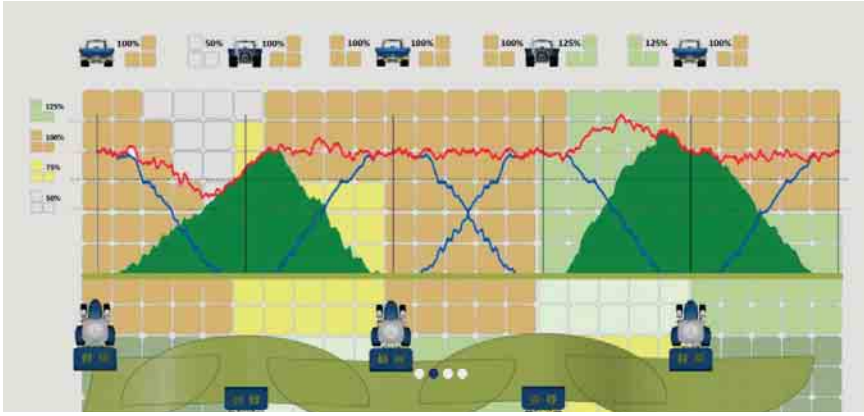
"In recent years, Ivan has changed our compound fertiliser to 4.5 bags of 10:8:20 + S or 11:7:23 + S reflecting an increasing requirement for phosphorous and potash on the farm."

Organic manures

The farm has a six-bay slatted unit on the farm and takes in finishing cattle each winter on a per-head basis. Bart places high importance on this quality imported "finishing slurry" for use on fields destined for early and main crop potatoes. "The slurry definitely helps to boost dry matter in the potatoes," he says.

"In recent years, we have started using pelletised poultry pellets and dry layers' manure on winter barley and wheat from Organic Fertilisers in Newry. We believe that the different types of organic manure are providing a wide range of major and minor nutrients to a hungry crop during early spring and they are helping to improve soil microbiology too."

Brian, Maura, Bart and David Maertens.



Improving accuracy under Tillage TAMS

Bart purchased a new Amazone UX4200 trailed sprayer in autumn 2017 under the Tillage TAMS. "After careful consideration and viewing all the options we decided to go for a sprayer that is one of, if not the highest-spec trailed sprayers in the country," says Bart. "But we don't buy features for fun, they have to be financially justified."

Bart opted for some really clever specs that will help ease his daily workload while also getting the best results possible from his crops.

The machine is fully ISOBUS. It comes with all the features you tend to see on sprayers of this sophistication. Features include steering axle with incorporated slope detection, twin-pump system, distance control on the booms (Bart opted for the higher four-sensor option), auto-rate control and Amatron3 terminal with joystick control.

The two options that perhaps I feel Bart will gain most from are the auto-cleaning cycles which are controlled from the operator's seat. The sprayer can be thoroughly cleaned without leaving the tractor cab, reducing downtime.

The second is that he will see saving coming from the Amaswitch option. (Bart's was the first in the country). This is individual nozzle shut on/off that is controlled via GPS. It minimises the amount of excessive overlap possible with savings of up to 5% on chemicals claimed.

"That allows me to save money and also protect the environment by ensuring chemicals only go to exactly where they are needed," says Bart. "It was the grant under the TAMS scheme which enabled me to go for this machine."

> The system will close the spreader's shutters in areas where fertiliser has been applied

In recent weeks, Bart has purchased a new Bogballe M35W fertiliser spreader with GPS section control to ensure optimised overlap on headlands and in wedges. The system adjusts the application rate of the fertiliser to the shape of the field.

"The system works with an infinite number of sections and regulates steplessly both in wedges and on headland," says Bart. "The system will automatically close the spreader's shutters in areas where fertiliser has already been applied – for example on the headland."

"For us, investing in technology is the way to go, even when times are tough," concludes Bart.

> The Maertens base all their crop nutrition applications on soil samples taken every three years

A new way to grow

Paddy Rhatigan has found that forestry gives him as much job-satisfaction, and a better work-life balance, than sucklers. His income is higher too

Noel Kennedy
Teagasc Forestry Advisor, Roscommon

Many drystock farmers are reassessing their situations and seeking sustainable options to improve returns while also improving their work-life balance. Paddy Rhatigan went through this thought process. As a result, he took radical action.

Interest in forestry

Reared in Knockhall, not far from the Shannonside village of Rooskey in Co Roscommon, Paddy was farming sucklers full-time with his father, as soon as he left school.

"I always looked on forestry as a potential option for our marginal land," says Paddy. "Our combination of heavy soil and wet summers can make cattle farming extremely difficult." A neighbour, Paddy Hanley, owner of the local bacon factory, planted his farm in the 1990s.

Paddy Rhatigan watched over the fence with admiration as the fast-growing trees thrived on land similar to his. Following the death of his parents Paddy continued to farm. In his forties and farming on his own, he began to think seriously about his quality of life now, and in the future. He concluded that putting land in forestry could help to reduce his difficult and sometimes stressful workload.

"In 2012, I took the life-changing decision to plant most of the farm," says Paddy. Following consultation with local forester Joe Tansey, an afforestation grant application was made to plant 45 of the farm's 53ha. The remaining 8ha around the house were kept for farming.

The large area for planting, influenced by its eligibility to retain Basic Payment, made possible the establishment of a highly commercial, sustainable, stand of Sitka spruce. "I made sure we included a significant, 20%, share of broadleaf woodland of oak and birch and extensive biodiversity protection," says Paddy. "I want my forest to be an asset to the countryside and wildlife."

Paddy Rhatigan shaping a young oak.

Paddy also factored into his decision-making that forestry on this scale, with excellent road access, would achieve economies of scale contributing to valuable timber sales in the longer term. In the short to medium term, he will maximise income from annual premiums and the Basic Payment Scheme.

Effect of planting

Planting works were completed by December 2013 – the afforestation grant covered all of the establishment costs. Within weeks, Paddy received his first annual forestry premium of almost €28,000.

As an eligible farmer, he will contin-

Paddy Rhatigan believed that putting land in forestry could help to reduce his difficult and sometimes stressful workload.

Revised Forestry Programme 2014-20

The Forestry Programme 2014-2020 was recently revised with new enhanced forest establishment and support grants. This will make the planting of broadleaf trees more attractive to farmers.

Some of the highlights are:

- Increases in establishment grants and annual premiums with a premium top-up for planting areas 10ha+.
- Premium up to €660/ha to plant oak and beech.
- Premium up to €680/ha for Native Woodland Establishment.
- Premiums payable for 15 years.
- Agroforestry premium increased from €260/ha up to €660/ha. Premium paid for five years.
- New forest fencing and tree shelter scheme.
- Second thinning grant for broadleaf forests @ €500/ha.
- Forest road grant – road density increased from 20m/ha to 25m/ha.

For more information, see https://www.teagasc.ie/crops/forestry/news/2018/mid-term-review-summary.php

Farm and income profile 2017

Total farm size	52.69ha
Enterprises	Forestry 45.49ha – Sitka spruce 36.4 ha; oak and birch 9.6ha – P2012
	Meadow (in GLAS) – 7.2ha
Direct payments 2017	**€**
Afforestation premium	26,880*
Basic Payment Scheme	7,908
GLAS	2,755
Total	37,543 = €712 per hectare

*Annual premium paid for 20 years. Income tax exempt. USC and 4% PRSI** deductable
** PRSI liability for applicants under 66 years old

ue to receive premiums for 20 years.

Taking all direct payments into account for 2017 – forestry premiums, Basic Payment Scheme and GLAS – the gross income is working out at €712/ha, €284/acre. "There is no way," Paddy says, "that I was ever going to make that out of suckling. In fact, the difference is even greater as my own cost of labour and general inputs are hugely reduced."

Following planting, there was a massive reduction in Paddy's workload and although he had sold all his cattle he was determined that he would continue to farm his remaining land. In 2015, he put this into GLAS as traditional hay meadow and each year, weather permitting, he cuts and sells up to 140 bales of hay or silage locally. Unsurprisingly, he has also planted 450 native broadleaf trees under the Native Tree planting option.

Getting involved – gaining experience

While his forest was still under contract Paddy had his first experience of looking after young trees, under the supervision and encouragement of local forestry contractor Padraic Kelly.

This working relationship developed and, since 2014, Paddy has been working part-time with Padraic planting, fencing and pruning young plantations across Roscommon and Leitrim. As well as gaining experience and knowledge from his contractor colleagues, which he is now putting to good use in his own forest, Paddy hugely enjoys the work. "It's healthy and I'm earning a few bob."

Since 2016, Paddy has taken on full responsibility for looking after the forest. The trees are in rude good health with impressive growth across all species but in such a large forest there are always jobs to be done. As Paddy observes: "Nature doesn't stop working when you do."

Jobs, for example, include the maintaining internal access paths and forming/shaping the extensive plots of oak and birch. Paddy realises that these jobs, done early and done right, will have huge benefits for the quality of the trees and those looking after them in the years to come.

Gain knowledge – build confidence

Paddy's knowledge of forestry has grown enormously since planting. "This is my forest – my future and I'm determined to gain the knowledge and develop the skills to ensure it gets the best management," he says. To this end, Paddy keeps himself informed and updated by attending local Teagasc field days and seminars and consulting the Teagasc forestry website. He recently attended a Teagasc/DAFM information meeting on the revised forestry programme. Anticipating first thinning in as little as six to seven years, he has attended a conifer thinning and timber measurement course run by Teagasc in 2017.

The future

"I'm genuinely excited about forestry and farming," says Paddy. "My decision to plant has been fully vindicated and my income and quality of life have improved enormously."

It's all about the buzz…

Why it's important to have a variety of pollinators

Paul Fitters
Lecturer at the Teagasc College in the National Botanic Gardens

A combination of both honeybees and wild bees is most likely to give the best pollination.

Pollination requires the transfer of pollen from the male part of a flower (the stamen) to the female part (the stigma) of another, or sometimes the same, flower. In grasses, hazels and birches, the wind moves the pollen. Such plants often have exposed stamens (e.g. catkins), which produce and disperse a lot of pollen. But this is an expensive method as lots of pollen is lost…literally on the wind…only a fraction will be blown onto female flowers.

Most plants (87%) are pollinated by animals such as bees, hoverflies and butterflies. These must be enticed or tricked into becoming unsuspecting "postmen". So plants will produce colourful, scented and sometimes intricate flowers (orchids, for example) to attract their pollinators. They also need to produce the nutritious nectar in their flowers to keep the pollinators coming back.

Mostly, the pollinators are unaware they have been duped into transporting the pollen, which gets attached to their bodies when they brush against the stamens of one flower. It falls off onto a stigma when they visit another flower. That's cross-pollination.

Of all the insects in Ireland that help to pollinate plants, bees are exceptional in that their entire lifecycle depends totally on both pollen and nectar and hence they are the best pollinators. Beekeepers move hives around in the country to areas where there is an abundance of plants in flower in order to get lots of honey for the beekeeper. In return the fruit growers get better fruit set.

There are more bees than just honeybees. Ireland is also home to about 20 species of bumblebee and 77 species of solitary bees. Honeybees are good as crop pollinators because they are generalists, not fussy about what crop to visit. But they have their drawbacks too. For one, they have short tongues that do not suit plants where the nectar is deep within the flower such as melons and as a result are not interested in them.

> "As 75% of all crop plants are animal pollinated, the importance of pollinators to growers is clear

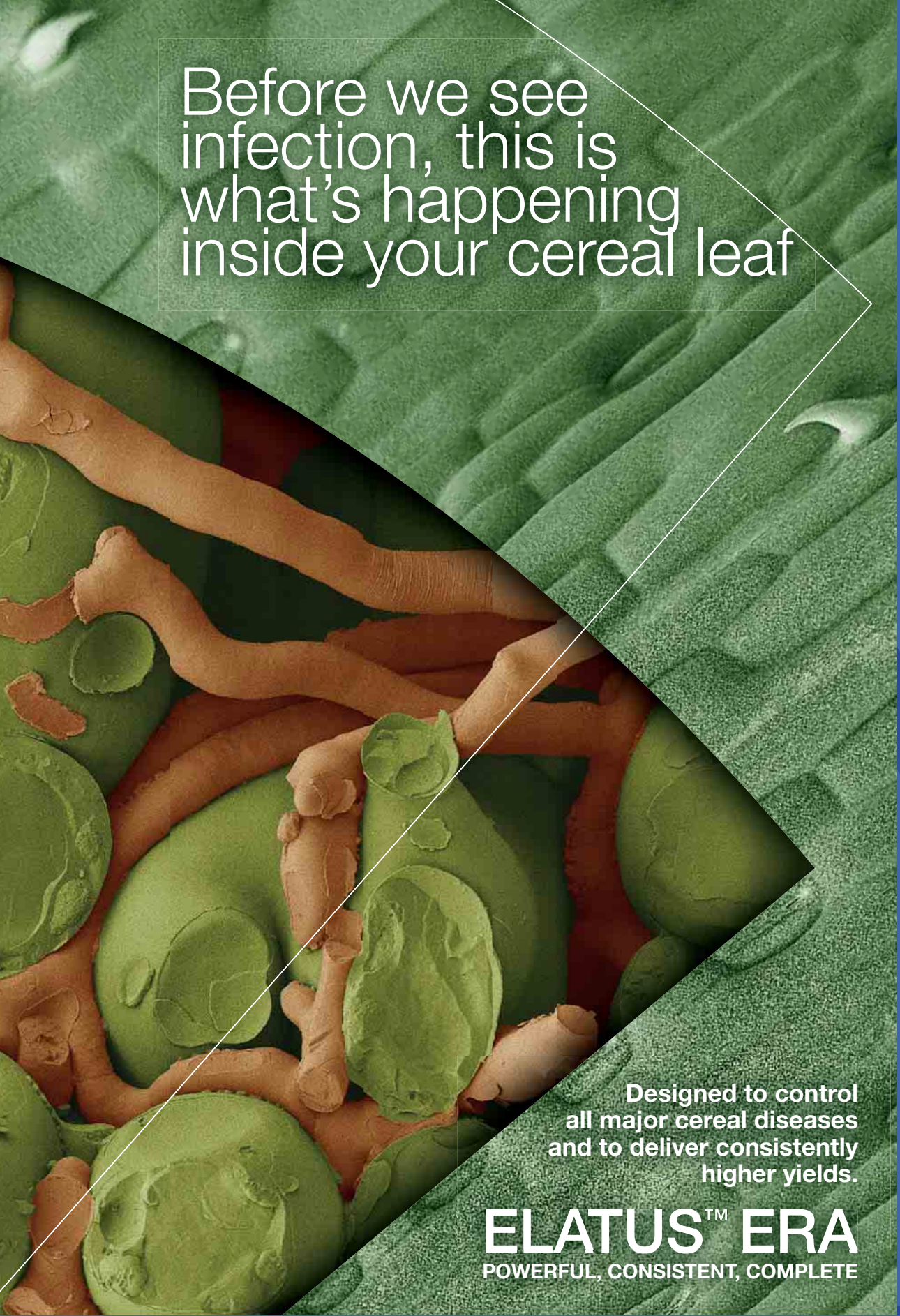
Secondly, as they also use pollen as a food source, they collect pollen in pollen sacs on their legs, which is then not available for pollination. Thirdly, when they visit flowers they do so rather calmly, as opposed to bumble bees who buzz-pollinate. The vibration they produce helps release pollen from the stamens. Crops such as blueberries and tomatoes need buzz-pollination.

Wild bees tend to visit trees more often than honeybees who focus mainly on densely blooming plants. Wild bees will also start to pollinate at lower temperatures and when there is more wind than honeybees. As a result, a combination of both honeybees and wild bees is most likely to give the best pollination of crops and hence better fruit set.

As 75% of all crop plants are animal pollinated, the importance of pollinators to growers is clear. Within Ireland alone, it is estimated that animal pollination is worth €53m. Keeping our bee hives thriving but also supporting our wild populations of (bumble)-bees and other pollinators, is really worthwhile.

Creating pollinator friendly habitats, supporting beekeepers, informing ourselves and raising awareness among the public will all help make Ireland more pollinator-friendly.

For more information, read the all-Ireland pollinator plan 2015-2020 (www.pollinators.ie). You'll find guidelines there on how to make your area more pollinator friendly and a series of how-to-guides for pollinator friendly actions.



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