



Today's Farm

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COMMENT



Mark Moore
 Editor,
 Today's Farm

The potential of sheep

A recent study has shown that the rate of genetic gain achieved in New Zealand (€1.16/lamb per year) was more than four times higher than the genetic gain achieved in the Irish maternal index (€0.27/lamb per year).

This has been a major contributor to New Zealand maintaining lamb output, despite a 50% reduction in their national ewe flock over the past two decades. The Irish and New Zealand Across Country flock was established at Teagasc Athenry with the dual objectives of validating the Irish national maternal breeding index and comparing Irish and New Zealand genetically-elite animals within an Irish grass-based production system.

Results to date show that irrespective of origin, animals of high genetic merit outperform low genetic merit animals, thus highlighting the importance of genetic selection and the use of the Sheep Ireland maternal breeding index.

Acmhainneacht an fhiontair caorach

San eagrán seo, táimid ag díriú ar tháirgeadh caorach, go háirithe an chaora bhaineann. Tá acmhainneacht mhór dul chun cinn ag baint le géineolaíocht mháthartha. Thug staidéar a rinneadh le déanaí le fios go raibh an ráta gnóthachain ghéinitigh a baineadh amach sa Nua-Shéalainn (€1.16/uan in aghaidh na bliana) ceithre huaire níos airde ná an gnóthachain géinitigh a baineadh amach in innéacs máthartha na hÉireann (€0.27/uan in aghaidh na bliana). Chuir sé seo go mór le cumas na Nua-Shéalainne leanúint dá haschur uan, in ainneoin laghdú 50% ar a dtread náisiúnta caorach baineann le scór bliain anuas. Bunaíodh tread trastíre na hÉireann agus na Nua-Shéalainne ag Ionad Teagasc i mBaile Átha an Rí, agus dhá chuspóir ann bailíochtú a dhéanamh ar innéacs náisiúnta pórúcháin mháthartha na hÉireann agus comparáid a dhéanamh idir ainmhithe Éireannacha agus Nua-Shéalainne a bhaineann le scothaicme ghéinitigh i gcóras táirgthe in Éirinn atá bunaithe ar fhéar.

TILLAGE
 Is it time to give min-till another chance?
 >> 24-25



Teagasc advisor Mike McCarthy and Tipperary farmer Joe Pollard.

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Cover | Bunclody, Co Wexford farmer Patrick Kehoe is farming Romneys which are bred for extreme ease of lambing and fit in well on his mainly tillage enterprise.

FARM HAZARDOUS WASTE COLLECTION

- 14 November 2017, Cahir Mart
- 17 November 2017, Mayo-Sligo Co-operative, Ballina
- 21 November 2017, Tullamore Mart
- 24 November 2017, Athenry Mart
- 28 November 2017, Kells Recycling Centre

Protect yourself, your family and your farm!

Make your farm a safer place by using the low cost hazardous waste collection centres for the safe disposal of your farm hazardous wastes. Guidance and information on the brochure here for farmers will greatly assist in the efficient and safe operation of the farm hazardous waste collection centres each day. Save yourself money!

TRIPLE RINSED PESTICIDE AND DAIRY HYGIENE CONTAINERS ARE NOT HAZARDOUS WASTE

ORGANIC DEMONSTRATION FARM WALK LAOIS

- **Date:** 6 December 2017
- **Venue:** Tom Dunne, Seefeld Farm, Ballinasloe, Durrrow, Co Laois, Eircode: R32 DR90
- **Time:** 12pm

FESTIVAL OF FARMING AND FOOD – SFI SCIENCE WEEK AT TEAGASC

A Taste of Food Science

- **Date:** Tuesday 14 November 2017 (6pm-9pm).
 - **Venue:** Teagasc Ashtown Research Centre, Dublin 15, D15 KN3K
- How do we use all our senses to relate to food? How clean are your hands? What makes a good steak? How easy is it to grow your own vegetables? What exactly is gluten? Get the answers to these and many more questions at this open evening. Free tickets available on EventBrite .
- **Contact:** maire.caffrey@teagasc.ie
 - Healthy Starts Here

FESTIVAL OF FARMING AND FOOD – SFI SCIENCE WEEK AT TEAGASC

- **Date:** Tuesday, November 14, 2017
 - **Venue:** Teagasc, Grange, Trim, Co. Meath
- Interactive agriculture and science event for primary school children.
- **Contact:** kieran.meade@teagasc.ie

DAIRYING: FROM FARM TO FORK

- **Date:** Tuesday, November 14, 2017 (10am-1pm)
- **Venue:** Teagasc Moorepark, Fermoy, Co Cork is organising a fun day for secondary school students who will visit the dairy research farm and find out what happens to milk when it's processed.
- **Contact:** emer.kennedy@teagasc.ie/niamh.obrien@teagasc.ie

SPUD SCIENCE

- **Date:** Tuesday, November 14, 2017
 - **Venue:** Teagasc, Oak Park Crops Research Centre, Carlow
- Teagasc Oak Park Crops Research Centre will host students from Carlow Institute of Technology for its Science Week event. The event will be focused on the science behind the potato, from breeding new varieties to producing the perfect crisp. Talks and demonstrations will be held in our breeding facilities here in Teagasc Oak Park and will cover aspects of breeding, agronomy, biotechnology and processing.
- **Contact:** gerard.hehir@teagasc.ie

SCIENCE WEEK AT JOHNSTOWN CASTLE

- **Date:** Tuesday, November 14, 2017 – Wednesday, November 15, 2017
 - **Venue:** Teagasc, Johnstown Castle, Wexford
- Local primary school children will visit the research facilities at Johnstown Castle; this will include a tour of the growth chambers, laboratories, field trials and dairy farm. The children are preparing to exhibit some experiments at the primary fair at the BT Young Scientist exhibition.
- This event will give primary school children some contact time with PhD students and their experiments and get to try some hands-on experiments and see some growth chamber experiments, field and lab experiments and, of course, the dairy cows on the farm with their calves.
- **Contact:** karen.daly@teagasc.ie

TEAGASC GRANGE SCHOOLS VISIT (SECONDARY LEVEL)

- **Date:** Wednesday, November 15, 2017 (9am-12pm)
 - **Venue:** Teagasc Grange, Trim, Co Meath
- Farm and laboratory demonstrations of science applied to food production and animal health for secondary school children.
- **Contact:** orla.keane@teagasc.ie

60 MINUTE SCIENCE

- **Date:** Thursday, November 16 (7.30pm-10pm)
 - **Venue:** Link gallery at Carlow VISUAL
 - **Tickets:** Reserve your place on 059 917 2400 or email boxoffice@visualcarlow.ie
- Teagasc is hosting a free evening of science talks in the Link gallery at Carlow VISUAL, with MC Jonathan McCrea, TV presenter on the RTÉ science show 10 things to know about... This event is kindly sponsored by Science Foundation Ireland as part of the Science Week Festivals programme and organised by Teagasc.
- **Contact:** catriona.boyle@teagasc.ie

Talks

- **Emily Crofton, Sensory Scientist:** Food – a multisensory experience
- **Mark Fenelon Head of Teagasc Food Research Programme:** Milk – nature's perfect food
- **Sara Vero, Agri-Environment Researcher – Soil – much more than just dirt**
- **Donagh Berry, geneticist – Sustainable animal production using DNA information**
- **Eimear Gallagher, Food Scientist – Gluten free foods**
- **Denis Griffin, Potato Breeder – The not so humble spud: Special Guests The perfect pig**

'EWE' WANT TO LEARN ABOUT SHEEP

- **Date:** Thursday, November 16, 2017 (9am-1pm)
 - **Venue:** Teagasc, Mellows Campus, Athenry, Co Galway
- Teagasc Athenry opens its doors to students from local secondary schools to its research centre in Athenry this Science Week. The exhibits on display include:
- **Animal Science –** Here students will see how science is being used to address issues related to reproduction and parasitism in sheep.
 - **Sheep Breeds –** View alternative sheep breeds – their attributes and role(s) in Irish farming
 - **Grassland and the environment –** different grass and clover species and learn about nitrogen fixation. Dealing with environmental issues, use of slurry and fertiliser, etc.
 - **Education –** Careers in Agriculture
 - **Contact:** norina.coppinger@teagasc.ie

For a full listing of events organised by Teagasc during Science Week, see www.sfi.ie/events/

National dairy conferences

Seizing opportunities for a better future

Lyrath Hotel, Kilkenny Tuesday 28 November 2017

Kilmore Hotel, Cavan Wednesday 29 November 2017

8.30 am	Registration and light refreshments	
	Kilkenny	Cavan
9:15 am	Welcome	
	John Moloney, Teagasc Regional Manager	Con Feighery, Teagasc Regional Manager
Session 1	Sustainable milk production	
9.20 am	Chairman: Kevin Twomey, Dairy Farmer & Chairman of Dairy Stakeholders Consultation Group Speaker: Sean Molloy, Glanbia	Chairman: Eoin Lowry, Irish Farmers Journal Speaker: Michael Hanley, Lakeland Dairies
Session 2	Grass10: Grow More, Graze More, Earn More	
10.15 am	Chairman: Michael O'Donovan Gras10 competition – Judges report Aidan Brennan, Irish Farmers Journal Panel discussion Aidan Brennan Grass10 dairy farmer winner	Chairman: Joe Patton Grass10 competition – Judges report John Maher, Teagasc Panel discussion John Maher Grass10 dairy farmer winner
Session 3	People in Dairy	
11.15 am	Chairman: Dr. Noel Cawley, Teagasc Structural change and its implications Paidí Kelly, Teagasc Managing through leadership Margaret Dorgan, Management Consultant	Chairman: Prof. Gerry Boyle, Teagasc Structural change and its implications Paidí Kelly, Teagasc Managing through leadership Karen Brosnan, Management Consultant
	Getting ready for spring peak Phil Purcell, Dairy Farmer, Kilkenny	Getting ready for spring peak Mark Cassidy, Dairy Farmer, Meath
12.45 pm	Lunch	
Session 4	Technical updates	
2.15 pm – 4.30 pm	Chairman: Dr. Frank O'Mara, Teagasc Selective dry cow therapy Dr. Aideen Kennedy, Teagasc Correcting soil pH with Lime David Wall, Teagasc Managing risk in your breeding decisions Dr. Andrew Cromie and Kevin Downing, ICBF Controlling Iodine levels in milk Dr. Stephen Butler, Teagasc Lessons from the Next Generation herd Morgan O'Sullivan, Teagasc	Chairman: John Kelly, Teagasc Selective dry cow therapy Dr. Aideen Kennedy, Teagasc Correcting soil pH with Lime Ger Courtney, Teagasc Managing risk in your breeding decision Dr. Andrew Cromie ICBF and Kevin Downing, ICBF Controlling Iodine levels in milk Dr. Stephen Butler, Teagasc Lessons from the Next Generation herd Morgan O'Sullivan, Teagasc

Now's a good time for soil sampling

If ground hasn't been tested in the last five years it's time to get it done

Mark Plunkett
Soil Specialist, Teagasc, Crops,
Environment and Land Use Programme

It is essential that samples are taken with a suitable soil corer under suitable soil conditions and down to 10 cm. Phosphorus (P) accumulates in the top few centimetres of soil in grassland. A shallower sampling depth will give inaccurate soil P readings. To be comparable over time, soil samples must be taken to the correct depth on each sampling occasion.

Guidelines for taking a soil sample

- Soil sampling areas should be no more than 2ha to 4ha in size.
- Avoid any unusual spots such as old field boundaries, etc.
- Sample the top 10cm of soil with a suitable soil corer.
- Leave three to six months between sampling and P and K applications.
- Take representative soil samples (follow a "W" soil sampling pattern).
- Avoid following lines of regular machinery traffic.
- Take approximately 20 cores to make up the soil sample.
- Prepare a soil sampling map and label the samples.

Check soil pH and lime requirements

An up-to-date soil test result will show the soil pH and the lime requirements required to correct the soil pH to the target for the crop. Table 1

Table 1: Target pH for different crops and soils

Crop type	Soil pH
Grass – grazing and silage	6.3 - 6.5
Cereals	6.5
Maize/OSR	6.8
Beet/beans/peas	7.0
Potatoes	6.0
Swedes/turnips	6.5
High Mo soils	<6.2
Peat soils (15cm deep)	5.5 – 5.8



Ensure correct soil sampling depth for accurate soil P reading.

shows the target pH levels required for a range of different crop types.

Only apply lime based on a recent soil test report as excess lime will reduce the availability of major and minor nutrients such as phosphorus, manganese, zinc and boron.

- Don't exceed 7.5t/ha in a single application. Where the lime requirement is large (>7.5 t/ha [3 t/ac]) split the lime application (ie apply 50% now and the balance in year three).
- On high-molybdenum (Mo) soils, maintain soil pH <6.2 to prevent negative effects on Cu uptake in ruminant animals
- On high-molybdenum (Mo) soils, only lime a proportion of the farm each year (eg 20% of the farm annually) to reduce the risk of an acute copper deficiency in grazing animals arising from high Mo levels (related to high soil pH) in grass across the entire farm.

Soil testing – the cost and value

- A standard soil test (pH, lime requirement, P and K) at a cost of €1.25/ha/year is cheap when you consider that a kilo of P currently costs approximately €2.50.
- A well-taken soil sample provides vital information to tailor field-by-field nutrient advice.
- It will provide a solid foundation for a lime and fertiliser plan to address nutrient requirements and help build soil fertility levels into the future.
- Now is the best time of the year to have soil samples taken.

Teagasc provides a soil-sampling service where a trained soil sampler will call out to your farm and take soil samples in the correct way.

Teagasc advice

Please contact your local Teagasc advisor to plan soil-sampling requirements.



Only apply lime based on a recent soil test result. Over-application of lime will reduce the availability of soil P.

TEAGASC CALF REARING MANUAL



Best Practice from
Birth to Three Months



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Agreeing is not enough

Many farmers say they are convinced of the benefits of calving at 24 months but many of their heifers don't hit the target. Weighing animals is key

Joe Patton
Teagasc Animal and Grassland Research & Innovation Programme, Grange, Co Meath

Whether it be for intensive grazing systems in Ireland or North American-type indoor units, there is worldwide consensus among researchers and farmers that calving at 24 months results in lower rearing costs, easier calving, better fertility and higher lifetime yields. So why is the proportion of heifers calving at 22 to 26 months on Irish dairy farms below target?

The question of heifer management practices on dairy farms has been given some renewed attention recently by Michael Malone, Teagasc,

Ballyhaise. Michael, who works with the Teagasc-Lakeland Dairies joint advisory programme, has also undertaken some work on the topic as part of his masters' thesis.

"In the last couple of years, we have really targeted improved herd fertility as part of the Lakeland programme," explains Michael. "In the course of farm visits and workshops, heifer management has featured a lot. It was clear from speaking to suppliers that almost everyone agrees on 24-month first calving as the way forward, and the majority of farmers say that they try to implement this on their farms.

"However, when we look at the actual heifer data from ICBF it shows a different story – only 41% of replacements on Lakeland farms actually calve at 22 to 26 months old."



A better understanding of heifer management targets and practices

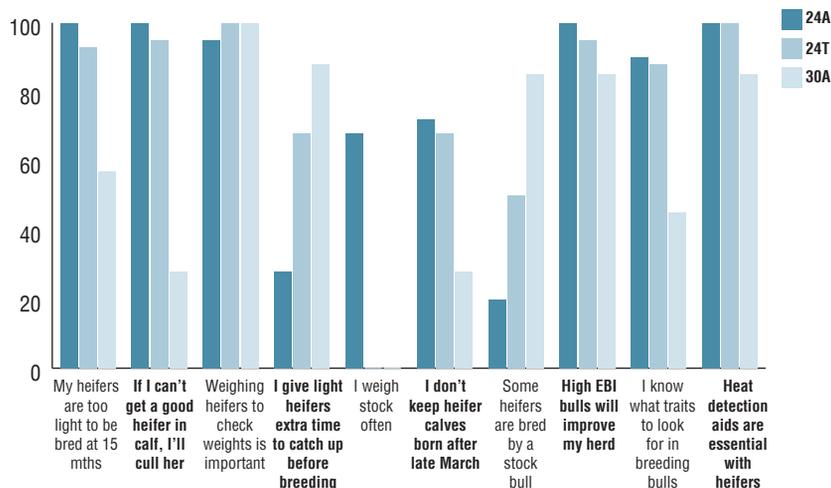
Michael set about examining this disconnect by carrying out detailed interviews with a representative sample of 60 Lakeland suppliers. He then matched each farm's practices to its actual herd production, breeding and heifer data.

"The first, simple, thing we learned is that, when it comes to heifer rearing, there are three broad categories of farms," says Michael. "Those who actually calve at 24 months old, those who target calving at 24 months old but don't do it, and a small number who are content to calve at 30-months plus, for their own reasons."

In the study, these groups are referred to as 24A, 24T and 30A, respectively. "It was an important distinction to make, particularly for that large middle 24T group. These farmers are on board with the idea of 24-month calving, and in fact had the highest estimate of additional rearing costs for older calving heifers.

"So to help these farmers, it is more about identifying the how-to practices rather than repeatedly highlighting the benefits. In contrast, our 30A farmers had a much lower estimate of extra costs and also had the highest target weight at first insemination across the groups – the challenge to make improvements on these farms is

Figure 1
Heifer management practices and outcomes





quite different as a result.”

So what then were the main differences in heifer-rearing practice between these types of farm? Michael starts with the similarities. “First up, our survey farmers agreed across the board that high EBI is working for their herds, that heat detection aids are essential and that weighing heifers is important.

“But when we get to the practical details, particularly around weighing, we saw some key trends emerging. It is interesting to note, for example, that there was no significant difference between groups for target weight at calving, yet the 24T and 30A groups both wanted their heifers significantly heavier than 24A at first insemination. This showed us that size at breeding seems to be the issue rather than size at calving.”

This comes through again where it is seen that most of the farms failing to calve at 24 months will delay first breeding to give lighter heifers a chance.

“When we look at it closely, herds that are missing the target for 24 month calving tend to want stronger heifers at breeding,” says Michael. “They then hold off submitting these heifers for a few months if they believe heifers are underweight.”

Critically, the number of farms in the 24T and 30A categories actually

Joe Patton, James Dunne and Gerard Reilly.



Continued on next page

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weighing their heifers was zero – so by definition it is solely down to opinion on size at breeding rather than fact. “We have seen many situations on the ground where heifers were adequately grown yet breeding was being delayed due to perception of heifers being too small,” adds Michael. “This is a missed opportunity that can only really change if weighing of stock is carried out.”

Michael also compared herds that are weighed regularly to those that are not. “Interestingly, those weighing heifers regularly tend not to delay breeding based on weight, so they are not using a final weight to select heifers for breeding,” he notes. “Rather, it is a case of using the regular weighing data to drive better decisions and have heifers well-grown for breeding. It certainly is a case of, “If you don’t measure it, you can’t manage it”.

Michael also looked at the overall herd performance across the categories. Lakeland herds calving heifers at 22 to 26 months old had higher milk solids yield per cow, higher six-week calving rates and calving intervals, and had better EBI values overall. “It is difficult to identify cause and effect here,” says Michael, “but definitely the most efficient herds are opting for 24-month calving”.



Gerard Reilly says heifers that calve later than 24 months are generating unnecessary cost.

Farmer focus Gerard Reilly

Lakeland supplier Gerard Reilly is putting heifer-rearing recommendations into practice. Gerard farms at Glassleck, near Shercock, Co Cavan. He milks 148 cows in a spring-calving system and supplied 530kg milk solids per cow in 2016. Of 48 replacement heifers calved this year, 47 calved at two years old.

“I suppose there is always one who’ll let you down,” says Gerry, smiling. He points out that two-year-old calving is vital to his system. “We are farming at a fairly high stocking rate on drumlin ground, where weather can be tough and having enough feed is always an issue. Why would I want to be carrying extra passengers for another six months?” he asks.

“The debate comes up from time to time, and maybe some farmers want their heifers that bit older at breeding. But when you look at the cost of renting extra ground for grazing silage, more sheds and slurry storage needed, it cannot stack up. In any case, we have most of the heifers at 340kg, plus at 14-15 months, so there is no problem submitting these for breeding.”

In recent years, Gerry has worked a contract-rearing arrangement with

Owen Cooney, who farms about 20km away in Virginia.

“This has worked very well in terms of labour and heifer performance,” says James Dunne, Teagasc Ballyhaise, who is Gerry’s advisor. “The heifers are weighed regularly and the lads target growth rates of 20kg per month. In any batch there will always be a few heifers falling behind, for one reason or another, and weighing helps to spot these animals early on. Owen can draft these out for extra feeding to help them catch up.”

“The heifers are weighed regularly and the lads target growth rates of 20kg/month. In any batch there will always be a few heifers falling behind, for one reason or another

When we visited the farm in mid-October, weather conditions were less than ideal. The heifer calves were split into a

heavier batch on 1kg meal and lighter calves on 1.5kg.

“We split 15 lighter heifers (those under 200kg) for extra feeding. Heavier calves were moved to higher ground nearer the home farm to graze off lighter grass for a couple of weeks,” explains Gerry. “The group average EBI is €125 with about €60 for milk and €40 for fertility. I am quite happy with this bunch overall.

“We have found that higher-EBI heifers grow into very solid stock but you need to keep up the protein in the first winter diet to stop them becoming too fat as heifers.”

“For farms in this area, we recommend that dairy farmers should have 700kg DM (three round bales equivalent) of high-quality 72+ DMD silage available per weanling heifer, and supplement with 1.5kg to 2kg of good energy, quality protein concentrate in the first winter,” says James Dunne. “Gerry and Owen have these calves well grown to this point, and have a stock of good silage available. If these heifers get an early start to grass next spring they should be coming in at 340kg to 350kg for breeding on 1 May 2018, right on target.”

Foreign sheep find their niche

These young Wexford farmers have found ideal breeds for their circumstances

James Doran
Teagasc Drystock advisor,
Enniscorthy

Denis Brennan (25) farms sheep and tillage in partnership with his father Michael in Galbally, Ballyhogue, Enniscorthy, Co Wexford. Spring barley is grown every year with forage crops sown into stubbles, with crops such as swedes, fodder beet suitable for grazing and forage rape sown as standalone crops.

“Sheep production has always been our core enterprise,” says Denis. “We run a flock of pedigree Suffolk ewes producing shearling rams for breeding, as well as a group of commercial mid-season lambing ewes. We buy 250 to 300 store lambs to be wintered on fodder crops and concentrates.”

The family are renowned for producing pedigree Suffolk rams for sale and Michael is currently secretary of the Co Wexford sheep breeder's society.

Bursary

In the summer of 2014, Denis was awarded a bursary by the North Kildare Producer Group after graduating from the UCD agricultural science course. “The aim of the bursary is to allow young farmers interested in sheep production to broaden their skills and gain further knowledge in areas that interest them while also investigating research topics suggested by the group,” says Denis.

“The bursary brought me to England and Wales. My first stop, at the request of the group, was to work in the 2014 British farm shop of the year, Blacker Hall Farm shop, located in Wakefield, between Sheffield and Leeds.



Michael and
Denis Brennan

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The aim was to learn how the farm shop marketed local produce direct to the consumer and report on the potential for a similar business plan in an Irish setting.”

Once he had finished serving his time in the shop, Denis set about visiting farms with two main focus areas: pedigree breeding and efficient lamb production. The second area, efficient lamb production, was something that Denis found to be working really well when he visited a flock of Highlander ewes owned by Neil Oughton near Montgomery, a town on the Wales-England border.

Neil Oughton runs a flock of 600 Highlanders – a composite New Zealand breed comprising Romney, New Zealand Texel and Finn breeds developed to be functional, highly maternal, easy-lambing, prolific and easier to feed and maintain due to a medium-size body weight.

The farm was achieving remarkable results, with the Highlander ewes weaning 1.6 lambs each. All ewes lambed outdoors in April and received no concentrate supplementation pre- or post-lambing. The ewes were able to make excellent use of the high levels of protein and energy in spring grass. A seed was planted in Denis's mind.

Highlanders arrive

On 17 March 2016, 24 two-year-old Highlander ewes all scanned as in-lamb with two lambs landed in Galbally. The ewes lambed from 1 April outdoors, unassisted, which in itself was a huge change. The Brennans' pedigree Suffolks, lambing indoors from 1 January, had always needed supervision.

The Highlanders' strong maternal ability meant that no lamb received assistance with lambing; no ewes were checked for milk; and no lambs were assisted to suckle. At the end of the lambing season, 43 of the 48 lambs scanned were alive on the ground and subsequently weaned from the ewes after 14 weeks, a weaning rate of 1.80.

“We kept all ewe lambs born (20) as replacements,” says Denis. “We kept the best Highlander ram lamb to serve the ewes for the following breeding season and he was 60kg at mating time. One ewe died during the summer months but 23 ewes were put to the ram again in 2016 to repeat the trial. The ewes scanned 1.92 lambs per ewe and lambed in April 2017 unassisted, weaned 1.75 lambs per ewe.”

The ewe lambs kept from the lambing season of 2016 will be put to the ram this year, along with the mature ewes bringing the total number of Highlander breeding ewes to 43.

Other ewes on farm are also being put to the Highlander ram to produce Highlander cross ewe lambs for future lamb production.

Plans for the future

Although still a small number by national flock standards, Denis plans to expand the Highlander flock in the coming years if performance continues to yield high weaning rates. In five years' time, the plan is to have the farm entirely in grass and forage, totally dedicated to sheep with no commercial ewes or stores purchased.

“At a medium to high stocking rate of four ewes/acre (10 ewes/ha), this would see the flock potentially grow to approximately 350 ewes,” says Denis. “If weaning rates continue on par with recent performance, this will see over 550 lambs weaned at a weaning rate of 1.6 lambs per ewe, an output of approximately €1,500/ha assuming a lamb price of €95.”

This would put Denis in the top third of sheep farmers based on the 2016 Teagasc Profit Monitor data on output/ha, stocking rate/ha, lambs reared, etc. In a low labour/low input flock, this would be excellent performance.

“The farm was achieving remarkable results, with the Highlander ewes weaning 1.6 lambs each. All ewes lambed outdoors in April and received no concentrate supplementation pre- or post-lambing

This figure is even more impressive when you take into account that Denis has a full-time job in procurement with Slaney Foods. Furthermore, unlike a lot of mid-season lamb production very little, if any, concentrates will be fed to lambs during summer, grazing with fodder crops and a reseeding programme planned in unison complete the system. The variable and fixed costs, which so often eat into gross and net margins will be kept to a minimum.

Another angle that Denis intends to exploit is that the top 10% of Highlander ram lambs born will be kept and targeted for sale as breeding stock, an element of which has already happened in 2017 with three Highlander rams sold for breeding in 2017. “It's early days but the signs are very positive,” concludes Denis.

Romneys Tillage and



grassland system



James Doran and Patrick Kehoe.

Patrick Kehoe is another young (33) Wexford sheep and tillage farmer. He farms in Ballyroebeck, Bunclody, Enniscorthy, Co Wexford, totalling approximately 82.5ha. The farm is predominately in tillage, 68ha, with another 14.5ha under grass.

"Our system involved lambing 150 typical Suffolk cross Belclare ewes from mid-March each year," says Patrick. "The system was working reasonably well with scanning rates of approximately 1.9 lambs/ewe on mature ewes and 1.5 on ewe lambs which were also presented to the ram for breeding. We typically weaned 1.5 lambs per mature ewe after a heavy workload."

The problem Patrick found was that lambing the ewes was taking up a considerable amount of time in mid-March when crops need to be sown, fields prepared and tilled, etc. While on a visit to New Zealand in June 2015, Patrick got chatting to some like-minded sheep farmers and the one breed of sheep that kept coming up in conversation was the Romney.

"The Romney breed promised an easy-care lambing option due to the wider pelvis, low maintenance and good mothering ability," says Patrick. "This is supported by high lamb growth rates with good grassland management without the need for concentrates and a further small bonus of a higher fleece weight at shearing."

In short, Romneys ticked a lot of boxes for Patrick so on returning home, and with the blessing of his wife Mairead, 33 mature Romney ewes arrived in Ballyroebeck in the autumn of 2016. All were in lamb to a pure-bred Romney ram. These ewes were scanned on 10 February and had a scanning rate of 1.7 with 30 of the 33 showing up in lamb carrying 51 lambs.

"The rate was slightly disappointing," says Patrick. "However, the ewes started lambing unassisted as planned from 7 April 2017 with the result that 48 lambs were weaned from the ewes, an impressive weaning rate of 1.6 lambs per ewe with just three lambs lost at lambing time considering zero supervision."

Similar to Denis Brennan's system, ewes received no concentrate supplementation pre- or post- lambing as high-quality spring grass fuelled the system. Lambs were finished on grass only also.

Plans for the future

Patrick is planning to keep all ewe lambs bred from the mature ewes. He will put these to the ram this season, along with the remaining mature ewes deemed fit for breeding in November and continue the same trial for lambing next spring. If this is successful, the plan is to stock the 14.5 hectares of grassland in future with 150 Romney ewes which equates to 10 ewes/ha (four ewes/acre).

The output figures targeted are very similar to Denis Brennan's system with a target weaning rate of 1.6 lambs per ewe producing €1,500 output per hectare on a low-cost/low-labour system. Again, similarly to Denis, this would put Patrick in the top third of sheep farmers based on Teagasc Profit Monitor results for similar performance indicators with labour requirement and costs kept to a minimum.

He also plans to keep the best ram lambs each year and target them for sale as breeding stock with the remaining male lambs slaughtered. Ewe lambs will be retained for breeding with some possibly sold for breeding also once mature flock size has been established.

It's great to see two young farmers committing to sheep farming with such an open mind to alternative production methods and although it's early days for both, the signs are very positive that both systems will work.

Fluke control in a difficult season

A wet autumn creates ideal conditions for this persistent nuisance

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

Teagasc surveys have shown that over 90% of farms treat their stock for fluke. So fluke is a concern for most sheep farmers at some stage of the season. Given the current wet autumn, it is worth focusing on how fluke infestations are being managed.

When we discuss fluke in sheep we tend to only consider the ewe, but in high-risk areas it is becoming an increasing issue for lambs later in the season. Like most aspects of flock health, good planning is key. Fluke control strategies should be high on the agenda when discussing a flock health plan with your vet.

Where animals are left untreated and/or, ineffective treatment is used, fluke infestation can become a major problem. Livestock with a fluke burden suffer reduced growth, fertility, milk yield, etc. In addition, depending on the level of burden and animal's status, it can also result in mortality. This is due to both the direct effects on the animal's system and, indirectly, as a result of having depressed immunity/increasing susceptibility to other pathogens, eg salmonella, clostridial (black's disease).

There are two types of fluke which affect ruminants on Irish farms: liver fluke and rumen fluke. We tend to focus on liver fluke as its occurrence and clinical effects are more common. Rumen fluke is a relatively new problem, which in the past was largely confined to tropical climatic conditions. Clinical occurrences of disease in stock on farms here were rare.

How does fluke damage the sheep?

Liver fluke disease (fasciolosis)

• **Acute:** symptoms include lethargy, reduced grazing, distended stomach, anaemia and sudden death. It happens when immature liver fluke burrow through the liver causing damage. When this occurs in large numbers it can result in liver rupture, haemorrhage and death. It typically occurs from September to December.

• **Sub-acute:** symptoms include lethargy, rapid body condition loss, failure to respond to good nutrition and jaw swelling. Death can result when left untreated. It typically occurs from October to January.

• **Chronic:** symptoms include reduced condition, poor fleece quality, swelled jaw (bottle jaw) and gradual weight loss. Death can result when untreated; effects are compounded at times of metabolic stress, eg late pregnancy and early lactation. It typically occurs from January to April.

Rumen fluke disease (paramphistomosis)

This is more common after wet summers. When clinical effects occur symptoms include scour, lethargy and dehydration. It occurs when immature rumen flukes complete the



migratory phase during their larval stage to the rumen. Damage can occur to the duodenal wall which can result in enteritis and even death. Once they have reached the rumen, the effects appear to be limited.

Farm history is a good starting point as it generally indicates what you can expect from year to year. But not every season is the same. Prevailing weather conditions can alter both the incidence and distribution of fluke with carryover effects into the subsequent season. On mixed farms, weather can also alter the grazing pattern with prolonged periods on wetter grazing pasture not suitable for heavier livestock.

Aids to diagnosis

• **Physical symptoms:** look for the characteristics outlined previously. If in doubt consult your vet.

• **Faecal samples:** this is where the presence, or absence, of fluke eggs is determined. The process is limited by the fact that only adult fluke shed eggs. Some laboratories also provide an alternative means of testing in the form of a coproantigen Elisa test. This is a more sensitive test that may provide detection at a slightly earlier



Key messages

- Fluke can have a serious effect on your flock.
- Recognise the symptoms, test faecal samples and get feedback from your abattoir.
- There are six different categories of flukicide available for sheep.
- Choose the correct product for the time of year.
- Use best practice when dosing.
- Have a fluke control plan in place for your farm – consult your vet.



Fluke control strategies should be high on the agenda when discussing a flock health plan with your vet.

stage of development. The presence of rumen fluke eggs in the sample does not always warrant treatment. Consult your vet in relation to this.

•**Post-mortem diagnosis:** this is an effective way of diagnosing fluke issues on your farm. Feedback from abattoirs from cull ewes or lambs sold late in the season is useful.

•**Fluke forecasts:** these are issued from the Department of Agriculture, Food and the Marine.

Remember not all farms are the same; areas of higher rainfall or those with wetter ground are at higher risk than those on drier soils. Farms can vary from low- to moderate- to high-risk and consequently the number of treatments and strategies employed must vary too.

Treatment

There are six different categories of flukicide licensed for use in sheep available in Ireland. It is vital when purchasing a product that you check which category you are purchasing from.

Caution should be employed when using Tricabendazole-based products as fluke resistance has been detected. Judicious use, or substituting with a

product from an alternative category with efficacy against immature stages, is advisable.

Treatment against rumen fluke depends exclusively on Oxyclozadine-based products. To protect their efficacy, they should be used carefully and only when needed. As with all products take note of the withdrawal date. This is particularly important for store lambs finishers and those aiming to sell dry ewes after scanning.

Choice of treatment will depend on the time of year, risk level of the farm, management (eg housing) and what stage of liver fluke development the desired treatment is targeting.

Autumn treatment

•**Target:** immature fluke.

•**Flukicide:** effective against immature fluke.

•**Aim:** prevent immature fluke migration and development.

Winter treatment

•**Target:** adult and immature fluke.

•**Flukicide:** effective against immature fluke.

•**Aim:** treat adult and immature fluke to prevent liver damage.

Spring/early summer treatment

•**Target:** adult fluke.

•**Flukicide:** effective against adult stages of fluke.

•**Aim:** to reduce pasture contamination.

Preserving flukicide efficacy

As with worming products, resistance to flukicides is becoming a problem. To preserve the effectiveness of active ingredients we need to avoid overuse of the same categories. It is vital that correct dosing procedures are used.

Checking dosing equipment, in particular correct calibration, is highly important. Another key consideration when treating the ewe flock is the dosage rate.

All products will give dosage guidelines, but do you know the weight range of the ewes in your flock? This tends to be larger than many expect. Consider the weight of your lightest hogget versus your heaviest ewe. With a variety of breed types present in many flocks, it is not uncommon to see a 40kg+ weight difference. Take these factors into consideration when dosing your flock.

sheep focus

Catch crops can cut costs

Grass is the cheapest feed. But catch crops and fodder beet can play a role in feeding a flock

Jack Murphy
Teagasc drystock advisor, Thurles

Joseph Egan who farms in The Ragg, Tipperary, has recently started finishing store lambs to boost the income from his tillage farm. "This is our third year finishing lambs over the winter and we are very happy with how the system has worked so far," says Joseph.

"This year we sowed 20ha of a leafy turnip and forage rape mix following winter barley. It was all planted by 2 August so we expect yields of over 2,400kg/DM/ha of utilisable material." Assuming a lowland lamb (35kg to 44kg) intake of 1.5kg DM per day then 1ha of the catch crop will provide 1,600 lamb days of grazing.

Therefore, the 20ha has the potential to provide 32,000 lamb days of grazing. "As we are in GLAS we can't graze this until 1 December," says Joseph. "We aim to have grazing completed by 1 March giving us 90 grazing days."

Dividing the total number of lamb days (32,000) by the timeframe, Joseph intends to graze the crop (90 days), it should provide enough forage to finish 355 lambs. While on the crop, lambs will be offered concentrates at a rate of 0.4kg/day.

"The key to good yields for grazing is the early planting date of the crop," says Joseph. "Once on the crop the lambs' liveweight will be monitored to make sure they are reaching the target of 1.5kg liveweight gain per week. If the lambs' performances are below target we will increase the amount of concentrates to ensure they will be all sold by early March."

Fodder beet

As well as finishing lambs on catch crops, Joseph planted 5ha of fodder beet in April to be used for winter

grazing. "We chose the variety Blaze as it is low in dry matter and a large proportion of the crop grows above the ground, helping to increase utilisation," he says. "Depending on results this year, we may select a variety with even lower dry matter next year."

"We aim to start grazing the fodder beet from 1 November and be finished by the start of February. Lambs will have access to a grass runback while grazing the beet and, similar to when they are on the catch crops, will be offered concentrates at 0.4kg/day."

Predicted yield

The predicted yield of the fodder beet is 14,400kg/DM/ha of utilisable material. Assuming a lowland lamb (35kg to 44kg) intake of 1.5kg DM, 1ha of the fodder beet will provide 9,600 lamb days of grazing. Therefore, the 5ha of catch crops Joe has sown has the potential to provide 48,000 lamb days of grazing.

Dividing the total number of lamb days (48,000) by the timeframe Joe intends to graze the crop (92 days), it should provide enough forage to finish 522 lambs.

As with the catch crop, increasing the concentrates offered to the lambs will increase the number of lambs that can be carried.

Costs to the farmer

The cost of growing the catch crop was put at €207/ha which includes seed, fertiliser and machinery costs. Across 20ha and feeding 355 lambs for 90 days this works out at €11.60/head for 90 days. Feeding an average of 0.4kg/head/day of concentrates for the 90-day period will cost €8.64/head, assuming a ration price of €240/t. This brings the total feed cost for this system to €20.24 per head.

The cost of growing the fodder beet was put at €1,131/ha including seed, fertiliser, sprays and machinery work. Across 5ha and providing feed for 522 lambs this works out at a cost of €10.83 per lamb for the 90 days. Feeding an average of 0.4kg/head/day of concentrates for the 90-day period will cost €8.64/head, assuming a ration price of €240/t. This brings the total feed cost for this system to €19.47 per head.



PRODUCTION TIPS

Jack Murphy, John Egan and Joseph Egan admire a crop of Blaze fodder beet.



The most popular catch crop sown is a mix of forage rape and stubble turnips partly due to tillage farmers choosing the catch crop measure within GLAS. Forage rape/stubble turnips provide high yields of quality roughage into the winter at a competitive cost. Sowing date, grazing date and whether they received an application of fertiliser will determine the yield potential of these crops.

- For top yields, wait 12 to 14 weeks after sowing before starting to graze. A crop planted after the middle of August should yield 1.5t to 2.1t of utilisable DM/ha. Earlier sowings will yield higher dry matter, but if planting was delayed until September the yield will be at the lower end of the range.
- Forage rape and stubble turnip crops can be used as the sole source of feed for both ewes and lambs provided that they are introduced to the crop gradually over a couple of weeks. The best way to introduce sheep onto the crop is to have a grass runback present from the start.
- If grazing pregnant ewes, mineral supplementation will be needed, iodine is particularly important. Lactating ewes will need between 0.5kg and 1kg of meal (14% to 16% CP) for six weeks post-lambing if they remain on the crop. Adequate, clean drinking water should always be available. Be sure to have all grazing completed by early March when brassicas will start to flower. Post-flowering, the plant can become poisonous.
- Good fencing and a strong current will be required to prevent sheep breaking through the strip wire to gain access to the entire crop. Three or four strands of Polywire and plastic stakes to fence the field will cost in the region of €1/m to €1.50/m. This considerable expense (if fencing is not available) should be taken into consideration when estimating the value of a crop for sale.
- To get maximum utilisation of the crop, strip rather than block-graze. A long and narrow feed face will boost the number of stock who can gain access to the crop at any one time. If the field is on sloping land it is best to graze from the top of the hill to the bottom.
- Clean livestock policy: a key challenge for farmers finishing store lambs outdoors this year will be adhering to the new clean livestock policy. Sheep with a heavily contaminated fleece will fall into Category C and can't be slaughtered until remedial action has been taken.
- To keep lambs clean, crutch or dag them before turnout. They should be introduced to the crop gradually to reduce the risk of scouring. Lambs should have a clean, dry, lying area and any troughs where feed is being provided should be moved regularly to avoid poaching, compaction of subsoil and the creation of muddy areas.

'From heather to grass our mules will last'

John J. Cannon
Teagasc Sheep Advisor, Letterkenny,
Co Donegal

While still in its infancy the Donegal Mule Group has made rapid progress in the a year since its foundation. The group's marketing slogan "From Heather to Grass our Mules Will Last" reflects confidence in their product. In this article, I will review the progress of the Donegal Mule Sheep Group with the hope that the approach could be replicated elsewhere.

For those not familiar with them, Mule ewes are the result of a cross between a Bluefaced Leicester ram and a Scottish Blackface Mountain ewe. Mules are sought after by lowland sheep farmers because they are widely recognised as being prolific with excellent mothering traits.

Depending on the strain of ewe involved (Perth, Lanark, Swaledale, West of Ireland type, etc) the offspring display different physical characteristics such as head colour, size and wool/skin type. The United Kingdom lowland sheep flock is dominated by Mule ewes which are then crossed with terminal sires to produce the annual lamb crop.

While there have been individual farmers breeding Mule sheep in Donegal there was never an organised selling group or a specific sale for Mule sheep in the county until 2016. In previous years, Donegal farmers looked to sheep markets in Northern Ireland to sell Mule ewe lambs and hoggets.

Teagasc hill sheep conference 2016
In February 2016 Teagasc held a suc-



cessful national hill sheep conference1 in Ballybofey, Co Donegal. Farmers attending heard a number of interesting papers on topics ranging from hill land management to the finishing of store lambs. In a paper on the hill sheep sector in Donegal, two of the take-home messages struck a chord with farmers:

- Improve income by cross-breeding at least 30% of all flocks, weaning at least 0.8 lambs per ewe, and
- Improve marketing by using producer groups for replacement and store lamb sales.

Later that year on 7 July, John J Cannon and Seamus Campbell of Teagasc held a meeting in Ballybofey to investigate the possibility of "establishing an annual sale of hill cross ewe breeds". At this meeting Professor Michael Diskin, Teagasc sheep enterprise leader, outlined the advantages of a producer group in marketing breeding stock and how it might operate.

Frank Hynes, Teagasc sheep specialist, also spoke at this meeting. He encouraged those present to "have a go at getting a producer group for hill cross replacements off the ground".

By the end of that meeting, there was a list of interested sheep farmers compiled. Further meetings of this group during July and August were facilitated by Seamus Campbell, Teagasc. The main interest was in having a sale for Mule sheep.

A committee was set up with Kieran

William Gallen and Seamus Campbell admire Lanark ewes. Bottom right: A lot of Donegal Mules.



The main aim of the Donegal Mule Group is to provide value for money stock for lowland sheep producers

FUTURE PLANS



When I asked Kieran about plans for the future he replied that “while we are over the moon” with our progress to date, we must continue to build on the work done so far. We have three aims for the next twelve months:

- To further improve the quality of stock offered for sale through more exact inspections.
- To allow continued expansion of the group to meet future demand by allowing in new members annually.
- To engage in increased promotion for 2018.

The group was very keen to acknowledge the huge goodwill and help they received. William Gallen said that “special mention should be made regarding the following: Brian Crawford, manager of Ballybofey and Stranorlar Mart, all our sponsors and the role played by Teagasc. Without this help it would not have been possible to achieve the progress we did”.

In order for the development of an efficient sheep production system in Ireland, it is essential that we develop a stratified system as is the case in the UK with improved linkages between hill and lowland sectors. This means that our hill and mountain breeds are used to produce prolific replacement crosses for the lowland flock.

This development is well established in the west of Ireland and is now occurring in the Donegal. The aim must be to continue to roll out this progress to all the other areas with hill and mountain sheep. In order to do that, hill farmers must ensure that they wean in

excess of 0.8 lambs per ewe so that they can produce enough replacements for their own flock hill flock and then engage in some cross-breeding.

Alternatively, farmers with enclosed land could buy in their horned replacements annually and breed all of their flock to a Bluefaced Leicester ram. The Mule male lambs are excellent sheep to finish. They have high growth rates and very acceptable carcase conformation so the hill farmer is gaining all the way.

McGrath (Pettigo) as chair and William Gallen (Killygordon) as secretary and treasurer. Conor Maguire (Ballybofey) was the first PRO and Seamus Campbell continued to facilitate meetings. The other members of that committee were James McGee, Thomas Doherty, John Bustard, Charles Tinney, Adrian Gallagher, Mark O'Hara and Patrick Browne.

Seamus Campbell informed me that “the group was very keen and quickly decided to hold a first sale in October 2016”. He also said “they had the aim of selling 400 to 500 sheep and drew up a set of rules regarding membership, quality and a code of conduct”. They agreed “Donegal Mule Group” as the name.

At a recent meeting with Kieran McGrath and William Gallen, William informed me that in 2016 they also decided that “all stock offered for sale would have to carry a Donegal Mule Group ear tag that could only be obtained via the secretary”.

The group carried out quality control checks on all stock prior to the sale and made the service of an experienced shearing contractor available.

William explained: “This ensured that sheep were properly presented for sale and farmers were assisted with shearing and sale preparation. He continued: “At our first sale, there was a 100% clearance of 558 sheep from 18 sellers. The 418 mule ewe lambs averaged €117 and 140 mule hoggets averaged €171 with 20% of

the stock was sold to buyers from outside the county.”

Sale in 2017

Buoyed by the success of the first sale, the group reviewed all aspects of its approach and made plans for 2017. It allowed some new entrants and embarked on a promotional strategy. This included showing Mule ewes at the local shows in Donegal and the group competed in the Mule section at Tullamore Show.

At its second sale in September 2017, there were over 1,300 mule females offered for sale.

There was an almost complete clearance of stock with 219 mule hoggets averaging €163 and a 95% sale of the 1,100 ewe lambs offered at an average price of €102 each.

Thirty-two percent of the stock was sold to buyers from outside of Donegal which is very encouraging. Kieran McGrath, chair, was keen to point out that “the main aim of the Donegal Mule Group is to provide value for money stock for lowland sheep producers and also to provide increased returns for hill producers of the Mules”.



sheep focus

Grass10 – a campaign to improve sheep performance

Virtually all farms could grow 11t to 15t of grass dry matter/ha/year. But average annual grass DM production languishes far below this level, varying considerably depending on location, farm type, season, and grazing management

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



G rass, either grazed or ensiled, can supply up to 95% of the energy requirements of sheep. It's not easy to achieve but the profitability attained from a grass-based diet is compelling. On-farm profit is proven to increase by €105/ha for every additional tonne of DM utilised. Many Irish sheep farmers are currently not using grass to best effect and there is scope to: increase grass production; utilise that grass; produce large quantities of lamb and achieve a very high profit margin for the farm.

Growing as much grass as the farm is capable of should be the aim on any farm. Set stocking/continuous grazing systems are still operated on Irish sheep farms, with sheep grazing the same grassland area all year.

Rotational grazing offers greater flexibility in grassland management through increased control over sward structure, grazing intensity, regrowth periods and overall pasture supply. Dividing the grassland area into a number of paddocks, which are then grazed, fertilised and rested in turn will guarantee that greater levels of grass are eaten.

Current grassland performance

Informed estimates suggest that an average of only about 5.6t grass DM/ha/year is utilised nationally on drystock farms and Teagasc National Farm Survey (NFS) data suggests utilisation is growing at less than 2% annually from this low

base. Data from the best commercial grassland farms and research farms indicate that the current level of grass utilised can be increased significantly on sheep farms (more than 14t DM/ha grown at 75% utilisation results in 10t DM/ha utilised).

Improvements in soil fertility and grazing infrastructure are enabling such levels of grass production and utilisation. However to match this level of grass utilised, many farmers will need to up-skill their grazing management practices.

Grass10 campaign

Grass10 is a new four-year campaign recently launched by Teagasc to promote sustainable grassland excellence. The Grass10 campaign will play an important part in increasing grass growth and utilisation on Irish farms; improving profitability at producer level and helping to ensure the long-term sustainability of Irish sheep production.

Objective

The main objective of the campaign is to achieve 10 grazings/paddock/



year utilising 10t grass DM/ha. In order to achieve this objective, we will need to:

- Improve grassland management skills.
- Improve soil fertility.
- Improve grazing infrastructure.
- Improve sward composition.
- Increase grass measurement and use of PastureBase Ireland.

Grazing management

The optimum stocking rate for an individual farm is the one which maximises profitability. This depends on the individual farm's grass growing capability.

While every farm situation is unique, as soil types and local



PASTUREBASE IRELAND

Technologies to assist grassland management

Teagasc launched PastureBase Ireland (PBI) – an online grassland management decision support tool – in January 2013 and Grass10 will see the roll-out of a new PBI website as a key component of the campaign.

Once you've entered data from your farm (eg grass measurements), the PBI platform provides real-time and customised grassland management advice to assist your decision-making. These reports allow you to benchmark your farm with farms in your discussion group or region. The data accumulated to date indicates that farms participating in PBI have achieved improvements in grass DM production and grazing management.

PBI shows that grass cannot be managed effectively without knowing farm covers, grass demand and grass growth.

Grassland performance on sheep farms

Over the last two years, the average annual grass DM production on sheep farms recorded on PBI is around 12t to 13 t DM/ha. Taking a more in-depth look at why some farms are able to produce high quantities of grass it is clear that achieving more grazings from each paddock during the season is the key driver of success.

The average number of grazings achieved per paddock/year on these sheep farms is around five. However, the better farms achieved six. This results in more grass grown and eaten/ha.

On a high proportion of sheep farms the number of paddocks is too low, leading to a small number of large paddocks. The net result is long residency times (up to two to three weeks) and reduced paddock productivity.

A number of issues arise in these situations: regrowths are continually being re-grazed, proper grazing heights are not achieved, nitrogen application is irregular and in many cases pre-grazing yields are too high, all of which results in swards of poor quality.

More paddocks = more grazings

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

Additional paddocks make management of pasture more streamlined and leads to better control of grass, especially during periods of high growth. A key finding from the grazing performance of drystock farms recording on PBI showed that the greater the number of grazings achieved, the higher the grass DM production produced. Every extra grazing achieved increased annual grass DM production by 1.5t DM/ha.

Maximising the number of grazings achieved on each paddock is a very effective method of increasing farm grass utilisation. Paddock residency should be no longer than five to six days on sheep farms during the mid-season. It is critical that all sheep farms try to sub-divide existing paddocks into smaller areas.

weather conditions vary, many Irish farms are only producing 50% of their grass growth capability, limiting output.

To maximise profitability, increases in lamb production must come through utilising more grass rather than importing supplementary feed. Sheep farmers may need to up-skill themselves on grazing management practices, measure pasture covers regularly (at least weekly during the main grazing season) make grazing decisions using grassland software and analyse their grassland production data.

These are the key drivers of increased grass growth capacity on the farm.

Maximising profitability, increases in lamb production must come through utilising more grass rather than importing supplementary feed.

Grass10 wishes to acknowledge the support of its industry partners in this new campaign:



Building the foundation for improved efficiency

A new calf shed is streamlining production on this Kilkenny farm

Gordon Peppard
Teagasc Green Acres Calf to Beef programme

Pat Bowden and his family, who farm near Lisdowney, Co Kilkenny, joined the Teagasc Green Acres Calf to Beef programme in March 2015.

“We then had 40 suckler cows and took all their followers to slaughter,” says Pat. “We also bought in 70 Friesian bull calves each year, slaughtering them as steers between 24 and 30 months.” The farm is fragmented into three parcels and, having considered all his options, Pat decided, in early 2017, to sell the suckler herd and concentrate on a much larger calf-to-beef enterprise.

“The plan is to rear two groups of calves: 80 Friesian bull calves in the autumn and a further 100 calves in the spring,” says Pat. “These will be slaughtered as steers between 24 and 28 months.”

To rear this number of calves, Pat decided to invest in a dedicated calf-rearing shed. Previously, calves had been reared in a lean-to and stables. This resulted in inefficiency as calves were in a number of different locations for feeding, bedding, herding, etc. Many of the small sheds could only be cleaned out manually.

In January this year, the calf shed was started and completed by local builder Micheal Bergin. Internal works including penning, water installation, etc, were completed by the

Bowden family themselves. The shed was ready for its first intake of calves by February.

Key requirements

“A shed must provide the calf with easy access to milk, straw, concentrates and fresh water, while also providing shelter, warmth and a dry bed in a well-ventilated, but draught free, environment to maximise animal performance,” says Pat. He says he also saw the investment as an opportunity to improve his working conditions and streamline the farm’s overall production.

Where to put the calf house?

Pat chose a location at the periphery of the yard, with plenty of space around the building for ease of access for deliveries of straw/milk replacer, cattle trailers, loaders, etc. There’s also room to extend the shed, should that be needed.

Shed design

Pat’s new shed is 63ft long (four bay) and 47ft wide. It is a portal span shed with an A roof and no internal pillars. The floor area is divided into 10 pens, five down each side with a 10 feet wide central passage.

Pen size

Each pen is 12.5ft (3.8m) wide by 18ft (5.5m) deep; this will give a pen size of 225 sq ft (21m²).

“I didn’t want the pens to be too deep, so that calf observation would be easier,” says Pat. As a calf requires



Gordon Peppard and Pat Bowden.

a minimum of 2.1m², the maximum number of calves per pen will be 10, although eight to nine may well be plenty.

If you put 10 calves initially into a pen of this size, they appear to have loads of space and the temptation is to put many more in. The reality is at the start of rearing the calf may only be 45kg but over a number of weeks they will double in size to 90-100kg. It is at this stage you realise eight or nine calves would have been plenty in the pen.

Lighting

Calf sheds should have ample lighting. Ideally, 10% of the roof/side sheeting should be translucent sheeting to provide natural light. With Yorkshire boarding on both sides of the shed, there should be plenty of natural light and Pat decided against putting translucent sheeting in the roof.

“With hindsight, translucent sheet-



A roof pitch of 17°, a sloping floor, Yorkshire boarding and a solid rear wall are key features.



There is plenty of space around the new building.

ing in the roof may well have been worthwhile.” Additional artificial lighting has been provided at calf level to aid inspection.

Straw bedding and drainage

Calves spend up to 80% of their time lying down so a warm dry bed is essential. Pat uses deep straw bedding.

Drainage is vital. Pat put in a concrete floor with a slope of 1:20 from the back wall of the pen to the centre passage where there is a 2in channel to take away seepage. This liquid runs to a tank at the front of the shed. The 2in channel is a bit too narrow and a wider channel would be more beneficial, admits Pat.

Roof pitch and ventilation

The roof pitch on the shed is 17 degrees, to keep the overall height of the apex down. This is the minimum to allow excess heat, water vapour, dust, gases, bacteria, viruses to be removed from the shed and a continu-

ous stream of fresh air provided. To ensure there was plenty of outlet, Pat left an opening of 14in with a covered canopy to ensure that no rain water could get into the shed.

Inlet ventilation

Good ventilation in calf sheds is critical. The aim is to reduce air speed at calf height but not to restrict airflow. You do not want wind blowing too strongly on top of calves; therefore, the inlet opening needs to be above calf height with calves protected from it. The inlet area should be at least double but preferably four times the size of the outlet.

Pat built a solid concrete wall at the back of each pen up to a height of 6ft, giving the calves plenty of protection from wind, draughts, etc. On top of the wall he installed Yorkshire boarding. This is two rows of a 6in board followed by a 2in gap.

The second row was placed 3in out from the first row, with the 6in board

of the second row, coving the 2in gap in the first row.

The height of the Yorkshire boards is 5.5ft (1.67m) giving eave height of approximately 11.5ft. With a 2in gap in an 8in space, you have 25% of the side of the shed letting in air and providing ventilation.

Feeding space and water

Milk feeding is at the front so Pat can feed the calves from the centre passage without having to enter the calf pen.

“Fresh straw is provided in racks on the dividing pens close to the front of the pens. Don’t expect calves to eat from the bed.”

Meal and fresh water is also supplied at the front of the pen. Concentrating the sources of “mess” in one easily accessible location makes for ease of inspection and cleaning.

“The goal is an optimum environment for calves and greater efficiency for ourselves,” concludes Pat.

tillage

Time to give min-till another chance?

A min-till system requires a change in mindset and expert management but the potential benefits are undeniable

Mike McCarthy
Teagasc tillage advisor, Thurles

If you ask a tillage farmer about their experiences of min-till you may get an answer along the lines of “We tried that years ago and nearly went broke,” or “A neighbour got into that one time but gave it up quick. We’ll stick to the plough.” So what went wrong? Let’s take a look at the concept of min-till itself.

Min-till means replacing the plough with a cultivator, often a disc type machine, followed by a seed drill. Only the layer of soil where the seed is placed is cultivated. The main benefit is cost-saving. Farmers found that by min-tilling fuel usage plummeted and work rates increased. However, given the nature of our wet climate in combination with shallow tillage, problems arose.

Without the deep drainage created by the plough the shallow, cultivated, layer could become saturated and seeds failed, leading to poor establishment and reduced yields. To create drainage, discs were swapped for tines and deeper cultivations, but costs increased so eventually many farmers reverted to the plough.

But some farmers still feel min-till has a role. I recently spoke to a client of mine, Joe Pollard from New Inn in south Tipperary who has been sowing all of his crops for the past four years with the Claydon strip till system. Joe is a mixed tillage and sheep farmer growing winter and spring wheat, winter oats, winter barley and beans.

Traditionally “plough and one pass”, Joe decided to make the move to strip till four years ago when local contractor Pat Murphy from Cahir purchased a Claydon drill.

Like min-till, strip-till is a method of drilling where cultivation only happens where the seed is being placed and the remainder of the soil is left undisturbed.

Drill makes can vary (...you should consider several) but the general principle is the same – a leading tine loosens the soil and creates drainage often working between six and eight inches deep. This is followed by a coulter which places the seed into the cultivated strip. The seed is then covered and, depending on drill type, it may be rolled by a press wheel.

Very little pre-cultivation is needed and the whole job is completed in one pass. Depending on the make of drill between 40% and 50% of the soil is moved and the remainder is left undisturbed. Done right, strip-tillage or direct drilling will reduce fuel costs by up to one third.

So is it all about the money? Not according to Joe. Before moving to strip till, Joe had looked at a number of different Claydon-sown crops and what they had in common was the soil’s ability to dry out.

“As only half of the soil is being disturbed the ground dries much faster than ploughed fields, allowing jobs like fertiliser spreading to be completed earlier, simply because you can get into the fields without doing damage,” he says.

For Joe it’s all about the soil. “If you plough a field that has been in long-term ley, it is very noticeable how quickly the soil dries out,” he says. Why? Its excellent soil structure. Repeated ploughing can damage soil structure over time reducing root penetration and soil aeration. Creatures such as earthworms, excellent soil workers, are adversely affected.

Strip tilling helps the soil to repair itself; but this takes time. Most growers who adopt strip till will tell you that the first few years can be challenging while the soil is adjusting, but

after two to three years crops improve noticeably.

In Joe Pollard’s fields, the improvement in soil structure is clearly evident. The soil is crumbly and friable and difficult to roll into a ball. Earthworms are very easy to find. But how do yields stack up? When I spoke to Joe, he and Pat were busy planting Costello winter wheat after winter oats that yielded 9.5t/ha. A respectable yield for any system.

Joe says: “When we started, there was a yield penalty. We had problems with compaction and rough stubbles led to uneven sowing depths. But they improved quickly and now our yields are the same as when we were ploughing.”

From an onlooker’s perspective the system looks very impressive, achieving the same yields at a lower cost is enough to get anyone thinking. But many farmers still have doubts. There are indeed problems, and quite a few, as it turns out.

Compaction

Almost every grower who adopts strip-till encounters problems with





ABOVE: Mike McCarthy and Joe Pollard examine soil structure under min-till.

compaction in the early years – a type of compaction that is not seen when ploughing, as the plough tends to relieve the problem each year. Compaction can lead to patchy and uneven establishment. To put it simply, compaction happens when heavy machinery drives on wet land. Subsoilers, when used in the correct conditions can help, but the key factor is knowing when not to be on the land.

Wet harvests and heavy combines can cause compaction but, unbeknown to many, it can actually be loaders and bale trailers that are to blame. When strip tilling, the effects of compaction are gradually lessened. As soil structure improves natural drainage occurs and land does not become as wet, leading to a lower risk of compaction.

Weather

Working wet soil can lead to capping and new seedlings will not be able to break through to the surface. Finding the opportune moment for can be challenging. This why farmers who direct drill often sow earlier in the autumn and later in the spring.

Slugs

Cultivating in strips means that once a slug finds its way into the drainage channel they can move more easily and can sometimes take out entire rows of cereal. A pre application of slug pellets two weeks before planting and placing pellets in the rows will help.

Grass weeds

Grass weeds such as meadow grass, sterile brome and blackgrass can be the Achilles heel of any strip till system. The plough will bury a lot of weed seeds but with direct drilling everything remains on the surface.

Herbicide spend may increase and a more pre-emergence approach may be needed. Light cultivation pre-sowing will allow grass weeds to germinate so they can be sprayed off with glyphosate, which is a vital tool in any reduced tillage system.

A good rotation is crucial for successful grass weed control. At least one non-cereal such as beans or oilseed rape is needed as well as a balance between winter and spring planting. Continuous winter cereals

can end up as dirty fields, infested with grasses and delivering lower yields.

These problems can be overcome through careful attention to detail and stubble management post-harvest. In this case, Joe has straw-harrowed the field twice and applied glyphosate before sowing. Harrowing encourages weed seeds and volunteers to germinate and slug eggs to desiccate. It's an essential part of the system. So there are challenges but this system can work in Irish conditions provided you have the right mindset. According to Joe and Pat: "It's not as simple as just changing your machinery, a lot more attention to detail is needed if you want to make a success of strip till."

With the current TAMS that is available for tillage there is a 40% grant available (60% for young farmers) for these machines. Their popularity may increase over the next few years as tillage farmers look for ways to reduce costs. But don't just do it for the grant, with careful management min-till can deliver the many benefits we've discussed.

health and safety

Tractors, livestock and chainsaws

Pat Blackwell
Teagasc Kilmallock

Michael Somers
Teagasc Forestry Advisor

Eva Hayes
BAgrSc (Walsh Fellow based
in Kilmallock Limerick)

Farming in Ireland has the unfortunate distinction of being the most dangerous occupation. Farmers account for 6% of Ireland's workforce but suffer 50% of workplace fatalities. In addition, 2,500 serious injuries occur annually on Irish farms. High numbers of farm-related serious accidents go unreported.

This background of accidents was the driving force behind the recent Farm TLC event held in Pallaskenry Agricultural College. Farm TLC is a rebranding of the health and safety message. The farm TLC model echoes the phrase tender, loving, care.

Farming with TLC will promote respect for health and safety. TLC also



Protective clothing is a must for chainsaw operators.

stands for three of the key factors affecting farmer safety: transport, livestock and chainsaws. The objective of the event was to present basic, practical skills that farmers can adopt in their working lives.

Chainsaws

Chainsaws are one of the most versatile tools found on farms. They are indispensable for small jobs such as fencing, trimming scrub and hedges. Many farmer forest owners frequently cut their own firewood.

However, chainsaws rank number one in the world for injuries inflicted in land-based industries. Most farmers have no formal training in the safe use of chainsaws.

Andy Walsh from Husquvarna Ireland outlined the protective clothing (PPE) that all chainsaw operators must use. Andy advised that every chainsaw user should own and wear the following:

- Helmet with visor and earmuffs.
- Forestry jacket.
- Protective trousers.
- Protective boots.
- Work gloves.
- First aid kit.
- Mobile phone.

He advised that when you are using a chainsaw you should never work on your own. Your mobile phone should be fully charged, it should be in an accessible pocket and you must check for coverage in the area where you are working.

Andy explained that all chainsaws are lethal but some are more lethal than others. Many saws that have been out of production for more than 30 years ago are still in use and people are still ordering replacement parts for these saws. Many of these saws lack the most basic safety features. He advised that anyone purchasing a chainsaw needs to ensure that the following features are present:

- Chainbrake.
- Kickback guard.
- Throttle lock.
- Chaintcatcher.
- Righthand guard/rear handle.
- Stop control.



- Centrifugal clutch.
- Anti-vibration system.
- Saw cover.

He concluded by demonstrating the damage a saw can inflict on a safety trousers. Ballistic nylon is the protective material in these trousers. Chainsaw trousers contain 10 layers of ballistic nylon which clogs and stops the saw when they come in contact. His test proves how useful these trousers are. His saw clogged and stopped without breaching the seventh layer of nylon. This feature ensures that serious injury will be avoided.

Transport

Most farmers transport cattle on Irish roads in cattle boxes towed by cars, jeeps and tractors. They also transport other agri goods such as silage straw, firewood and fertiliser, etc.

Sergeant Kevin Bourke from the Garda Traffic Corps in Henry St, Limerick, outlined the main safety features on modern trailers.

Kevin stated that it's common to see a car towing a trailer while driving along at the 120km/h speed limit on motorways, despite the fact that the legal speed limit for towing a trailer is just 80km/h.

Speed is just one of the regula-



Farm accidents were the driving force behind the recent Farm TLC event held in Pallaskenny Agricultural College.

tions concerning trailer use that are frequently flaunted. The laws and licensing for trailer use are complicated. Many drivers are towing trailers without the proper licence, despite the risk of incurring penalty points and potentially voiding their insurance cover. He emphasised that when it comes to trailer use, weight is a common area of non-compliance.

One of the vehicles on display was a 2006, 1.9 diesel VW Passat. Attached to this car was a cattle box big enough to carry two cows. The car had a maximum load of 3.5t, which includes the vehicle itself, everything in the car, the box and its contents. If this car had two cows weighing 1,200kg, it was in

excess of its legal load regardless of whether the driver had the correct licence.



Kevin Bourke talking to farmers about what they can tow legally.

This came as a shock to many present. It was explained on the night that not all cars have the same weight capacity and that it is the driver's responsibility to inform themselves what they can tow legally.

Weight issues with triple-axle cattle boxes

Kevin Bourke and Brian O'Dwyer showed farmers where the weight plates were on the jeeps and boxes. It is a common misconception

that the weight for a car or jeep refers to the load it can tow. In all circumstances, the plate on a vehicle refers to the total weight of the vehicle and its trailer and load.

These plates can be found inside

the doors or under the bonnet. This is a particular problem with heavier trailers such as the triple-axle cattle box (14ft by 6ft model). This trailer is heavier than the double-axle 12ft by 6ft trailer, therefore the load in the box needs to be reduced to cater for the extra weight of the trailer.

Cars and single-axle small trailers

Drivers with a category B car licence can tow a trailer that has a maximum weight of 750kg. This includes the weight of both the trailer and its load. This means that you can tow a car trailer with a small load without breaking the law.

Tractors and trailers

Sergeant Bourke explained how tractors and trailers on the road are an area concerning the traffic corps. Young, inexperienced, drivers towing heavy loads on roadways are of particular concern. He advised that a beacon must always be visible from behind the load and that brakes and chains or break away systems should be kept in good condition.

He said he has seen some very worn and dangerous hitch systems towing very heavy loads. Rear lights on trailers are very often faulty or broken. He advised everyone present that regular servicing of trailers is essential to ensure that tyres are legal, brakes are functional and lights are fully operational.

Securing loads

Unsecured loads are particularly dangerous, when they are in transit. However they become lethal in a situation where sudden braking is needed. Many farmers transporting bales of silage regularly use no straps whatsoever to secure the loads. Sergeant Bourke has witnessed damaged and torn straps being used. He advised that if straps are faulty or damaged they should never be used.

He recommended that everyone who tows a trailer for agricultural purposes read the *Revised Standards for Agricultural Vehicles*, which is published in booklet form by the RSA and is available for download from the RSA website.

We'll return to the safety factors when dealing with cattle in the next edition.



Budget 2018

Teagasc Financial Management Specialist **Kevin Connolly** outlines the main measures affecting farming

The income tax standard rate bands have been increased with the income tax rates (20% and 40%) remaining unchanged (Table 1).

There was no change in the tax credits for 2018 (Table 2).

Tax credits are applied as a straight deduction from an individual's income tax as calculated by applying the two tax rates and using the bands outlined above.

* The earned income tax credit is calculated at 20% of an individual's earned income (excluding earned income that is taken into account for the PAYE tax credit) subject to a maximum of €1,150. Where an individual has earned income that qualifies for the earned income tax credit and PAYE tax credit, the combined tax credits cannot exceed €1,650.

Age exemption limits

There are income thresholds set for people aged over 65 years, and below which they can earn income and pay no income tax. These thresholds remain unchanged. The 2018 limits are:

- Single: €18,000
- Married: €36,000

PRSI

Farmers pay the self-employed rate of PRSI known as Class S PRSI. This is applied to all income and there is only one rate so no bands apply.

The Class S rate remains unchanged at 4%. "Reckonable income" for the purposes of PRSI is profit after capital allowances but before reliefs and deductions.

Universal Social Charge

The Universal Social Charge (USC) is payable on gross income after relief for certain trading losses and capital allowances, but before relief for pension contributions.

The lower exemption threshold above which income becomes liable to the USC will remain at €13,000



Table 1: Income tax standard rate bands

	At 20% rate – the first		At 40%	
	Existing 2017	Change	Proposed for 2018	
Single/widowed	€33,800	€750	€34,550	Balance
Married (one income)	€42,800	€750	€43,550	Balance
Married (two incomes – max)	€67,600	€1,500	€69,100	Balance
One parent/widowed parent	€37,800	€750	€38,550	Balance

Table 2: Income tax credits

	Existing 2017	Proposed 2018
Personal tax credits		
- Single	1,650	1,650
- Married	3,300	3,300
Single person child-carer tax credit	1,650	1,650
PAYE credit		
Earned income tax credit (max)*	1,650	1,650
	950	1,150
Home-carer tax credit	1,100	1,200
Dependent relative tax credit	70	70
Age credit		
Single	245	245
Married	490	490

Table 3: USC rates

2017 USC income bands	2017 USC rates	2018 USC income bands	2018 USC rates
€0 to €12,012	0.5%	€0 to €12,012	0.5%
€12,013 to €18,772	2.5%	€12,013 to €19,372	2.0%
€18,723 to €70,044	5.0%	€19,373 to €70,044	4.75%
€70,045 to €100,000	8%	€70,045 to €100,000	8%
> €100k (self-employed only)	11%	> €100k (self-employed only)*	11%

*Self-employed individuals with annual income exceeding €100,000 are subject to a 3% additional surcharge – an effective 11% rate of USC. Those in receipt of PAYE income only in excess of €100,000 will be subject to a maximum USC rate of 8%.



for 2018. So where an individual earns less than this amount, no USC applies. Where the income exceeds €13,000 in 2018 then the revised rates apply as shown in Table 3.

The maximum USC rate paid is reduced from 2.5% to 2% for individuals who are either above 70 years or who hold a medical card and whose aggregate income (not including Department of Employment Affairs and Social Protection payments) is €60,000 or less.

The marginal rate of tax for employed/self-employed individuals (under 70 years) with a maximum income below €70,044 is shown in Table 4.

Stock relief

There were no changes made to stock relief in this budget.

The legislation enacting the enhanced stock relief for young trained farmers (100% relief for up to four years for qualifying farmers) outlined in Section 667B TCA 1997 contains a requirement for the applicant to submit a business plan to Teagasc for certification in order to qualify for the relief. This is a requirement under EU State Aid provisions.

Table 4: USC

	2017	2018
Income tax	40%	40%
PRSI	4%	4%
USC	5%	4.75%
Total	49%	48.75%

Energy efficiency accelerated capital allowances

These accelerated allowances are available to companies and other trading structures who invest in energy-efficient plant. This measure allows the purchaser to write off 100% of the purchase value of qualifying energy-efficient equipment against profits in the year of purchase.

This measure was due to expire at the end of 2017 but is being extended to the end of 2020.

Further information on the categories of investment covered are available from the SEAI.

Other energy-efficiency measures

- Funding of €17m to fund the rollout of the Renewable Heat Initiative and schemes to incentivise the uptake of electric vehicles.
- €36m allocated to expansion of energy-efficiency programmes for commercial and residential sectors.

Corporation tax

There is no change to the corporation tax rate which will remain at 12.5%.

Value added tax (VAT)

There are no changes to any of the VAT rates. The flat-rate farmer addition rate remains at 5.4%. The VAT rate applying to sales and purchases of livestock remains at 4.8%. The standard rate of VAT remains at 23%. The 13.5% rate also remains unchanged. The 9% reduced rate for tourism-related services is to be maintained.

Deposit interest retention tax (DIRT)

This is a tax on interest paid or credited on deposits of Irish residents. The current rate of DIRT is 39%.

It was announced in Budget 2017 that the DIRT rate would decrease by 2% each year from 2018 to 2020 until it reaches 33%.

From 1 January 2018, the DIRT rate will decrease by 2% to 37%.

Statutory minimum wage

The statutory minimum wage is due to increase from €9.25 per hour (set on 1 January 2017) to €9.55 per hour from 1 January 2018.

Stamp duty

The stamp duty rate levied on non-residential property changed with

effect from midnight 10 October 2017. Transitional arrangements to avail of the 2% rate are available for purchasers with binding contracts in place before 11 October and where the instruments are executed before 1 January 2018.

Consanguinity relief for stamp duty (for inter-family farm transfers)

This relief was due to expire on 31 December 2017. A further three-year extension (up to 1 January 2021) to consanguinity relief for inter-family farm transfers has been announced.

The relief will reduce the effective rate applied on lifetime land transfers by gift between family members from 6% to 1% – effective from midnight on 10 October. This differs from the previous operation of this relief which applied a 50% reduction to the normal rate of stamp duty reducing the previous rate from 2% to 1%.

The upper age limit of 67 for potential transferors of land on which the transferee wishes to claim consanguinity relief will be removed on the enactment of the Finance Act.

Consanguinity relief applies to transfers between related persons, ie blood relations including lineal descendant, parent, grandparent, step parent, husband or wife, brother or sister of a parent or brother or sister; or lineal descendant of a parent, husband or wife or brother or sister and foster children.

Commercial land

A stamp duty refund scheme will be introduced for commercial land purchased for the development of housing, provided the relevant development commences within 30 months of the land purchase.

Stamp duty exemption for young, trained farmers

Budget 2016 introduced an additional requirement (specified by the European Commission under state aid rules) that the young trained farmer applicant must complete a business plan and present it to Teagasc for certification before the execution of the transfer. A revised guideline document reflecting this requirement is expected to be issued by Revenue in due course.

» Continued on next page

Table 5: Rate for non-residential property (including agricultural land)

Pre-midnight 10 Oct 2017		From 11 Oct 2017	
Consideration	Rate of duty	Consideration	Rate of duty
Entire consideration	2%	Entire consideration	6%

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Capital acquisitions tax (CAT)

The rate of CAT is unchanged at 33%. The CAT thresholds have also remained unchanged:

- Son/daughter, minor child of deceased child: €310,000.
- Lineal ancestor/descendent, brother sister, niece, nephew: €32,500.
- Any other person: €16,250.

Capital acquisitions tax – agricultural relief [no change to the general conditions in this budget].

The conditions for a donee (receiving a gift) or successor (receiving an inheritance) to avail of CAT agricultural relief are as follows:

- They must continue to meet the farmer test (the 80% agricultural property test).
- The eventual user of the property subject to the relief must meet the active farmer test as set out below.

To meet the active farmer test the final user of the agricultural property must either:

- Hold (or obtain within four years of receiving the property) a recognised agricultural qualification (as listed for the young farmer stamp duty exemption qualifications listed in schedule 2, 2A or 2B to the Stamp Duties Consolidation Act 1999) AND who farms the property on a commercial basis with a view to the realisation of profits for a period of six years from the valuation date for the property, or
- Spend 50% of that individual's normal working time* farming agricultural property (including the property received) on a commercial basis with a view to the realisation of profits for a period of six years from the valuation date for the property, or
- Lease the whole or substantially the whole of the agricultural property, comprised in the gift or inheritance for a period of not less than six years commencing on the valuation date of the gift or inheritance, to an individual who satisfies either of the previous two criteria.

*Definition of 'normal working time'

- Normal working time, including both on-farm and off-farm working time, approximates to 40 hours per week.
- An individual spending an average of 20 hours per week working on the farm will meet the 50% of normal working time criteria.
- Where it can be shown that an individual's normal working time is less than 40 hours a week, then the 50% requirement will be applied to the actual hours worked, subject to the overriding requirement that the farm be farmed on a commercial basis



Agricultural land leased out for the purposes of siting solar infrastructure will continue to be classified as agricultural land and so will be an eligible chargeable asset for retirement relief.

and with a view to the realisation of profits.

Treatment of land under solar panels for the purposes of CAT agricultural relief

Previously, land that was leased out for the purposes of siting solar panels was deemed no longer to be used for agricultural activity and so was deemed ineligible for agricultural relief.

As a result of this amendment, agricultural land leased out for the purposes of siting solar infrastructure will continue to be classified as agricultural property and so will be an eligible asset for agricultural relief.

This change is subject to a condition restricting the amount of the farm holding that can be used for solar infrastructure to 50% of the area of the total farm holding that was gifted or inherited.

Capital gains tax (CGT)

The general rate of CGT is unchanged at 33%

Capital gains tax retirement relief

There were no changes to the general conditions or operation of retirement relief from capital gains tax announced in this budget.

Treatment of solar farms for the purpose of CGT retirement relief

Previously, land that was leased out for the purposes of siting solar panels was deemed no longer to be used for agricultural activity and so was deemed ineligible for retirement relief.

As a result of this amendment, agricultural land leased out for the

purposes of siting solar infrastructure will continue to be classified as agricultural land and so will be an eligible chargeable asset for retirement relief.

This continued access to the relief is subject to a condition restricting the amount of the total farm holding that can be used for solar infrastructure to 50% of the area of the total farm holding. It applies to disposals made on or after 1 January 2018.

CGT farm restructuring relief

To enable farm restructuring, relief from CGT has been available (subject to conditions) where land disposed of by either sale or exchange has been reinvested into other land.

The deadline for the completion of the first restructuring transaction is 31 December 2019. Both restructuring transactions must still be completed within a 24-month period.

Amendment to CGT relief on qualifying property assets purchased prior to 31 Dec 2014

This relief was introduced in Budget 2012 and catered for properties bought between 6 December 2011 and 31 December 2014. Under the conditions of this relief where a property is purchased and held for more than seven years, then any capital gain that accrues in that seven-year period will not be subject to CGT on its disposal.

This amendment reduces the holding period to qualify for full exemption from CGT, on any gain from seven years to a minimum of four years with the aim of releasing potential development land for sale. It will apply to disposals made after 1 January 2018.

Other measures announced

- **Sugar tax:** a tax at a rate of 30c/l on drinks with over 8g of sugar per 100ml and a reduced rate of 20c/l on drinks with between 5g and 8g of sugar per 100ml.
- **Cigarettes:** excise duty on a pack of 20 cigarettes will rise by 50c, with a pro-rata increase on other tobacco products. This will bring the price of cigarettes in the most popular price category to €12.
- **Prescription charges:** reduction in prescription charges for all medical card holders under 70 from €2.50 to €2 per item with cap of €20.
- **Mortgage interest relief:** for homeowners who took out qualifying loans between 2004 and 2012 there will be a tapered extension of mortgage interest relief of 75% of the existing relief into 2018, 50% in 2019 and 25% in 2020. The relief will cease entirely from 2021.

Specific measures for agriculture

The Department of Agriculture, Food and the Marine has been allocated €1.5bn to cover both current and capital spending – an increase of €64m.

- Brexit response loan scheme – €25m is to be provided to facilitate the development of a new Brexit response loan scheme for farmers, fishermen and food businesses in 2018. Similar to the previous Agri Cash Flow Support Loan, this scheme is being developed in partnership with Strategic

Bank Corporation of Ireland (SBCI).

- Agri-environmental measures – funding of €233.8m to fund GLAS and organics.

“ For homeowners who took out qualifying loans between 2004 and 2012 there will be a tapered extension of mortgage interest relief of 75% of the existing relief into 2018, 50% in 2019 and 25% in 2020

- Sheep Welfare Scheme: €20m to be made available next year.
- Areas of Natural Constraint (ANCs) – funding of €227m.
- Beef Data Genomics Programme – funding of €50m.
- Targeted Agriculture Modernisation Schemes (TAMS) – funding of €70m.
- Knowledge Transfer Programme – funding of €23m.
- Organic Farming Scheme – funding of €11.7m and a further €1.2m for development of the organic sector.
- Forestry – funding of €106m.
- Horticulture sector funding – fund of €5m to support capital investment.

Key messages

- The standard rate bands have been increased with the income tax rates (20% and 40%) remaining unchanged.
- The earned income tax credit has been increased by €200 to €1,150.
- The two middle universal social charge rates have been reduced with a small upward adjustment in the second band to match in with the minimum wage.
- A stamp duty rate of 6% has been introduced on transfers of non-residential property. Purchases or gifts of agricultural land are included in the non-residential property category and are liable to this higher rate in the absence of reliefs.
- Consanguinity relief from stamp duty is extended for a further three years with the upper age limit of 67 to be removed for the transferor on enactment of the Finance Act.
- There is no change in the Capital Gains Tax (CGT) and Capital Acquisitions Tax (CAT) rates.
- The CAT thresholds have been left unchanged.
- There are no changes to any of the VAT rates.
- Availability of energy efficiency accelerated capital allowances is to be extended to the end of 2020.
- A general increase of €5 per week is to be applied to most social protection payments for 2018 from late March 2018.
- The DIRT rate will decrease by 2% from its current rate of 39% to 37% for 2018 and will decrease by a further 2% each year until it reaches 33% by 2020.

Schedule for Finance Bill 2017 and Finance Act 2017

The Finance Bill, published on 19 October 2017, will contain more detail on the measures announced in Budget 2018.

It will then be debated by both houses of the Oireachtas and will be signed into law as Finance Act 2017 around the middle of December.

Social welfare changes

Child benefit rates (€/child)

Child benefit rates have not changed and remain at €140/month.

Farm Assist

The payment rate for Farm Assist has increased by €5 per week with a €2 increase in weekly rate of Farm Assist for each qualified child dependant.

Selected social welfare rates

The changes to some selected social insurance and social assistance payments are highlighted in bold in Table 6.

There is a general increase of €5 in

Table 6: Social welfare rates

	2017	From March 2018
State pension (contributory) (<80)	€238.30	€243.30
- Qualified adult increase	€158.80	€162.10
State pension (non-contributory) (max)	€227	€232
- Qualified adult increase	€150.00	€153.30
Jobseeker's allowance (aged 26 +)	€193	€198
Farm Assist	€193	€198
Invalidity pension	€198.50	€203.50

the weekly rates with a proportionate increase for qualified adult dependents and a €2 increase in all qualified child dependant weekly payments.

These increases in social welfare payments are expected to take effect from the week beginning 26 March 2018. An 85% Christmas bonus will be paid in December to certain recipients of a long-term social welfare payment.

Full details of all changes to social protection payment rates available here <http://www.welfare.ie/en/downloads/budfact18.pdf>

Note: this summary is based on the author's interpretation of the relevant budget measures and should not be taken as a definitive interpretation of these measures. For all individual tax queries you are advised to seek professional tax advice from your own accountant/tax advisor.

Teagasc working with TAMS II

Tim Hyde

Teagasc, Crops, Environment and Land Use Programme

The Targeted Agricultural Modernisation Scheme (TAMS II) forms part of the Rural Development Programme 2014 to 2020 and is jointly funded by the European Union and the national Exchequer. It is so important that we are giving it, unashamedly, a major plug.

TAMS II was launched in May 2015 and will close on 31 December 2020. The financial allocation to the scheme is €398m. The schemes involved in TAMS II are outlined in Table 1.

TAMS II grant rates

The scheme is open to all farmers with a minimum of 5ha declared on the Basic Payment Scheme or in the case of intensive enterprises farmers that generate a minimum of 20 production units from farming. The maximum investment ceiling is €80,000 per holding and the minimum investment eligible is €2,000 per application.

The rate of grant is 40%. The investment ceiling is raised to €160,000 for registered farm partnerships. The rate of grant aid is increased to 60% for qualified young farmers less than 40 years of age. A maximum grant aid of €40,000 (€60,000 for partnerships) under the Low Emission Slurry Spreading Scheme is independent of the €80,000 in the other schemes.

Farm planning help from Teagasc

Investment under TAMS II requires careful planning. It is important to seek expert advice when considering an on farm investment. Teagasc advisors are in a position to assess future expansion and the possibility of acquiring grant aid under TAMS II. The assessment may involve farmyard layout, slurry and effluent storage, investment costs and financial planning. Advisory expertise may also be required when an applicant employs a draftsman for detailed drawings and planning permission application. The drawings must show specific measurements and comply with DAFM building specifications when they are submitted with a TAMS II application. Advisory assistance may also be required to source finance from banking institutions.

The TAMS II application process is divided into tranches, which are usually of three months' duration. Applications are assessed after the closing date for each tranche. Where planning permission is required, the DAFM will not accept an application unless the full planning permission or exemption accompanies the application. Fixed investments not requiring planning permission require a farmyard layout plan to a scale of 1:500 showing the position of the proposed investments.

Applications must be submitted online through agfood.ie. Details required include the costs and dimensions of proposed investments in addition to slurry and effluent production and storage. The following documents have to be submitted in support of an application:

- Farmyard layout plan – scale 1:500.
- Farm building plans – scale 1:100 or 1:200.
- Grant of full planning permission including conditions.
- DAFM mass concrete tank costs (Excel sheet).
- Young farmer declaration (where applicable).
- Companies Registration Office Certificate and Memorandum and Articles of Association (where applicable).

“ Compliance with DAFM specifications and explanatory notes is essential for grant aid

TAMS II claim

Certain investments require the online submission of Card A at least five days before the final fix of steel reinforcement, and before pouring concrete.

A farm safety training course has to be completed within the five-year period prior to the submission of a claim for payment.

The claim application must, again, be submitted online. All work must be completed and a valid claim for payment must be received by the Department within three years of the date of issue of approval for applications



submitted up to 13 January 2017. However, applications submitted from 14 January 2017 have only 12 months to complete structures and six months to purchase mobile equipment from the date of approval before submitting a claim for payment.

Claims submitted one to 25 working days' late are subject to a 1% reduction in grant aid per day. Claims submitted after 25 working days late are subject to a 100% reduction in grant aid.

It is important that at every step of the investment preparation should be made for the claim. The following is a list of documents that must be submitted in support of a claim for payment:

- Receipts.
- Tax clearance certificates for applicant and contractors.
- Quality certificates (electrical, slats, concrete, protection of steel, CE certificates, etc).
- Evidence of ownership or leasehold title for each site.
- Farm safety code of practice certificate.



- Education qualification certificate (if applicable).

Teagasc TAMS II planning service

Each Teagasc advisory region has employed an advisor to complete TAMS II online applications and claims. This work requires great precision to ensure errors or omissions do not occur in either the application or the claim.

The advisor has to be familiar with the terms and conditions of each scheme and the DAFM building specifications and amendments to these that arise from time to time. Compliance with DAFM specifications and explanatory notes is essential for grant aid.

The Teagasc TAMS II Planning Service is only available to clients on core contracts. A TAMS II application and claim for large-scale projects costs €800. Applications and claims for small-scale projects such as purchases of dairy equipment, machinery, etc, costs €165.

Contact your local Teagasc office or advisor for further details.

Table 1: TAMS II maximum financial allocations

TAMS II schemes	Maximum financial allocation
Animal Welfare Safety and Nutrient Storage (AWNS)	€170m
Dairy Equipment Scheme (DES)	€50m
Low Emission Slurry Spreading (LESS)	€4m
Organic Capital Investment Scheme (OCIS)	€8m
Pig and Poultry Investment Scheme (PPIS)	€20m
Young Farmer Capital Investment Scheme (YFCIS)	€120m
Tillage Capital Investment Scheme (TCIS)	€26m
Total	€398m

Progress of TAMS II to October 2017 is outlined in Table 2.

Table 2: DAFM II report, 9 October 2017 on TAMS II

Status	Number of applications received	Number of approvals issued	Number of payment claims received	Number paid	Total amount paid
AWNSS	5,618	4,074	527	369	€2,555,948
DES	3,483	2,900	867	655	€8,410,535
LESS	1,018	856	244	204	€2,266,610
OCIS	684	557	145	117	€436,657
PPIS	182	137	23	12	€118,415
YFCIS	3,472	2,533	573	433	€11,142,592
TCIS	687	457	18	0	€0
Total	15,144	11,514	2,397	1,790	€24,930,759

KerryLife project

Farmers have helped design the KerryLife project which aims to save a fascinating species: the freshwater pearl mussel. A proposed scheme will see more farmers and counties involved

Kevin O'Sullivan
Teagasc, Killarney

Padraig Cronin
KerryLIFE Project

The freshwater pearl mussel (FWPM) can live to over 100 years of age which makes it the longest living animal in the country. And Ireland possesses 46% of the entire European population which makes it important from a European conservation standpoint.

As a result, Ireland has a legal obligation to conserve the FWPM under the European Habitats Directive. This is one of the driving forces behind KerryLIFE, a demonstration project which aims to restore the two internationally important freshwater pearl mussel populations in Co Kerry to fully viability.

The project extends over two river catchments – the Kerry Blackwater and the Caragh, both of which are located on the Iveragh peninsula in the southwest of the county.

KerryLife was set up in 2014 and is to run initially until 2019. The Life Programme is EU-funded but the project is also supported by Teagasc in conjunction with other partners. The KerryLIFE project aims to develop practical conservation measures for the mussel and demonstrate sustainable land-use management techniques to promote the mussel population.

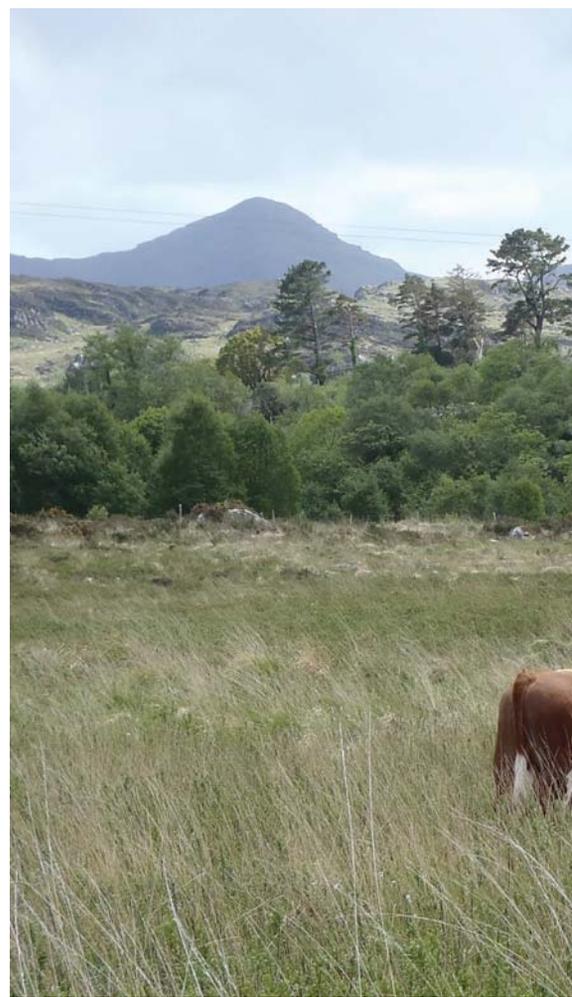
The project provides guidance for farming and forestry enterprises. The project has already increased the public awareness of the species and its conservation both locally and at a national level.

Farming

There are only drystock farms operating within the Caragh and Blackwater catchments farming sucklers or hill sheep, often both.

The average farm size is 80ha with low stocking rates, eg 20 to 30 cattle and/or 100 to 150 ewes being typical stock numbers.

The KerryLIFE team, coordinator Richard O'Callaghan and agriculturalist Padraig Cronin, work with farmers in the catchments to trial conser-



vation measures on their farms. The procedure for this was started in 2014 when the project team invited expressions of interest from farmers in the catchments to work with the project.

Following this, the farms of participants were surveyed and appropriate actions for their farms agreed between the team and the farmer. These measures included, among others, drain management on the farm, broadleaved tree planting and the establishment of buffer strips along watercourses and drains.

Grazing management was also looked at and grazing plans were agreed if they were appropriate on the farm. Animal access to watercourses was also investigated and alternative livestock drinkers such as nose pumps have been placed on farms.

Soils were analysed and nutrient management plans drawn up for each of the participating farms. All of these features were included in an individual farm plan, which was agreed between the project team and each farmer.

Participating farmers receive payment in relation to the actions agreed for their farm and the cost of the work involved. Each farm plan is different and payments vary accord-



Kevin O'Sullivan, second from left, facilitating a discussion group on the farm of Dan O'Sullivan, Bohacullia, Blackwater Bridge.

PEARL MUSSEL

The freshwater pearl mussel is similar in appearance to the clam and lives in river beds. Its lifecycle is complicated – individuals can grow up to 145mm in length and prosper in rivers that have soft water and low levels of calcium. The pearl mussel requires high-quality rivers with clean river beds and waters with very low levels of nutrients. In general, rivers and river bed habitat need to be in pristine condition. The pearl mussel also needs a stable gravel bed with very little fine silty material.

The young larval stage of the freshwater pearl mussel (called glochidia) attaches to young trout or salmon for a period of time and is then deposited on riverbed gravels where they develop into juvenile mussels. This is the critical juncture in the survival of the freshwater pearl mussel populations because it is essential that oxygen levels within the gravel are the same as that of the open water for the juvenile mussels to survive.

Siltation of the river bed is regarded as a main contributor to clogging of the riverbed gravels in which the juveniles live, and their subsequent poor survival rates. In addition to siltation, other threats to FWPM survival arise from nutrient enrichment from phosphorous and nitrogen leading to algal growth. Changes to the river's morphology due to land drainage have also affected survival rates.

Threats such as these are generally associated with land use such as farming and forestry but other factors including road building and climate change will also have effects on mussel survival. There is only one population of freshwater pearl mussels that is considered viable in Ireland – the remainder are all older, poorly reproducing, populations.

There are at least 96 individual populations of FWPMs in the Republic of Ireland and, of these, 27 rivers have been designated as Special Areas of Conservation. However, there has been a decline of freshwater pearl mussel populations, mainly due to the continuous failure to reproduce new generations of mussels.



Cattle grazing in the Caragh catchment.



A mussel (in grey) on a river bed.

ingly. At present, there are 39 farm plans drawn up for the project area. Feedback from farmers has been very positive.

Teagasc is facilitating two discussion groups in conjunction with the LIFE project; these groups meet a number of times a year.

Forestry

Forestry accounts for 2,600ha or 12% of the two catchment areas. It is mostly coniferous plantation – consisting of Sitka spruce and Lodgepole pine. Most of the forestry is Coillte-owned but there are significant areas of privately owned forestry in the project area.

Similarly to farming land use, the threats to the survival of the mussel arising from forestry are associated with siltation and release of nutrients after clearfell harvesting.

The project team is working with both public and private forestry owners on measures to mitigate threats to the mussel population from forestry. These include drain management and alternate firebreak methods.

In addition, the conversion of coniferous forestry to broadleaved forestry, which would be managed for conservation, is being examined.

There are 11 forests in the two catch-

ments and these have been surveyed and trials have commenced on the use of mitigation measures within them. For example, halo-thinning, where early thinning of coniferous trees around selected broadleaved trees, is done in order to encourage the favourable growth of broadleaved trees within the forest is being explored.

The national picture

The Department of Agriculture, Fisheries and the Marine is in the latter stages of appointing an operator for a European Innovation Project for the protection of the freshwater pearl mussel nationally.

Hopefully, the Freshwater Pearl Mussel Conservation Scheme will be up and running in 2018. There are eight priority catchments nationally, which contain 80% of the country's freshwater pearl mussel population and make up 8.5% of the freshwater pearl mussel catchments in the country.

These eight areas, spread between Donegal and Kerry, will be the only catchments selected for inclusion in the scheme. The knowledge gained and the experiences of the farmers partaking in the KerryLIFE Project will inform the structure of the new scheme.

Forestry complementing

We're not talking about planting the grazing platform but for some situations, trees are the ideal choice

Tom Houlihan
Teagasc Forestry Development
Department

Forestry has long been a key part of the landscape in Co Cork. The county is a national leader in forestry-related initiatives from planting to harvesting. Co Cork is also the location of many enterprises supporting the industry including forest nurseries, timber harvesting contractors, forestry consultants/companies, state-of-the-art timber processing mills, educational and recreational facilities.

All such enterprises add value along the forest supply chain and contribute to the local economy. Further, forestry has been identified as a key enterprise which contributes to climate-change mitigation; enabling the sustainable future expansion of other farming sectors such as dairying and beef.

Cork has a total of over 94,000ha of forest cover, and almost 45,000ha of that is privately owned. The majority of this resource has been established by astute farmers and landowners who have seen opportunities to diversify their farming activity and create a complementary enterprise on their farms.

Donal McCarthy is a progressive dairy farmer whose farm is located in the scenic surroundings of Ballydehob in west Cork. His overall holding is almost 103ha. "My dairy enterprise is centred on a grazing platform of almost 27ha surrounding the farmyard, sustaining a herd of 70 dairy cows," says Donal. "Other land on the homestead is classed as rougher-type grazing for sheep and some of it is on outfarms."

With encouragement from Teagasc, Donal was one of the first farmers to join REPS over 23 years ago and he currently participates in GLAS.

In 2009, Donal considered his land-use options for an area of 11ha of marginal land located eight miles from his main farm. "I considered the location of the land relative to the



home farm, the cost of reclaiming the land's heavy soil and the likely subsequent returns from farming it," he says.

Donal also researched other options, including forestry. The range of advantages soon became evident. "The land is close to existing productive forestry and I established that Forest Service afforestation grants would be available to cover all planting costs," says Donal. An annual tax-free premium of €427/ha would also be paid over 20 years.

In addition to this, Donal's land, if forested, would meet the required criteria and be eligible to draw down the Single Farm Payment and, subsequently, the Basic Payment. The tax-free nature of forest premiums (or premia, if you prefer), as well as that of future timber sales, were seen by Donal as particularly advantageous.

Donal decided that forestry was the

right option for him and he had the 11ha planted in March 2010 by forester Alan Farrelly of Greenbelt. The planting mainly consisted of commercial forest species, combined with additional broadleaves for biodiversity and landscaping benefits.

Donal went on to plant a further 27ha in 2015 on another parcel located almost six miles from his main farm. This is also a commercial forestry venture with 10% inclusion of alder, a native broadleaf species. His more recent forest enterprise provides similar overall payments as before, with a current higher premium paid over a 15-year period (€510/ha per annum on the majority of the plantation).

The reasons for his decision to afforest were similar to those that convinced him to proceed with his planting in 2010. The potential costs of land improvement measures would have been significant.

dairying in Co Cork



For me, forestry is an enterprise that, well-managed, can optimise returns on marginal land



Donal McCarthy's dairy enterprise is concentrated on a fertile grazing platform of almost 27ha surrounding the farmyard, sustaining a herd of 70 dairy cows. INSET: Donal, pictured with Alan Farrelly, planted some marginal land at home, and a further 27ha located almost six miles from his main farm.

"I could have spent over €100,000 on reclamation but would still have had land with lower income generating capacity for conventional farm enterprises," says Donal. "The ability to draw down the BPS payment and forest premiums on the same land parcels is a great advantage." Watching his first forest establish and seeing his forest premium cheque arriving each January certainly encouraged his decision to plant again.

Planting a second time

Donal is one of the 30% of all forest owners nationally who, over the last 10 years, have gone on to plant at least a second time following their initial planting decision. He is very happy with his decision to plant and has 'no regrets whatsoever'.

In addition to attractive premium income, Donal is aware of the potential of well-managed forestry

to appreciate in value year on year, thereby providing a secure pension plan, which he says he will be in control of himself.

"By that, I mean that I can choose the optimum future time to cash in on the crop," says Donal. Analysis by Teagasc has shown the annual equivalised value of a productive, mainly conifer, timber crop expressed in today's money can be in excess of €550/ha per year. There is a significant amount of similar land in west Cork for which forestry would be an ideal land-use choice.

"I firmly believe that for farmers and landowners with different land types, forestry represents a potentially complementary enterprise on the farm. For me, forestry is an enterprise that, well-managed, can optimise returns on marginal land while also providing many environmental benefits," concludes Donal.

Bioeconomy promising for rural communities

Barry Caslin

Teagasc Energy and Rural Development Specialist, Teagasc Rural Economy Development Programme



Teagasc, IT Tralee, IBEC and the IFA are partners in a thematic network funded under the EU's Horizon 2020 programme called AgriForValor. The aim is to convert waste, by-products and residues from agriculture and forestry into energy or industrial raw materials; generating new sources of income for rural areas.

The AgriForValor project goals include transferring knowledge to enable farmers and foresters to take up existing research results and techniques. So AgriForValor is highlighting case studies and delivering training on how to best make use of biomass sidestreams. In October, the AgriForValor Spanish hub partners hosted project partners from Hungary and Ireland to Seville. We'll focus on two initiatives they visited.

Campillos biogas AD plant

This 1,600kW AD plant in Malaga was constructed at a cost of €4m in 2016 and is managed by a small company called GIESA Agroenergia. The plant has the capacity to transform 65,000 metric tonnes of agricultural waste (60% of which is currently turkey and pig manure) per year into 2,200,000Nm³ of biogas.

The manure is free but the AD plant pays the transport costs. The biogas and heat generated is supplied to local poultry farms and to an animal feed factory – all are within 4km of the plant. The cost of piping the heat this distance is approximately €30 per linear metre. The plant receives 3.4c/kWh for the heat.

The plant is primarily a waste management facility and depends on gate fees for organic waste. The Spanish government pays a carbon premium of €7/t of CO₂ based on verified reductions in carbon emis-



Biotechnology will transform biomass from waste product to valuable industrial raw material.

sions through renewable heat and electricity generation. This generates approximately €30,000 per annum and will increase when the plant starts generating electricity later this year.

The material left over after the digestion/pasteurisation process is spread back to olive groves in the area.

The region of Andalucía has over 1.5m hectares of olives and the digestate is a valuable form of nitrogen, phosphorous and potassium (N, P and K). The digestate is separated into solid and liquid fractions prior to land spreading.

• More information can be found at <https://vimeo.com/216647337>

NATAC – Oleicola El Tejar (Producing valuable compounds from waste)

Oleicola El Tejar is based in Palenciana. It provides alternative uses for waste products from olive oil production. It is the largest also producers of olive oil globally, and generates electricity from waste. Olive pomace consists of pieces of skin, pulp, stone and olive kernel. Of the total olive weight, the pulp forms about 70% to 90%, the stone 9% to 27% and the stone/seed about 2% to 3%.

In 2014, Oleicola El Tejar developed a strategic alliance with NATAC, a biotechnology company. It is now generating high-value products such as polyphenols (worth €500 to €1,000/

kg) and other bioactive compounds from olive waste. Through extraction, purification and drying, bio-active compounds and nutraceuticals for cardiovascular health are produced.

Once these high-value compounds have been harvested, the secondary biomass is burned for electricity and the ash is returned to the olive groves as a nutrient source completing the circular economy.

More information can be found at <http://www.natac.es/innovaoleo-by-natac/?lang=en>

As we have seen from Spain, using biotech can be used to process waste streams into numerous benefits including heat, fertiliser substitutes and reductions in net carbon release. The medium-term potential for plants such as grass is almost unlimited; by participating in AgriForValor, the Irish partners hope to encourage rural stakeholders here to engage with this new revolution to benefit rural communities.

Value chains from biomass

Value chains identified include:

- Household and office items from lignin fibres.
- Bioplastics and raw materials from grass.
- Textiles and biopolymers from milk.

Visit www.agriforvalor.eu for further information on forest and agri sidestreams.

There's more to horticulture than fruit, flowers and vegetables

A recent conference exhibited the huge variety within horticulture

Yvonne Grace
Teagasc College at the
National Botanic Gardens

The Chartered Institute of Horticulture (CIH) held its annual conference in Dublin this year. I am a recently joined member and this was to be my first time attending a CIH event. The themes and speakers could not have been more varied; each exemplified the diversity that is found within horticulture.

Dr Tom Young, a research manager working for the Sports Turf Research Institute (STRI), told us about Green Roofs and, in particular, what type of green roof growing medium you should choose in order to achieve sustainable plant growth. The STRI was founded in 1929 by golfing unions. Now it is a commercial business, working on projects such as the FIFA World Cup and Wimbledon.

Then we had Mark Rendell who manages the Growing Company in the UK. His talk was about designing outdoor spaces for residential care homes. He told a moving story about an experience with a care home client, which illustrated how our perception of a simple dandelion can lead us to judge a space as uncared for, when in fact it may trigger memories of childhood sunshine and clocks for another person.

Next, we heard Helen King, director of consumer insight and innovation at Bord Bia, who explained that knowing the origin of food is important to us, as consumers. We are also interested in how we can use a healthy diet to ward off illness. On the topic of our gardens, we see them as a symbol of a life well-lived and now that urban dwellers are on the increase, the sale of novel containerised planting options is set to increase.

For the afternoon session, there was a science theme. Dr Fiona Crispie from Teagasc Moorepark, spoke to us about our microbiome and its relationship to health. We have all seen the advertisements for probiotic drinks – well the research showed



Dandelions: for some a weed, for others a trigger for precious childhood memories.

they may be worth including in our diet. The more diversity in your gut microbiome, the better it performs.

Plants

Back to the plants. Dr Caroline Elliott-Kingston, lecturer in horticulture and crop physiology at University College Dublin, described her fascination with a particular plant feature called the stomata. These tiny openings allow carbon dioxide in and water vapour out – a function that is increasingly important to understand as we grow our plants under intensive protected environments, and expect a longer shelf life from our purchases.

Carol Marks from Bord Bia, and a past graduate of the Teagasc College of Amenity Horticulture in the National Botanic Gardens, shared with us the economic value of horticul-

ture. For instance, the total farmgate value is €433m, of which edible crops make up €379m and amenity €54m, but these are just domestic market figures for 2016.

Bord Bia estimates that when you combine domestic and commercial sectors the overall figure would be closer to €1bn.

The passion from all of these speakers (and those I have had to leave out) was palpable; it made me very proud to be a part of the community of horticulturists.

So the next time you visit the garden centre or market to buy your food and plants take a look at the range of goods on display. Spare a thought for the many different Irish growers who all strive to provide high-quality horticulture produce for you the consumer.

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