



Today's Farm

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Farming on the edge

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COMMENT



Mark Moore
Editor,
Today's Farm

Don't forget 4 July

Sean Kennedy farms near Dingle facing the wild Atlantic from where mild and southwesterlies bring copious amounts of moisture. They drop not far short of a metre and a half of rain on his farm which is as fragmented as a dropped plate. Despite these challenges, Sean and his wife Gabrielle grow and utilise nearly 14t of grass DM/ha.

This is a phenomenal achievement, which Sean says is thanks to his remaining on top of the very latest technical advances in grass measurement and management. This July, Teagasc Moorepark will hold its biggest open day since 2015. If, like Sean, you want to remain abreast of the very latest developments you'll want to attend. All are welcome to this free event.

The date of the open day is easy to remember. Even if you have never set foot in America you will still probably know the significance of 4 July, Independence Day. It's particularly easy for Sean... the next parish is in the United States!

Ná déan dearmad ar 4 Iúil

Déanann Seán Kennedy feirmeoireacht sa Daingean agus aghaidh aige leis an Atlantach fiáin, farraige óna dtugann gaotha fionnuara aniar aneas cuid mhór báistí. Titeann beagán faoi bhun méadar go leith báistí ar a fheirm, rud atá scoite ar fud na háite. In ainneoin na ndúshlán seo, fásann agus baineann Seán agus a bhean chéile Gabrielle leas as beagnach 14t ábhar tirim féir/heicteár. Is éacht ollmhór é seo agus deir Seán gur tharla sé toisc gur choinnigh sé ar an eolas faoi na forbairtí teicneolaíochta is déanaí i dtomhas agus bainistíocht féir. I mí Iúil na bliana seo, beidh Teagasc na Cloiche Léithe ag reáchtáil an Lae Oscailte is mó dá gcuid ó 2015. Más mian leat fanacht ar an eolas faoi na forbairtí is déanaí, amhail Seán, beidh tú ag iarraidh freastal air seo. Tá fáilte roimh chách chuig an ócáid saor in aisce seo. Is éasca cuimhneamh ar dháta an Lae Oscailte. Fiú mura bhfuil cos leagtha agat i Meiriceá riamh, is maith an seans go dtuigeann tú suntas 4 Iúil go fóill; Lá na Saoirse. Tá sé thar a bheith éasca do Sheán...nach bhfuil an chéad pharóiste eile uaidh sna Stáit Aontaithe!



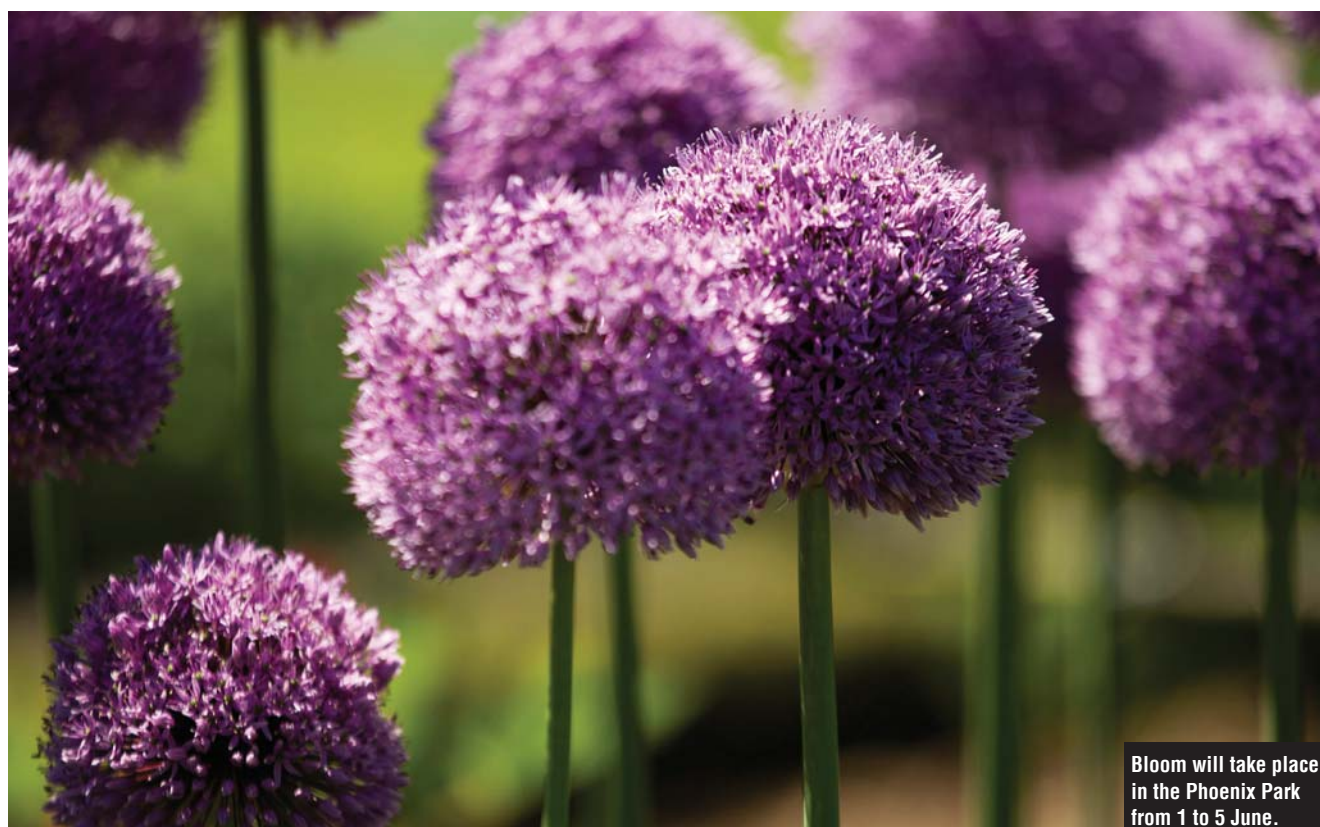
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Cover | Sean Kennedy with Teagasc advisor Nora O'Donovan. Sean's farm presents challenges for grass production and utilisation particularly due to farm fragmentation. / Valerie O'Sullivan



Bloom will take place in the Phoenix Park from 1 to 5 June.

Upcoming events and open days

3 May	Spring Tillage Crop Walk	Robert Auchmuty, Carranure House, Lecarrow, Co Roscommon.
3 May	Spring Tillage Crop Walk	Liam Robb, Newtowncunningham, Co Donegal
4 May	Teagasc horticultural technologies Seminar	Teagasc Ashtown Research Centre, Dublin 15
5-6 May	Timber 2017 - Irish Forestry, Woodland and Bioenergy Show	Stradbally, Co Laois
9 May	Spring Tillage Crop Walk	Michael O'Halloran, meeting at the Concrete Slab, Kilmoyley Road, Co Kerry
10 May	Organic demonstration farm walk – suckler to beef and cereals	Mark Gillanders, Ballinagall, Co Monaghan
16 May	Spring Tillage Crop Walk	Mark Holohan and John O'Loughlin, Rathangan, Co Kildare
29 May	Pig research dissemination day	Ballyhaise, Co Cavan
31 May	Pig research dissemination day	Moorepark, Fermoy, Co Cork
23 May	Soil/plant microbiome workshop	Johnstown Castle, Co Wexford
25 May	Organic demonstration farm walk – suckler to beef	Harry O'Grady, Finnitterstown Hse, Adare, Co Limerick
1-5 June	Teagasc exhibit at Bloom in Phoenix Park and Show Garden at Bloom	Teagasc Show Garden at Bloom, Phoenix Park
14 June	National Milk Quality Walk	The Power family, Ballymullala, Co Waterford
15 June	Managing Labour on your Farm Conference	Horse and Jockey Hotel, Thurles, Co Tipperary
22 June	Organic demonstration farm walk – beef, cereals and potatoes	Stuart and Jean Kingston, Upper Forest Farm, Farnanes
28 June	Crops open day	Teagasc Oak Park, Co Carlow
29 June	Organic demonstration farm walk – horticulture, salads and direct sales	Rory Magorrian, Kildinan Farm, Ballyhooley, Co Cork
21 June	TBC sheep open day	Teagasc Athenry
4 July	National dairy open day	Moorepark, Fermoy

Parents' days for ag college families

3 May	Collaborative farming – parents' days for ag college families	Kildalton College
4 May	Collaborative farming – parents' days for ag college families	Mountbellew Agricultural College, Co Galway
5 May	Collaborative farming – parents' days for ag college families	Ballyhaise Agricultural College, Co Cavan
9 May	Collaborative farming – parents' days for ag college families	Clonakilty Agricultural College, Co Cork
11 May	Collaborative farming – parents' days for ag college families	Pallaskenry Agricultural College, Co Limerick

What's your strategy?

Q&A

A total of 85 leading dairy, pig, beef and tillage farmers have completed the Teagasc/UCD Michael Smurfit course in business strategy. Maybe you should too



What is the purpose of the course?

In volatile times, it's extremely useful to have a written strategy defining: where you are, where you want to go, and how you are going to get there. Participants on the course produce a strategy for their own unique business/family situation.

"It'll certainly take you out of your comfort zone," says Offaly dairy farmer Ger Parady. "It makes you clarify your goals and ambitions, discuss those with family members, and write down how you are going to achieve them in a structured way."

Do you receive a qualification at the end of it?

Yes, the course is fully accredited by UCD and you'll receive a Level 8 certificate at a conferring ceremony in UCD, Belfield. More importantly, during the course you will have enhanced your skills in strategy formulation, negotiation, investment appraisal and other key areas.

Will the course be of practical use?

Certainly, this is executive education which is based around business cases and sharing real-life business challenges. "It's stood me in good stead when dealing with people such as bank managers," says Sean Coughlaine, Mayo dairy farmer.

Is the course just a hard slog?

No. There is some hard work to be

The participants on the Teagasc/UCD Michael Smurfit course in strategy have varied widely in terms of location and enterprise mix. What they've had in common is a desire to formulate a strategy which will help them achieve their medium and long term goals.

done, reading business cases and analysing your own business situation but the course is highly participative; all of those who took part say they enjoyed the course. "This is nothing like school," says Vanessa Kiely-O'Connor from Cork. "You actually end up with a fantastic network of contacts which keep going long after the course."

How much time must you commit?

There will be pre-reading and working on the strategy in your own time as well as the six days of the course. The course is broken into one module of three days (residential), one of two days (residential) and a final day where participants present their strategy.

Will I get any help in doing the work?

Teagasc advisors with an interest in business mentor groups of five to six participants between the modules to address any questions which may arise. The three mentoring sessions are hugely popular and farmers will discuss their strategic challenges in the group.

Do you need academic qualifications to participate?

Not necessarily. If you have been

running a commercial business for five years that can qualify you to take part.

Can you talk to someone who has done the course?

Yes. Farmers from almost every county have done the course and we will be happy to put you in touch with someone who has participated.

What age are those who take part?

There is no restriction though you must have some years of experience. Participants so far have been from their late 20s to late 60s.

The cost is €2,400 – that seems like a lot of money?

It is, but remember that there is a €200 discount for Teagasc clients and everything related to the course is included: meals, overnight accommodation, etc. More importantly, you will have completed a strategy for your business. This is an investment in yourself and your business and is tax deductible.

The next course will take place in autumn this year. There are just 20 places on it so express your interest now by contacting Mark.moore@teagasc.ie or 087-417 9131.

Living on the edge

This Kerry farmer overcomes serious challenges to achieve top grass yields

John Maher
dairy specialist. Teagasc Animal and Grassland research and Innovation Programme
& **Nora O'Donovan**
Teagasc advisor, Tralee

Sean and Gabrielle Kennedy farm on the edge of Kerry's scenic Dingle Peninsula directly facing the Atlantic Ocean. More importantly, Sean manages his grass "on the edge" of what's possible. Tight, you might say. Brave. Management has enabled his dairy farm to produce 14t of grass DM/ha on average over the last two years. The Kennedys will milk 65 cows this year. In 2016, they produced 1,150kg MS/ha.

The secret to grass production is achieving 10 grazings/paddock during the season but it's not easily done in this part of the world. "We're in a favourable part of the country for grass production but we have a few challenges," says Sean. "Rainfall reaches 1,400mm (55 inches) annually. But our greatest challenge is the degree of fragmentation. Our access to grazing paddocks is restricted by this and of our 20 paddocks – only two or three (15%) can be cut."

Sean operates a regime, which ensures grass never gets ahead of the cows. This involves a 17- to 18-day rotation and grazing covers of around 1,200kg to 1,400kg DM/ha. He achieves 10 grazings/paddock and his swards average 14t DM/ha/year. "If we have a grass surplus it has to be on the cuttable part of the farm," says Sean.

Grass growth everywhere varies from season to season, month to month and week to week. Sean's farm is not any different, so he walks every paddock on the farm each Tuesday to establish the grass supply. Sean uses PastureBase Ireland to calculate the average farm cover (AFC).

"The thing is to get a picture of grass growth versus herd demand," says Sean. "The key figure is the cover/cow, which must be 130kg to 150kg DM/cow." This is certainly lower than the usual target of 160kg to 180kg DM/cow and for many dairy farmers this is truly "living on the edge".

However, as Sean says: "It allows me to have nicer grass in front of the cows." It also ensures that grass covers don't get too high and it avoids paddocks having to be cut for bales or topped. In fact, Sean says he wants to avoid grass being wasted and he has only topped three paddocks in the last two years. It is essential, he says, to avoid topping or cutting given the level of fragmentation that causes restricted access for machinery.

In 2015, Sean's farm grew over 14t of grass DM/ha with 11 grazings/paddock. In 2016, the farm grew over 13t DM/ha with nine grazings/paddock. Last August and September were very wet in Dingle and didn't allow Sean to build up as much grass as he would have liked for autumn. As a result, the grazing season was short and less grass was grown.

"We got off to a good start this year," says Sean. "Over 1.5t DM/ha has been grown in the first round of grazing. The second round of grazing started in early April. The fertiliser plan over the coming months will be two bags of 18:6:12 applied per acre in April, 1.5 bags of ASN applied/acre in May and pasture sward (27:2.5:5) applied after that."

Where next?

Visiting other farms in the Kerry area is very important for Sean. He says this allows him to compare his business to others and to see where he can improve his level of grass production and utilisation. The Teagasc/Kerry AgriBusiness Joint Programme runs regular events in the area and this programme focuses strongly on grass production and utilisation.

Sean is also a keen member of his local discussion group. "Nora always brings a grass clippers with her to the monthly meetings," says Sean. "The estimates we make at the meetings



Soil fertility, like on many other farms, is also a challenge. Sean applies lime on a regular basis and the lime status of the soils has improved a lot



Sean Kennedy and Nora O'Donovan discuss grass covers on his farm near Dingle.



help me to keep my eye in and make accurate estimates back home.”

While Sean says he learns “new tricks” from visiting other farms with high levels of grass production, he also plans to increase the level of grass production by basics such as reseeding and improving soil fertility.

As Sean walks the farm weekly and estimates the level of grass production on each paddock, he can assess each paddock for its level of pasture production for that year and also each season from PastureBase Ireland. The paddocks with the lowest levels of production are easily identified and targeted for reseeding.

Over the last 10 years, Sean has

reseeded over 50% of the farm. More reseeding is planned this May (when grass growth is at its highest). Sean is a member of the cultivar evaluation study in Teagasc Moorepark. He will be sowing a single variety called Aber Plentiful later this year.

Soil fertility, like on many other farms, is also a challenge. Sean applies lime on a regular basis and the lime status of the soils has improved.

“Our P and K index is mostly around index 2, so there’s still room for improvement there,” says Sean. By improving soil fertility and reseeding, Sean expects to increase grass production on the farm, particularly at the “shoulders” of the grass pro-

duction season.

“I began measuring grass about 10 years ago with Sean McCarthy who was my Teagasc advisor at the time,” says Sean. “Later, I joined a grass measuring group set up by Grainne Hurley.” Today, Nora O’Donovan keeps Sean up to speed on any grazing developments. However, it is Sean’s enthusiasm for grass that keeps him competitive on growing and having his cows eating lots of grass.

“You need to remain determined to stay measuring grass regularly,” says Sean. “It’s vital if you want to make a good profit to support the family. It’s as simple as that.”

Teagasc Moorepark Open Day

– 10 reasons to visit

Tom O'Dwyer

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

Teagasc will open the gates to its Animal and Grassland Research and Innovation Centre (AGRI) Moorepark on Tuesday 4 July for a major open day. This major event happens every two years and should attract thousands of dairy farmers and their families; make sure to mark the date in your diary.

The focus of this year's Open Day is "Resilient Technologies"; these are the technologies which will help dairy farmers, and the entire dairy industry, to flourish in both the good times and the more challenging times. Resilient dairy businesses – i.e. those that adopt these proven technologies – will be technically and financially efficient, generate surplus cash, consistently achieve financial expectations and be simple to operate. Moorepark 2017 will highlight a range of resilient technologies now available to Irish dairy farmers, including:

Grazing management

- PastureBaseIreland database and online decision support tool;
- GrassHopper measuring device;
- Grazing infrastructure including land drainage;
- Pasture profit index (PPI) and recommended lists;
- Achieving high levels of grass utilised – target 10t grass DM/ha/year;
- Increasing herd and farm performance by including clover in swards.

The perfect cow

- High EBI index and fertility sub-index;
- 90% calving in six weeks;

- 5.5 lactations per cow;
- The place for crossbreeding.

Managing yourself and others – the people challenge.

- Labour efficiency – streamlining your working day; coping with peak workload in the spring;
- People management – including making your farm an attractive place to work and developing people management skills.

Developing a resilient dairy business

- Strategic planning – knowing, and being in charge of, your future direction;
- Achieving technical and financial efficiency.

Teagasc researchers, advisors and specialists will be on hand to update you on the latest research and advice in relation to these, and other, resilient technologies.

So why should you attend the Moorepark 2017 open day?

1 What you earn depends on what you learn: We live in a knowledge economy. It is vitally important that dairy farmers are up to date with the current technologies and developments. The Moorepark 2017 open day will highlight the relevant technologies which will enable dairy farmers to develop resilient, sustainable and profitable dairy farming businesses.

2 How you put into action what you learn will influence what you earn: But it is not just about what you learn. You have to be able to put into action what you have learned. Demonstrations will be a key feature of the event and will include: grazing management, reseedling, farm infrastructure, better breeding decisions



(‘the perfect cow’) and efficient milking. Workshops focusing on strategic planning, milk quality, people management and converting to dairy farming will also be featured.

3 The best investment you can make is an investment in yourself:

You have to make the time to attend events that can help you to develop...as a dairy farmer, as a person. Too many dairy farmers don't invest enough in themselves, yet the same farmers could make large investments in equipment, livestock or buildings. Put the date in your diary – Tuesday 4 July – and commit to investing that day in your development.

4 Knowledge is power: Knowledge is a powerful factor that enables people achieve great results. No individual dairy farmer can pro-



A large crowd in attendance at a previous year's Teagasc Moorepark open day.

per and flourish without the right knowledge. And there is no end to knowledge or your ability to acquire it. We can all benefit from learning new things. What you learn at the open day might help you come to better decisions in the future.

5 Meet Teagasc researchers, advisors and specialists: This is the one day in 2017 when all staff involved in the Teagasc dairy programme will be available for you to meet. Come along and take the opportunity to get answers to your questions. There will be opportunities to ask questions in the Technology Villages, at the workshops and at the special forums.

6 The people challenge: There is a growing concern that the people challenge could become a limiting factor for the future

growth of the Irish dairy industry. This challenge is multi-faceted and encompasses:

- Making dairy farming an attractive career choice for young people;
- The availability of skilled people to work on dairy farms;
- The ability to manage the additional complexities of larger herds, including managing employees;
- Achieving sustainable workloads for all people working on dairy farms.

One of the Technology Villages at Moorepark 2017 is devoted to this issue. Teagasc colleagues working in this area, such as Páidí Kelly, Marion Beecher, Pat Clarke and Abigail Ryan, will be on hand to discuss people-related issues with visitors to the Open Day. The new Teagasc *Employing Labour* publication will be available on the day and Teagasc expects that this guide will be a valuable resource for dairy farmers employing labour.

7 The sustainability challenge: Irish grass-based systems of milk production are more sustainable than most other systems of milk production throughout the world. Our clean, green image is used as a marketing tool by our milk processors. We need to prove our green credentials and be prepared to adjust our farming practices to meet both the changing requirements of international customers and our environmental sustainability obligations.

Teagasc research has identified the steps needed to increase the sustainability of our dairy farms including steps to reduce greenhouse gas (GHG) emissions, improve water quality and improve herd health and milk quality.

8 The Brexit challenge: While the final shape of the Brexit deal is not known, we can be sure Brexit will mean disruption for Irish milk processors, and ultimately Irish dairy farmers. In the face of Brexit, Irish dairy farmers must manage what they can manage themselves first. This will mean a relentless focus on driving productivity, the adoption of a low-cost mindset and careful assessment of investment decisions. Teagasc Moorepark research findings can help dairy farmers, and those in the wider dairy industry, to plan for the changes which will be the inevitable result of Brexit.

9 Get involved in debate/discussion – villages and forum: The Open Day will feature two special forums, each of which will involve a Q&A panel discussion. Each forum will be facilitated by Sharon Ní Bheoláin from RTE *Six One News*. The first will examine “Brexit and Irish Dairying”, and will include panellists such as the Minister for Agriculture, Food and Marine Michael Creed and other key stakeholders in the dairy industry. The second will discuss the question “Just how attractive is a career in dairying?”

10 Meet friends and have an enjoyable day away from your dairy business: While the focus of the Open Day is on technology, there will be plenty of time for you to catch up with friends. Not all of the conversations need to be about dairying. With the Munster senior hurling final due to take place on the Sunday after the Open Day, I'm sure that there will be many conversations involving hurling!

The Teagasc Moorepark Open Day is kindly sponsored by FBD.

¹ Bill Clinton

² Warren Buffet

³ Francis Bacon

dairying

10 TIPS TO MANAGE WORKLOAD

Joe Kelleher

Teagasc, Newcastle West, Co Limerick

This Limerick family work hard, but smart, constantly seeking ways to get quality work done in the most efficient and cost-effective way possible.

The Hannon family are dairy farming at Kiltiplan on the border of Patrickswell and Ballybrown parish, seven miles west of Limerick city. Cow numbers on this picturesque farm located close to Adare remained static at 145 for the five-year period between 2010 and 2014. However, numbers have taken a considerable jump in the past three years and there are now 200 cows in the herd.

John, Catherine and their four children; Fiona, 19, Mairéad, 17, Shane 15, and Tadhg, 13, all have key roles in the day-to-day running of the family farm. Even allowing for the enormous labour input contributed by the Hannon family, managing a 200-strong herd is no easy task.

“Labour is like concrete work, you have to order a bit extra to ensure the job is done right,” is the way John describes it. It is clear to see from the way this farm is run that any job that can be done by an outside provider is delegated out. If there is an easier way to carry out some task, then the facilities/equipment will be put in place on the farm to make this happen. Below are 10 ways in which the Hannon family are managing the workload on their farm:



Family labour

1 It is a case of all hands on deck on this farm. All four children milk cows regularly, and impressively, each of them can expertly stomach-tube a calf. When I last spoke with John, he informed me that he had returned from a meeting at 10.30pm the night before to find Fiona and Mairead drafting cows into the calving pen. John headed to bed and left the two girls at it. This is a situation many farmers throughout the country would be envious of.

Farm Relief service

2 The Hannon family make great use of the local Farm Relief Service. For example, during the breeding season, the FRS will milk the

cows one morning per week while John tail-paints the cows. Last winter, the FRS brought in a rollover crate, while John teat-sealed his in-calf heifers. This spring, FRS staff clipped all of the cows' tails in a few hours.

Other tasks carried out by the FRS include hoof-paring, calf dehorning, freeze branding and relief milking, all of which allows more time for John to focus on stock and grassland management.

Contractor

3 Any job that can be contracted out on this farm will be. All the obvious jobs such as silage-making, slurry spreading and hedgecutting are outsourced. Fertiliser spreading, spreading of soiled water, AI and fencing are also outsourced, leaving



Shane, Mairéad, Catherine, John, Tadhg and Fiona.

John with very little tractor work.

There is no topping carried out on the farm. Fields are grazed tightly or else a cut of round bales of silage are taken to clean up paddocks. A good maintenance man is another key member of John's team. All welding and other repair work is also contracted out. The absence of machinery is noticeable, which in turn cuts down on time (and money) spent repairing tractors and equipment.

Calf feeding

4 Calf feeding is one of the major consumers of time on dairy farms in springtime. Again, the Hannons have fine-tuned this area and only spend the minimum time necessary tending to calves, without compromising on calf welfare. All

calves are fed once a day from four weeks of age. At around the same time, they are moved outdoors to a sheltered paddock, reducing the time spent cleaning out calf houses.

A 50-teat calf feeder on the back of the quad is used to feed the outdoor calves, while a milk trolley is used indoors.

John points out that even in autumn he will put the 50 teat feeder on the quad when he needs to move the calves from one paddock to another. All calf houses can be cleaned mechanically with the loader.

Machinery/equipment

5 While the farm is not overburdened with machinery, there are some key machines which are

helping to reduce the labour requirement. John bought an industrial loader some years ago (for a quarter of the price of tractor) for feeding silage, among other jobs.

The quad is probably the most used piece of equipment on this farm and then there is John's favourite, the pallet fork. It might seem the obvious labour-saving device, but John uses it to great effect for chores such as covering and opening the silage pit. He loads all sand bags on to a pallet at the opening of the silage pit and then picks up pallets again when covering the pit in the summertime.

The fork is also used for moving tyres, pallets of fertiliser or moving milk for calves. Most of the tractor rear-mounted equipment can be attached and detached from the tractor seat quickly and safely with A-frames.



Continued on next page



John Hannon and Teagasc advisor Joe Kelleher.

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Facilities

6 Facilities are excellent on the farm. Cow numbers have expanded on many farms since the removal of quotas, but in most instances facilities have not increased accordingly. Not so, on this farm. There has been significant investment in calving pens, calf housing, cubicles, slurry storage, paddock sizes, water troughs, roadways, etc.

The drafting system is very effective and the backing gate in the collecting yard ensures a steady flow of cows into the parlour at milking time. Last autumn, converting several older buildings resulted in all calving pens being capable of being cleaned with the loader.

Increased slurry storage means that all soiled water can now be spread by contractor using the umbilical system.

Once-a-day milking

7 Cows on this farm are milked once a day in February every year, a practice that has been in operation for five years now. Throughout the entire calving season, all colostrum cows are milked OAD for five days after calving, until their milk is ready to enter the tank.

Thirteen milkings per week

8 Cows are milking only once on a Sunday from early autumn, freeing up Sunday evenings for family time. Cows are milked at the usual time on a Sunday morning and on the Sunday evening they are just moved to a fresh paddock to settle them.

Night feeding of silage

9 There is a dedicated house on the farm for cows nearing calving, which is fitted with locking barriers.

Silage is fed to all cows in the middle of the day, but the locking barriers remain closed in the calving house until about 10pm. As a result, very few cows calve at night

There is nobody on night calving duty and the system is working well for the Hannons. It should also be pointed out that only easy calving sires are used.

Bulk buying inputs

10 The Hannons are excellent at planning ahead. All inputs are forward-purchased and usually in bulk. There is no need to pop down to the local co-op for a gallon of detergent to wash the

parlour because it was bought in bulk before the first cow calved. It is a similar story for fertiliser. John tries to stay off the road as much as possible.

John works full-time on the farm and when you take family labour (excluding John), casual labour and student labour into account, he believes there is the equivalent of another full-time labour unit. But what is not as obvious, is that there is easily another labour unit being accounted for through work that is either outsourced or being reduced through labour-saving techniques.

The Hannons are always on the lookout for ways of making life easier. A lot of thought and effort has been put into labour-saving by the Hannons, much of it has been done cost effectively by using and adapting what they already had in the yard.

Busy

“Dairy farming is demanding on mind and body,” says John, “Especially in springtime, and we’re always on the lookout for ways to further reduce the work load on their farm. It takes time and effort to include labour saving in your routine because you are often too busy.”

Isn’t it time farmers, whatever their enterprises, all paused to look at how they do things and try and make life easier for ourselves? The Hannons are showing the way.

Minimise your silage waste

Tom Ryan
Teagasc Rural Economy Development Programme

What differentiates those who have consistently very little waste from others is attention to detail. There is nothing the best silage-makers are doing that can't be done by everyone else.

Field losses

The yield and quality of grass harvested can be quite different from the potential yield and quality.

This can be due to several factors, for example rough areas at gaps and around headlands, soft spots in the field needing drainage, obstacles left in the field, low yields due to poor fertility and soil acidity, inaccurate fertiliser spreading, predominance of old grasses and weeds in need of reseeding and harvesting losses in the pickup process.

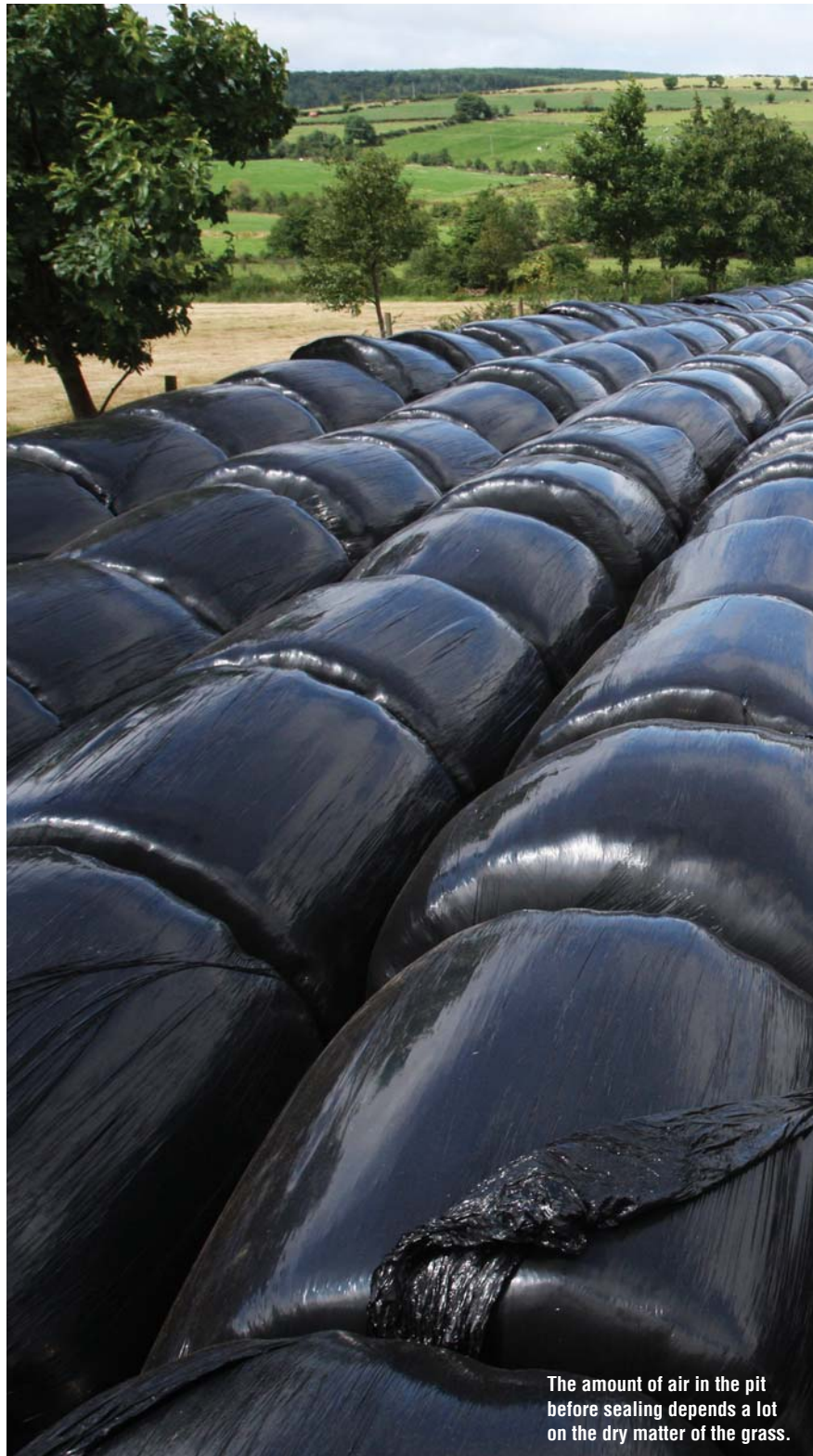
These problems generally take time and expense to sort out. The important thing is to have a plan to tackle them at some stage.

Wilting

Wilt, if possible, by cutting with a conditioner mower and spreading out the grass as much as possible. Follow this by tedding out the swaths before raking into windrows for subsequent pickup.

Weather permitting, this approach should ensure that the grass DM is between 27% and 32% within 12 to 24 hours of cutting, reducing the potential for effluent and concentrating sugars in the grass to aid good preservation.

Nowadays, the work rate of silage harvesting equipment is such that upwards of 40ha a day is easily achieved. Fast filling of silage pits is good; the only drawback is that the spreading, levelling and consolidating of grass might not be given enough time. This is more critical in silage pits being filled with wilted material. It is important to spread wilted grass in thin layers and compact it thoroughly.



The amount of air in the pit before sealing depends a lot on the dry matter of the grass.



Continued on next page

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Cutting height

Grass digestibility is lower in the stems than the leaves so anything that increases the proportion of stem in the ensiled material lowers the average digestibility.

When the load of grass is tipped out in the yard the colour and the feel of the material gives a good indication of the stem to leaf ratio. The extra yield gained by cutting lower is small and comes at the cost of diluting the quality of the silage.

Good preservation

Rapid filling, good consolidation and an effective air-tight sealing will generally result in a fast and efficient preservation with minimal dry matter losses. The result is well preserved silage with minimal waste, reduced DM losses, better feed value and good intakes.

Good preservation keeps the development of spoilage organisms like clostridia, moulds and yeasts at bay. The preservation process cannot begin while there is any air left in the pit. So a lack of attention to detail in sealing the pit will delay the preservation process and increase losses. Ensure that silage pits are really air-tight.

Keeping the air out

The amount of air in the pit before sealing depends a lot on the dry matter of the grass. Leafy, wet, short chopped grass will compact a lot better than dry, long chopped, stemmy grass. Below 24% DM, there is very little space for air as these spaces are filled with effluent and less rolling is needed. For material over 30% dry matter, air can find its way deep into the pit unless it is very well rolled and consolidated.

When pits are filled very fast, there isn't much time for rolling and consolidating and there usually isn't enough room in pits for two machines to safely operate at the same time. Compacting the grass therefore poses a challenge. Sometimes the best that can be achieved is to spread out loads as evenly and thinly as possible, leaving no lumps and humps or hollows.

The sides of clamps pose a particular problem. We tend to make them relatively steep which means they can't be rolled on for consolidation. It is important that the sides are well-built with a uniform slope, without humps or hollows. This will ensure that the silage covers will lie right up against the ensiled material leaving no air pockets, once effectively weighted down.



Another increasing problem is that pits are being overfilled. I get the impression that some farmers feel they can expand stock numbers but manage with their existing silage pits. The result is that the height at filling and even at feedout is dangerously high. Pits are getting narrower and narrower as they rise, increasing the danger of the loader toppling. The effectiveness of consolidation is lessened. At feed-out, stripping back the cover and tyres becomes a lot more difficult and dangerous.

Covering the pit

Covering the pit to maintain an effective air-tight seal is most important. The surface of the grass before covering should be smooth, without humps and hollows to eliminate air pockets and ensure that any rainwater falling on the covers will flow off completely. Water lodged continuously in depressions causes surface damage

underneath and if it leaks through will result in a vertical column of bad silage.

The covers must be weighted down well using a combination of tyres, mats, gravel bags and nets. Nets are great for keeping the covers in close contact with the ensiled material. Nets must be non-slip to make them safe to walk on. Tyres should be placed edge to edge and heavy lorry tyres used along the sides.

Gravel bags should be filled with pea gravel for drainage so they will last. Gravel bags are very effective because they exert much more pressure for their size than tyres. Therefore, they should be used in a line to seal clamps at ground level. This seal should ideally be right in close to the ensiled material, and inside any channel in order to prevent air getting back up the pipe in the channel during storage.

Overlaps of the covers should be

The yield and quality of grass harvested can be quite different from the potential yield and quality.



TAKE ACTION

If you have experienced some of the problems outlined in this article, maybe this is the year to take action to resolve these issues. Silage is an expensive feed. The extra work and expense of dealing with waste silage is considerable. The benefits of taking action include cost savings, better quality, higher intakes and greatly reduced concern about running short.

tra effort to cover the pit properly.

Grass can get caught up in this sheet, especially if the guide rail is present. This makes it difficult to fold back smoothly over the surface. The other benefit of this sheet lining the wall is that it protects the wall surface, wall floor joint and channel from wear due to effluent from unwilted crops.

Overfilling walled pits is also common and not a good practice. It makes effective sealing of edges more difficult. To prevent burdening the walls with extra weight over their design weight, grass piled above the walls should slope in at 45 degrees. This makes effective rolling at the walls difficult. Rolling at the walls should be done before the grass raises much above the top of the walls.

1.2m to 1.8m. Overlaps should be weighed down with gravel bags as well as tyres to make them air-tight.

All too often, I see polythene on the sides of clamps flapping in the wind or damaged by dogs, cattle, etc, or because after the initial covering it was never retightened when the clamp settled. This neglect causes massive surface waste and poor preservation in layers below the surface waste.

Top and side waste seems to be worse on the windy side of clamps. Wind blowing over silage creates all sorts of pressures that can either force or suck air if there are any deficiencies in the covering.

Regularly inspect and repair silage covers. Catching a damaged cover early can help to minimise spoilage from oxygen exposure.

Covering walled pits

Walled pits are better and safer as silage storage structures than clamps.

They are generally easier to cover effectively. However, I often see waste along the top and in by the walls.

Waste at the walls is often triangular-shaped, widening towards the floor, indicating that air and or water got in where the covers meet the wall. Gravel bags are needed here also and any water flowing off the cover towards the wall should be channelled away before it reaches the wall.

The wall should be lined with polythene as well. The polythene should extend from past the channel in the floor to out over the wall or up and over a guide rail if present. When the pit is being covered, this sheet should be folded back first and overlapped with the top covers. It still needs to be sealed with the gravel bags and rainwater deflected.

Some complain that it is too difficult to manage this extra sheet lining the wall. It really boils down to the fact that they don't want to put in the ex-

Silage covers

There is a wide range of silage pit covers available. These can be used with tyres, mats, nets and gravel bags. Some of the newer covers may have advantages over the normal practice of using two black polythene sheets.

There are covers with cling film properties (clear or slightly coloured) which cling better to the ensiled material preventing air pockets from forming. The aim is to reduce the amount of air taken in throughout the storage period.

Other products are described as "oxygen barrier films" and have cling film properties also. These are claimed to let virtually no oxygen through and would typically be used under a black polythene sheet or close weave netting. Suppliers of these products should be able to give assurances that the oxygen transmission through these should be much lower than that of normal black polythene sheets and the like.

Managing silage bales: knowing what you have

Lorcan Dooley
Teagasc advisor, Thurles

Making silage is not as cut and dry as it used to be (excuse the pun!). There was a time when you just had a first cut and a second cut. Now, most farmers will make pit silage but there are also a number of different cuts with paddocks being taken out of the grazing rotation throughout the year and some silage fields being earmarked for ultra-high quality early bales.

It can become difficult to keep track of where the good bales are kept, and where the excellent bales are. One solution is to keep the different quality bales in different piles around the yard. But most yards are tight for space and farmers don't want the bales too far from the sheds.

As a result, bales tend to get piled on top of one another as near to the feed space as possible. So how do you distinguish between the good, the bad and the ugly when looking at a block of maybe 500 bales?

Remembering what's what

I know farmers who use different colour silage wraps to great effect. The best quality bales might be wrapped purple; if not making pit silage first-cut bales might be wrapped in pink and second cut in black, for example. This is a very simple and effective technique.

Tom Ryan who farms in partnership with his wife Mary and son Michael, next to the famous Lisheen Castle near Thurles, has an even more precise technique. To keep track of which bales go where, Tom writes the cut date and which field the bales came from on the front of the bales, where it is clearly visible.

"It can be hard to remember where each section of bales came from," says Tom. "You are taking out pad-

docks all year. Writing the date and field name on the bale allows me to keep track of what I'm feeding."

The bale furthest to the right of the pile has the field name and date, while the rest of the bales that came off that field have just the date on them. Tom has bales from the "high field" cut on 18 June, because Tom knows the size of the field and there was a cut of seven bales to the acre.

By having the date on the bales, Tom is able to ensure that any spare bales from last year get used first. How many farmers are guilty of having the spare bales in the back of the pile unused for the last number of years?

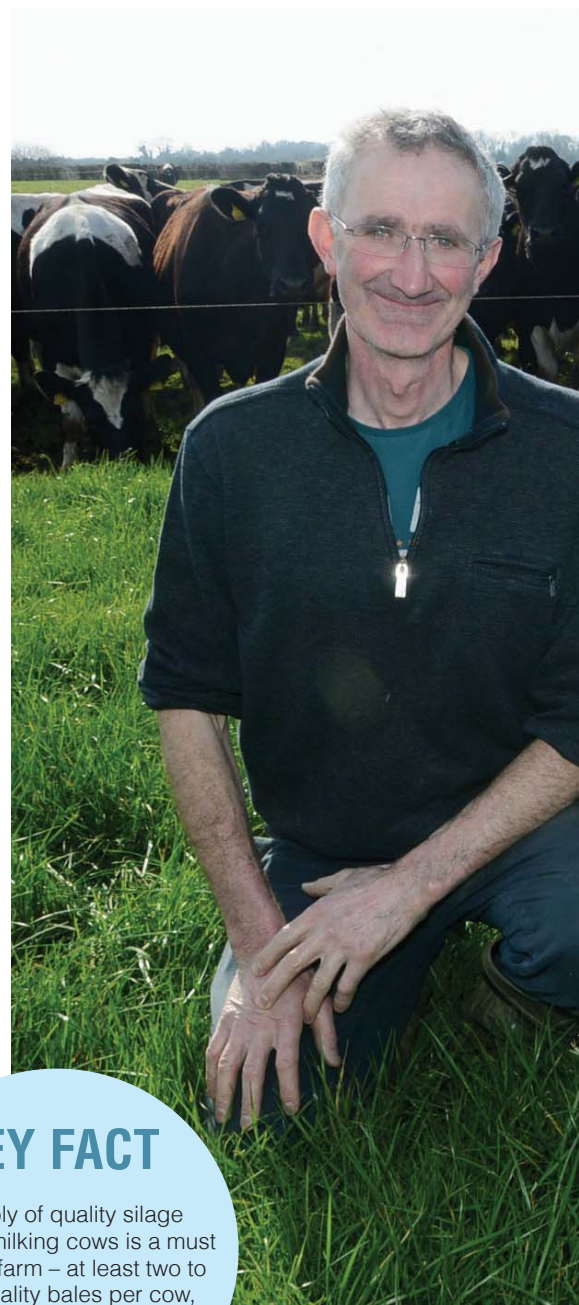
A supermarket wouldn't leave their products closest to going out of date at the back of the shelf; they put them to the front so that they are used first and it should be the same with bales of silage. If possible, a pile of bales should be accessible from all sides to help prevent this from occurring.

Planning for quality

In order to have good quality bales you need to make a plan. Most farms will be capable of making a number of good quality bales during the year



Tom Ryan has bales from the "high field" cut on 18 June.



KEY FACT

A supply of quality silage bales for milking cows is a must on every farm – at least two to three quality bales per cow, depending on your stocking rate, soil type etc.

from paddocks that have been taken out of the grazing rotation. These bales cut during the grazing season are ideal when fed to late lactation cows at the back end of the year.

During the winter, dry cows don't need the same quality silage but you still want to ensure that weanling heifers get good quality silage.

In order to get those additional quality silage bales, you need to make a plan. These bales will have to come from silage fields earmarked for quality. They will need less nitrogen (roughly 50 units/acre), and be cut early. A simple plan proposed by Teagasc dairy specialist Joe Patton is to: graze the paddock in February if possible, and spread with 3,000 gallons of slurry, then in March top up with



Tom Ryan and
Lorcan Dooley.

either 2.5 bags of 18-6-12 or one bag of urea if soil fertility is very good.

Cut around now, in mid-May. Ideally, you should choose a field with good quality ryegrass and if possible store these bales in a separate pile. They should not be stacked as they can lose their shape which can cause spoilage. Remember, if putting bales on hard core ensure that the surface is as smooth as possible to prevent punctures.

You need to be resigned to the fact that you will be getting less than eight bales to the acre on these fields. Forget about getting bulk, it's quality not quantity you are after.

An added bonus of writing down the field name and date is that Tom knows how many bales came from a paddock. If he got six bales to the acre, he can be reasonably confident

that they are good quality bales.

Benefits

Farmers that have started to make these quality bales are delighted with them. For the spring-milking herd, you need excellent quality silage. Tom says: "Having good bales in the spring gives you more confidence to graze strong. It's an insurance policy – if the weather goes wrong it's not the end of the world having to feed silage once its good quality."

There is no disputing that quality bales require more planning but for a resilient dairy farm there needs to be a supply of excellent quality silage in the spring and autumn. Cows will calve and milk in spring that's a certainty. The Irish weather is not so certain therefore farmers must be prepared for all eventualities.

Why do you need quality silage?

The reason you need a stock of good quality bales is to buffer feed cows at the shoulders of the year. You want to extend the grazing during the autumn and to work with your grazing plan in the spring. This spring showed the importance of having good silage to feed to cows forced indoors during poor weather/soil conditions.

The major benefit of having quality silage, especially during the spring, is that you don't get that big crash in milk solids and yield if cows need to be housed temporarily. It also reduces meal feeding, improves fertility and helps maintain cow condition.

A bug's tale: Johne's

Teagasc research is shedding new light on this sneaky disease

Aideen Kennedy and Riona Sayers
Teagasc Animal and Grassland Research and Innovation Programme, Moorepark

Johne's disease (JD) is an incurable disease of ruminants caused by infection with bacteria known as *Mycobacterium avium* subspecies *paratuberculosis* (MAP).

Young calves are most susceptible to JD infection, which primarily occurs when they ingest faeces contaminated with bacteria – when calves suckle an infected cow's dirty udder. Infected cows can also shed the bacterium in their colostrum and milk which can lead to infection of calves fed this milk.

One of the key issues stimulating interest in JD is an, as yet unproven theory, identifying JD as a possible cause of Crohn's disease in humans.

Clinical signs of JD

In the initial stages, animals appear healthy and the disease is virtually undetectable, even using diagnostic tests. Once an animal becomes infected, JD progresses slowly. Clinical signs are most common in animals of three to five years of age.

The disease primarily affects the wall of the gut causing it to thicken, which leads to difficulty in absorbing nutrients. This can lead to weight loss, diarrhoea and eventually death.

Diagnostic tests

Due to the slow progress and prolonged nature of the disease, JD is notoriously difficult to diagnose. None of the commonly used tests (ELISA, PCR or microbial culture) are 100% perfect. Interpretation of JD results is not clear-cut and test results are best interpreted by a combination of farmer and their vet on an individual farm basis.

Both false positive (animal not infected with JD but yielding a positive test result) and false negative (animal infected with JD but yielding a negative result) results can be generated during a testing programme. The more test results available for an individual cow, therefore, the greater the



level of confidence associated with her test status.

Based on results of a study by Teagasc, where a number of ELISA positive animals were found not to have lesions consistent with JD at post-mortem, it is always advisable to submit a dung sample for faecal culture to confirm shedding of the bacterium and possible infection.

TB-testing and Johne's disease

A further issue complicating JD tests in Ireland is the bovine tuberculosis testing (bTB) regimen. Testing for bTB has been shown to interfere with JD blood and milk ELISA testing.

A study conducted at Teagasc Moorepark examined the effect of the bTB skin test on both blood and milk ELISA results to provide appropriate advice on the optimal timing of JD ELISA testing in Irish dairy herds.

The results of our study showed that blood sampling for JD ELISA testing should be avoided for at least 71 days

Johne's disease primarily affects the gut wall, causing it to thicken, which leads to difficulty in absorbing nutrients.



Global markets demand high-quality products and Johne's disease control will play a pivotal role in ensuring our market leadership into the future

disease in the spotlight



post administration of a bTB test. Milk samples should not be collected within 43 days of the bTB test.

National control programme

Animal Health Ireland launched a JD pilot control programme in 2013. This programme involves on-farm risk assessments with a trained veterinarian, to identify management practices placing farmers at risk of spreading the disease. The diagnostic element of the programme involves using a blood or milk test (ELISA tests) to identify suspect animals and a faecal-based test to confirm the infection status of the animal.

High-risk management practices

Control programmes aim to break the cycle of disease transmission through identification and removal of infected animals and optimal calf management. As contact with infectious faeces is a major risk factor for transmission of JD, hygiene is a

key element in control. A nationwide survey by Teagasc showed the majority of Irish dairy farmers engage in a number of JD high-risk practices. These practices include housing sick cows in the calving area, overcrowding and not cleaning the calving area.

Additionally, over 70% of farmers pool colostrum and use waste milk to feed heifer calves. While such practices are often seen as labour and cost management procedures, they are placing farms at undue risk of spreading JD and should be avoided.

Economics

The economic effect of JD varies considerably between farms as it depends on the number of animals infected and how advanced the disease is in infected cattle. In Ireland, however, the economic effect of JD on many farms can appear minimal, which could perhaps be seen to negate the requirement for a national control programme.

It should always be noted, however, that Ireland is an exporting nation and the quality of our milk and milk-derived products must be above reproach.

A JD national control programme must, therefore, be given serious consideration and support. The long-term commitment needed for such a programme should not be underestimated however.

Conclusion

JD is a slow and insidious disease and immediate improvements in herd status may not be noticeable in the short term. However, studies have shown additional herd benefits, such as decreased calf morbidity, from implementing the hygienic farm management practices promoted in JD control programmes.

Our international markets demand high-quality products and JD control will play a pivotal role in ensuring our market leadership into the future.

BETTER farms

Taking the challenge

BETTER farm programme enters its third stage

Alan Dillon

Teagasc cattle specialist/BETTER farm programme manager

The BETTER farm programme began its third phase in February this year. The first two phases of the programme have shown great levels of success with monitor farms in the programme increasing profit levels and streamlining workloads by incorporating improved grassland management, breeding policies and financial management.

The previous phases of the programme attracted a lot of attention with large crowds at open days, sometimes exceeding 1,000 people. What proved a major strength of the programme was the fact that all the farms involved were commercial farms facing everyday struggles with weather, prices, cashflow and disease issues that all farmers have to live with.

Another strength of the programme was the geographical spread. With almost every county having its own BETTER farm, all farmers could find one nearby with a similar soil type, suckler system or climate that they could relate to.

Social media coverage of the programme will be increased in phase three. Twitter, Snapchat, Facebook and the *Irish Farmers Journal* online will provide regular updates on farm developments along with weekly updates in the print version of the *Irish Farmers Journal*.

Phase three of the programme has been named the BETTER farm challenge. Two new programme advisors were recruited in early 2017. John Greaney will cover western counties and Tommy Cox will cover eastern counties. The programme will have at least one new farmer per county with 27 new farms recruited at the end of 2016. Farms range in size from 18ha to 122 ha, with soil types from free-draining loam to heavy peat land in

need of reclamation.

A variety of systems are incorporated in the programme from suckling-to-weanling, suckler-to-store and all the major suckler-to-finishing systems including farms finishing bulls and steers. While no open days are planned for the new farms in 2017, as they are under development, it is hoped that the farms will see visits from discussion groups, as well as hosting open days and smaller technical workshops over the course of the programme.

As part of a new revamped phase three, the participating farms will have to partake in a number of challenges. Three of the challenges will be mandatory and farmers will pick three more from the remaining seven.

Mandatory challenges

The two-tonne grass growth challenge

The challenge

To get extra performance from existing swards and grow two tonnes more grass dry matter per hectare over the course of the programme. Where possible, the aim is to turn the two-tonne extra dry matter growth into extending the grazing season by two weeks in spring and two weeks in winter to reduce winter feed costs and improve animal performance. For farmers at a more advanced stage, the aim is to break the 10t DM/ha challenge.

Challenge criteria

- Grass measured weekly and updated on Pasturebase.
- Increasing number of paddocks, water troughs and reseeding.
- Farm mapped online.
- Nutrient management plans completed and updated annually.
- Silage quality analysed annually.

The farm finance challenge

The challenge

Keep 100% of the farm's direct payment and increase the farm's return into a positive gross margin each year of the programme. Follow the programme's cashflow planner and



be in a position to plan ahead and better manage finances. Farmers must complete an annual Teagasc eProfit Monitor.

Challenge criteria

- Complete eProfit Monitor annually.
- Cost control planner updated monthly.
- Six-year business plan completed by end of year one.
- Cashflow monitored over the course of the programme.

Farm safety challenge

The challenge

Complete a farm safety risk assessment on an annual basis and implement two positive changes annually.

Challenge criteria

- Two positive safety improvements made every year.
- Health and safety assessment updated annually.

Additional challenges

In addition to the mandatory challenges, farmers must pick three from the following list of challenges:

The breeding challenge

The challenge

Increase the average replacement value of your herd by €20 over the three years of the programme. There is an opportunity to help farms develop as specialist producers of high health



BETTER farm challenge participant Shane Gleeson from Cappamore in Co Limerick, with Alan Dillon, Teagasc cattle specialist.

into 10% of grassland.
 • Fertiliser bill on these farms looked at nitrogen usage in relation to stocking rate.
 • Management practices ensuring persistency of clover in the sward to be reported.

Meet the markets challenge

The challenge

• Hitting optimum specs all the time.

Challenge criteria

- All farms Quality Assured by 30 June.
- All farmers to visit the factory by the end of year one.
- All farmers to have received a supermarket multiple briefing by year two.
- Percentage of animals killed under 400kg dead.
- Fat class: percentage in fat class 3 in steers and heifers.
- Grades: R and U percentage.
- Liveweight gain measured a minimum of three times annually and targets set.

The mixed grazing challenge

For farms with both sheep and cattle enterprises the target is to establish a blueprint for operating a mixed grazing system. This will include autumn closing dates, for example, to allow for early spring turnout, low-cost fencing options for mixed grazing in rotation and housing/winter feeding options.

Challenge criteria

- Cashflow differences to be reported.
- Blueprint for managing autumn and spring grass on mixed farms to be developed.

The partnership/labour challenge

The challenge

This is a challenge to the programme to show that successful family and non-family partnerships can become established businesses that, with planning and structure, can provide a viable future for young farmers; and to examine labour usage on farms.

Challenge criteria

Five farms to monitor labour usage – two part-time and three full-time with weekly recording of time sheets during different times of the year.
 Partnership arrangements to be reported on between families and non-family arrangements.

Why not take the challenge yourself? The programme farmers will choose their challenges. But there's nothing stopping any farmer from taking these challenges too.

status – high genetic merit replacement heifers/cows.

Challenge criteria

- Data recorded in ICBF.
- Achieve ICBF breeding targets.
- Target a 365-day calving interval.
- Calving spread to be shortened to 10 weeks.
- Calving at two years old at the end of the programme.
- Calving rate: minimum of 0.92 calves/cow/year.

The herd health challenge

The challenge

The herd health challenge will look to establish what the main offenders requiring antibiotic use at farm level are typical usage rates across different enterprises; reduce the usage of antibiotics by putting a robust herd health plan in place. Farmers will develop blueprints that favour the targeted use of vaccines and optimum herd/flock management and husbandry practices. This will reduce high-risk diseases hence reducing inputs by 20%.

Challenge criteria

- Herd health plan to be completed with vet.
- More detailed analysis in Teagasc eProfit Monitor of antibiotic v vaccine usage.
- Ventilation improvements in sheds recorded.
- Vet call-outs: number of visits recorded each year.

The soil health challenge

The challenge

Get more farmers identifying the soil fertility status of their soils and then embarking on a programme, in tandem with a core group of BETTER beef farm participants on varying soil types (mineral and peat soils). The target is that each paddock receives a soil application during the first three years to drive improvement in soil pH levels and subsequently P and K indexes and grass production.

Challenge criteria

- Soil sampling all farms in year one.
- N and P programme is being filled out by each farmer.
- 70% index Index 3 in year four.
- pH target 6.1 in year four.
- Peat soils target 5.7 in year four.

The green farming challenge

The challenge

Demonstrate practical ways of incorporating clover into 20% of the farm's grassland swards and disseminate best-practice advice on how to manage swards to ensure high establishment rates and grazing practices to avoid issues such as bloat.

Challenge criteria

- Minimum of 20% clover incorporated in swards.
- 50% clover incorporated in year one into 10% of grassland.
- 50% clover incorporated in year two

CASE STUDY Tomas O'Leary, Readrinagh, Killarney, Co Kerry



Tomas O'Leary farms just under 45 adjusted hectares of land in two blocks, 26km apart.

Planning for profit on drystock farms

Michael Gottstein, Head of Sheep KT programme, Teagasc Animal and Grassland Research and Innovation Programme.

Maximising profit and return for labour and capital invested is just as important on drystock farms as it is in any other business. As part of the Teagasc BETTER Sheep programme, participants set themselves a financial target which they hope to achieve at a defined point in the future. Once a financial target has been set, a plan is formulated to map out how this target is going to be achieved, taking into account all enterprises on the farm.

Tomas O'Leary farms just under 45 adjusted hectares of land in two

blocks, 26km apart. The farm traditionally operated as a mixed sheep and cattle farm with approximately 150 midseason lambing ewes and 35 suckler cows taking all progeny to beef. In common with many drystock farms, the gross margin for the whole farm was hovering around €500/ha resulting in the farm profit often coming exclusively from subsidy payments.

Under the BETTER programme, the target set for this farm was to achieve a gross margin of more than €1,000/ha. From examining financial performance for a number of years before Tomas joined the programme, it became clear that while the sheep enterprise had the potential to exceed a gross margin of €1,000/ha, the autumn-calving suckler system was

not going to achieve this level of profitability. Consequently, it was decided to change the beef system to a trading system.

While it is relatively easy to set a target, it is important that that target is achievable and realistic. A detailed plan was drawn up to provide clear guidelines; tasks to be completed annually and performance targets to be achieved.

The following is the farm plan which was put in place for the O'Leary farm to provide a roadmap towards achieving a gross margin (excluding premia) of over €1,000/ha.

When fixed costs and subsidy payments are accounted for, this should result in the farm producing a net margin of approximately €45,000 per year or €1,000/ha.

Farm plan

Enterprise plan

Research has shown that the ideal ratio on mixed farms is a 60:40 split. On the O'Leary farm, the split is in favour of the sheep flock, with 60% of the area (27ha) allocated to the sheep enterprise. The planned increase in area (from 16ha to 27ha), coupled with an increase in stocking rate (from 10 ewes/ha to 12 ewe/ha) has seen ewe numbers increase from 150 to 320 over the last five years. The cattle enterprise is allocated 18ha with a target stocking rate of 2.5LU/ha.

Grassland plan

Key to profitability is achieving high levels of grass growth enabling a high stocking rate. Equally important is the production of sufficient grass at the shoulders of the year to allow for early turnout and extended grazing in the autumn. The grassland plan has a number of aspects:

- **Soil fertility:** the entire farm was soil sampled and soil pH was corrected by spreading lime. Once the soil pH had been corrected, the farm was resampled and a nutrient management plan was put in place to maintain soil pH and to bring soil P and K levels to the target of Index 3.
- **Field divisions:** the number of field divisions has been increased three fold. This allows for shorter residency periods (target three to five days per grazing division) protecting regrowths and allowing for better grazing management and animal performance.
- **Measuring grass growth:** grass growth is measured on a weekly basis and the findings inputted on to the PastureBase programme. This information is then used by Tomas to make decisions as to when ground needs to be closed up for silage; when surpluses need to be taken out as round bales; when fertiliser needs to be applied and to identify fields that need to be reseeded. .



Key to profitability is achieving high levels of grass growth enabling a high stocking rate.



The current breeding programme uses high-index Belclare and Suffolk rams where Belclare-sired ewes are mated with Suffolk rams and Suffolk-sired ewes are mated with Belclare rams.

Breeding plan (sheep)

Central to improving profitability on sheep farms is driving output by increasing litter size. Traditionally, the litter size on the O'Leary farm was in the region of 1.5 lambs weaned per ewe to the ram.

Over a number of years, this figure has increased to close to two lambs weaned per mature ewe joined and 1.5 lambs weaned per ewe lamb mated by using Belclare genetics and by delaying lambing until the start of March to coincide with grass growth and the natural breeding season for Belclare X sheep.

The current breeding programme uses high-index Belclare and Suffolk rams in a reciprocal cross where Belclare-sired ewes are mated with Suffolk rams and Suffolk-sired ewes are mated with Belclare rams. Ewe lambs are mated with Charollais rams.

Cattle trading plan

After dispersing his suckler herd, Tomas purchased weanling heifers (approximately 350kg) with a view to finishing these off grass the following summer/autumn. While the initial heifers purchased did very well, the replacement cost of these heifers and potential beef price did not indicate that this system had the potential to yield the target gross margin.

In conjunction with his Teagasc advisor, BETTER farm coordinator and drystock specialists, the farm plan was reviewed.

Currently, the plan is focused on purchasing yearling Friesian bulls (450kg) in late summer annually and finishing these at grass the following year at approximately 700kg liveweight.

This year's bullocks have done very well, having gained in excess of 0.9kg liveweight per head per day indoors over the winter on 65% DMD silage and 1.5kg of concentrate per head per day until 1 February.

Health plan

A flock/herd health plan was drawn up to give clear guidelines in terms of disease prevention, parasite control programmes for both cattle and sheep and a biosecurity protocol for bought-in animals.

Winter nutrition

Every year, silage samples are analysed to assess the quality of the silage. There is a constant push to improve the quality of silage available so as to reduce the reliance on expensive concentrate feed. Last year, Tomas made some silage that was 76% DMD, which was fed to the ewes in late pregnancy.

Summary

Farmers are busy people, often too busy to plan and reflect on how the enterprise is performing. But planning is the key to success. Setting targets without having a written plan with clear guidelines and achievable targets will result in failure. Work out how much money you made last year. Your tax accounts will show you this. Did you keep all of your subsidy payments? Did you retain all subsidies plus the same amount from your farming operation? That should be the target for most drystock systems.

The only way that output and financial performance can be increased is by sitting down and analysing past performance so that you can see where improvements can be made. Then it's about drawing up a plan that sets out clear targets in terms of your:

- Enterprise/farming system plan.
- Grassland plan.
- Breeding plan.
- Flock/herd health plan.
- Nutrition plan.
- Financial target.

Your local Teagasc advisor can help you to complete a plan for your farm.

organics

Gathering the pieces of the organic jigsaw

Although there is no indication of when the Organic Farming Scheme (OFS) will reopen, prospective organic operators need to be planning now if they are considering making the switch

“Give me six hours to chop down a tree and I will spend the first four sharpening the axe” – Abraham Lincoln

Dan Clavin
Teagasc Organic Specialist, Athenry,
Teagasc Rural Economy
Development Programme

This quote describes very well the mindset and planning required by you if you want to successfully convert to organic farming.

This starts with your attitude – you should be convinced that the new system is better than the old one. Are you aware of the changes in production methods, organic regulations and

KEY FACTS

- Area of land farmed in Ireland: 62,000ha, with approximately 95% in grassland.
- Utilisable agricultural area in organic production (UAA): Ireland 2% v Europe approximately 6%.
- Some 1,800 organic farmers in Ireland (approximately 70% are cattle farmers) including 600 who converted in 2015.
- Organic market in Ireland: €142m (2016), up from €107m (2012). Ireland has the second fastest-growing organic market globally (2016).
- EU organic market is worth €30bn (2015), up from €24bn in 2014. The EU market has doubled in size over the last 10 years.

the financial implications of converting to organic farming? In organics, there are few “quick-fix” solutions, so prospective organic farmers should gather as much information as possible prior to entering conversion.

What is organic farming?

“Organic farming is an overall system of farm management and food production that combines best environmental practice, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and products.”

Steps to successful conversion

Large numbers of farmers continue to attend Teagasc and Department of Agriculture, Food and the Marine (DAFM) demonstration farm walks. These walks offer an excellent chance to learn, at first hand, the practicalities of organic farming. Many farmers consider themselves to be “almost organic” i.e. using little or no artificial fertilisers.

The reality is that there is no such production system as “almost organic”. However if you spread little or no fertiliser, the transition to organic farming systems is made a little easier – but no artificial fertiliser inputs is only one of the components required to satisfy organic standards.

Consider

1 If you can answer “yes” to some or all of these questions, then you should consider switching to organic production.



Animals

- Is your current stocking rate below two livestock units per hectare?
- Can your animal housing be modified to incorporate a bedded lying area?
- Are you interested in maintaining a very high standard of animal welfare?

Cereals/horticulture

- Can you incorporate a grass/clover break into your rotation?
- Do you have a source of farmyard manure/slurry/compost on or near your own farm?
- Are you interested in achieving gross margins of €1,000/ha for cereal production?

Investigate

2 Get acquainted with the adjustments required by attending farm walk(s), talking to other organic farmers and or contacting a local advisor.

Familiarise yourself with the



Gross margins of €1,000/ha (excluding the organic scheme) are achievable from growing organic cereals.

organic standards. A major factor distinguishing organic farming from other approaches to sustainable farming is the existence of internationally acknowledged standards and certification procedures. These standards have been developed to provide organic producers with consistent, clear rules as to how organic food should be produced. A two-year conversion period is required before a farm is given organic status.

Some of the main requirements are listed below.

Fertilisers and chemicals

- Soluble mineral fertilisers are prohibited, but products such as lime and ground rock phosphate and sulphate of potash are permitted.
- Clover and other legumes supply nitrogen. The balance between fertility building crops, such as a grass/clover ley and exploitative crops such as cereals and potatoes is critical in a tillage rotation.
- Most manufactured agro-chemicals (e.g. chemical herbicides, pesticides, insecticides) are prohibited. Pests,

diseases and weeds are controlled by planting disease resistant varieties, mechanical weeding and false/stale seedbed techniques.

Animal welfare

- The highest standards of animal welfare are obligatory. Bedding, good ventilation and generous floor space are required for housed animals.
- Castration, debudding and tail docking require prior permission from the Organic Certification Body (OCB).
- Routine administration of veterinary treatments to animals is not allowed, with the emphasis on prevention rather than cure. Withdrawal periods for permitted veterinary products may need to be doubled or tripled prior to the animal entering the food chain.

Explore market opportunities

- For organic farming to be profitable, a premium price must be achieved for the produce you sell.
- Beef and sheep farmers interested in organic conversion should speak with other organic farmers and

processors about potential markets for store and/or finished animals. Up to 20 mart days, selling exclusively organic stock, now run nationwide.

- Strong market demand and lack of supply exists in a number of sectors including tillage, horticulture and dairying.

Organic certification

3 The Organic Certification Bodies (OCBs) provide an inspection and certification service for all organic production units in Ireland. They have been designated and are regulated by the Organic Unit of DAFM and are responsible for upholding the organic standards as defined by the EU.

The OCB will send you an information pack on request. The pack is tailored to your needs and will generally contain information on the application and conversion process, an application form and a guide to the organic standards.

If you decide to apply, a representative from the OCB will carry out an



Continued on next page

Pat Joyce and Charlie Devaney.



Why a SMART plan is best

This Roscommon farm family is following an ambitious plan with timelines and clear goals

Charlie Devaney
Teagasc advisor, Castlerea

All successful businesses set SMART goals: Specific, Measurable, Achievable, Realistic and with a Timeframe. Pat and Eileen Joyce, who run a suckler farm on the Roscommon/Galway border between Castlerea and Williamstown, have done just that and are following a simple plan with four clear targets in phase two to be fully implemented over five years with the gross margin target of €1,000/ha to be achieved by 2021.

The couple had been living in Dublin and decided to move home in 2006, so that they could rear their family in the country and help Pat's uncle, Paddy O'Connor, with his farm.

Almost immediately, Pat started an agricultural contracting business, to generate a second income stream,

which proved of great benefit when he started farming in his own right. "In 2009, I took over the farm which was in dry stock, at a relatively low stocking rate. This meant that the farm's entitlements were modest," says Pat.

Rather than waiting for the government to do something about his low value entitlements Pat set about improving his own situation. He decided on a two-phase approach.

Under the first phase, he would:

- Reseed the farm.
- Build a slatted shed.

Then, under a second phase, he would push up the output by:

- Maximising grass growth.
- Producing top quality silage.
- Keeping a tight calving interval/calving pattern.
- Breeding good quality stock.

Phase one

The first phase of the plan is now completed. Pat has reseeded over 80% of the farm (this is the target he had set) and he has built a four-bay slatted shed under TAMS II.

Phase two

The second phase of the plan has started over the last 12 months.

• Pat started measuring grass last year and joined a grass group. He is very lucky in that 95% of the farm is very dry which gives him great scope when farming during the shoulders of the year. The fields are mainly rectangular, which means they are easily divided into paddocks.

"Our stocking rate at 1.2LU/ha is far too low," says Pat. He plans to double his stocking rate over the next two years. "My aim is to have 30 suckler cows, sell half of the progeny as weanlings and half as stores at 18 months of age."

• Pat is determined to cut silage before the end of May and to take out paddocks if they get too strong for grazing: "Our silage in 2016 was 71 DMD and I hope to improve on that in 2017."

• Pat's calving interval is 371 days and his calves/cow ratio is 1.07. "My goal is to keep the calving interval short and to maintain the calves/cow figures for the next five years," says Pat. • Pat intends to produce really good quality cattle: "I will buy all replacements from local farmers and farmers in my local beef group. "My bull has a terminal value of €167, which should go a long way to producing the quality stock I want."

drystock

Scale is no barrier to top performance

Attention to detail in breeding and grass production strategies are the hallmark of this Clare farmer

Conor O'Reilly
Teagasc, Scariff

Michael Baker, Newtown, O'Callaghan's Mills, Co Clare, is a full-time suckler-to-weanling farmer, running 22 spring- and autumn-calving suckler cows. All of the cows receive AI. Michael took over the farm from his father, also Michael, in 2013 and is farming 28.5ha of grassland.

Enthusiastic to optimise the poten-



tial of the farm, Michael is an active member of the Brian Boru KT beef discussion group. He points out how important these meetings are, and how learning from each other in the group is one of the best ways of picking up fresh knowledge.

"I particularly like discussing breeding strategies," says Michael. "So three years ago when the opportunity to complete a do-it-yourself AI course came up, I took part." Since then, he has been getting some very good results with five-star AI sires. "I am delighted with having completed the course as I can buy, store and use straws myself to match each cow with the appropriate bull."

Michael's heifers and younger replacement stock have excellent replacement figures, as a result of using high replacement value AI sires on their dams. This puts him in a very good position to comply with the Beef Data Genomic Programme for 2018 and 2020. His calving figures on ICBF are very good too: a calving interval of 370-day, 0.95 calves/cow/year and a good calving spread in spring and autumn.

The benefits of AI

"The herd size is small and using AI means I can avoid the purchase cost and annual maintenance of a stock bull," says Michael. "DIY AI gives me access to a range of proven genetically superior bulls of different breeds which produce faster-growing calves. It allows me to mate cows and heifers to selected sires for particular replacement or terminal traits."

AI enables Michael to produce quality replacement heifers which will reach puberty earlier, have good calving ability, good fertility and calve within 365 days. They also possess good mothering ability and have milk to produce a 300kg plus calf at seven to eight months. They have good growth potential, good conformation and remain in the herd

KEY FACTS

Herds using natural service should be aware that 5% of bulls can be infertile while up to 25% can be sub fertile during the breeding season.

Ongoing vigilance for mating ability and fertility is recommended, particularly for young bulls.

for six to seven lactations. "Using AI also means we don't have the hazard of having a bull on the farm and the risk of bull infertility is eliminated."

Importance of heat detection

Michael is committed to heat detection and during the breeding season he walks through the cows twice to three times a day, mainly morning and evening.

In recent years, Michael has put his fields in paddocks and this has allowed him to easily move cows and their calves into the newly built slatted shed, which was grant-aided under TAMS II. "It's very important to be able to get cows who are on-heat



HEAT DETECTION

Conor O'Reilly, Padraic Mulconroy a 3rd year agriculture student at Tralee IT and Michael Baker.

In Ireland, currently less than 25% of calves born to beef cows are sired by an AI bull.

If using AI, heat detection efficiency is a critical component in achieving success. Fertility is highest at 12 to 18 hours after heat onset but is not greatly reduced by earlier insemination. However, late insemination, at 24 hours or later, after onset of standing heat, should be avoided.

About 10% of the reasons for failure to detect heat are due to cow problems and 90% to management.

Management problems include too few observations per day, too little time spent observing the cows or observing the cows at the wrong times, or in the wrong place, such as at feeding time.

Check

Careful checking for heat in the early morning and late in the evening minimise the night interval and results in detection of at least 70% of cows in heat.

Three further checks during the day, at four- to five-hour intervals, are needed to detect 90% of the cows in heat.

A vasectomised bull with chin-ball marking harness can help to identify cows that are in heat and increase the success of the service.

to the farmyard without too much trouble," says Michael.

"I'll use a temporary electric fence to funnel cows towards the gate and roadway, which allows me to separate an individual cow from the herd for AI. The livestock handling facilities in the new slatted shed help a lot when carrying out AI," says Michael. "It means I can get the job done quickly and easily."

Michael is planning to use more terminal AI sires to improve the beef traits and weight-for-age in his weanlings sold and he is confident that this will have no adverse effect on the replacement values of his cows and heifers.

Michael noted that some of his cattle sold in the mart went on to be

exported and some were killed as 16-month-old bull beef and he admits that he would not have thought that when selling them. It shows that by using AI, he is producing stock that might have the potential to be finished on grass on the farm.

Grassland management

By setting up a paddock system, Michael has been able to focus on his grassland management. He started measuring grass using a grass plate meter and taking grass measurements and inputting them to the PastureBase Ireland database. This allows Michael to see what grass covers are on a weekly basis and how many days ahead grazing are available to the herd.

"Using the plate meter and a recent full farm soil analysis shows up the production potential of each field and helps identify which fields need to be reseeded and what fields need extra P&K fertiliser," says Michael. "It also identifies which fields need to be taken out of the rotation when grass supply exceeds herd demand during the summer months and can be cut for silage."

Though he has no intention of becoming a dairy farmer, Michael has occasionally attended dairy events to see, for example, how milk producers manage grass.

"You can always learn from good farmers whether they are beef or milk producers," concludes Michael.

tillage

Septoria: timing and resistance

Marianne Mulhall
Teagasc tillage advisor, Kilkenny
Ciaran Collins
Tillage specialist, Teagasc Crops,
Environment and Land Use Programme

Controlling septoria is a growing problem due to the falling efficacy of triazoles (Opus, Proline, etc). The worry is that this will lead to a decline of SDHIs, which now provide over two thirds of the control against one third from with triazoles. Chlorothalonil (Bravo) should be long since pensioned off but it continues to play a useful role.

“Rotation, wheat variety, product choice and timing of application are all part of the equation for us,” says Stuart Graham, who farms 118ha of tillage crops in Holdenstown, Dunbell, Co Kilkenny. “Our rotation is made up of winter wheat (feed), winter barley (feed), winter oilseed rape, spring oats and spring barley (malting/seed).

“The straw from the winter wheat, spring oats and the oilseed rape is generally chopped and incorporated. Ploughing is sometimes carried out where grass weeds such as sterile brome are problematic and also if there are some compaction issues.”

Stuart uses a min-till system for sowing his crops, which includes a 3m Vaderstad combination drill, along with a Simba X-Press cultivator with

ST bar on front. The ST bar transforms the machine into a one-pass cultivator, which can restructure the soil, taking out compaction down to a depth of 25cm.

“The winter wheat is Lilli, which was sown the last week in September 2016 at 141 kg/ha,” says Stuart. “Lilli scores well on straw strength, lodging and on mildew resistance, but it is moderately susceptible to septoria and other diseases.”

Stuart is careful to “vary the active ingredients at each timing, in order to get the best results from the chemicals being used and to prevent resistance”. He checks the growth stages of the crop himself along with the help of his Teagasc crop advisor.

According to Stuart, “this allows us to get the best return from our spray programme.” He applies Bravo @ 1 l/ha at GS 30. This means he uses a four-spray programme for his winter wheat. “The T0 application of Bravo, along with CCC, is applied early. This gives me peace of mind that if there is some disease activity on the wheat then the Bravo will have some effect. It also helps with the following timing of the T1 and it acts as an insurance policy in case the weather delays the next spray.”

The T1 spray was Bravo @ 1 l/ha mixed with a Triazole and SDHI mix when the third last leaf was fully emerged. The T2 spray will be applied when the flag leaf is fully emerged



and this will be Bravo @ 1 l/ha mixed with Triazole and SDHI (80% to 100% rate), i.e. Adexar, Aviator, Librax and the last spray at flowering stage will be a Triazole (80% to 100% rate), i.e. Gleam/Prosaro.

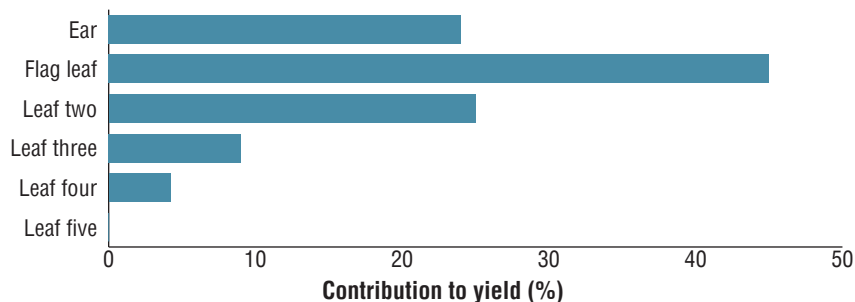
“Septoria control is not getting any easier,” says Stuart Graham. “But we can still manage it provided we don’t lose any of the tools we still have.”

Getting the timings right

All crops have had a lot of septoria on the lower leaves since early in the season. This is a source of inoculum for most infection later in the season. For yield development, we are only concerned about the top three leaves because that’s where 80% of the yield comes from.

Leaf emergence is primarily driven by temperature. Wheat leaves are produced roughly every 120 degree days so if you get an average daily temperature of 10°C a new leaf will be produced every 12 days. Septoria is also driven by temperature but it has a long latent period of about 400 degree days but this can vary depend-

80% of wheat yield comes from top three leaves



Source: HGCA wheat disease management guide January 2014



Stuart Graham and Marianne Mulhall.

HOW TO MINIMISE RESISTANCE

While resistance is inevitable, there are measures that we can put in place to slow its pace and to help extend the effectiveness of our current fungicides.

- Only apply fungicides in mixtures with additional effective modes of action. For example, using a multisite such as chlorothalonil, a triazole and an SDHI.
- Use the lowest dose required to achieve effective disease control.
- Limit the number of applications of individual modes of action within a programme.

WHAT SHOULD A FUNGICIDE PROGRAMME LOOK LIKE?

Leaf three spray (T1)

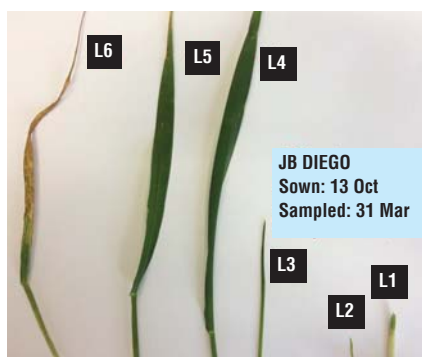
- Yield response: (2012-2014 Teagasc experiments show 0.5t/ha response when included in a full programme).
- Timing: apply on to final leaf three fully emerged.
- Recommendations: 1.0l/ha chlorothalonil plus 80% to 100% (SDHI + triazole).
- Notes: assess for eyespot and mildew also at this timing.

Flag leaf spray (T2)

- Yield response: (2012-2014 Teagasc experiments 1.7t/ha).
- Timing: apply on to flag leaf fully emerged (~ GS 39).
- Recommendations: 1.0l/ha chlorothalonil plus 80% to 100% (SDHI + triazole mix).
- This is consistently the best-paying spray in winter wheat trials.

Flowering spray (T3)

- Yield response: (2012-2014 Teagasc experiments 0.5t/ha).
- Timing: apply at the start of flowering.
- Recommendations: fusarium and septoria active triazole.
- The yield response can be low in low disease pressure years.



ing on variety and temperature.

A plant can produce three leaves in the time that it takes septoria to develop within a leaf. This is why leaf emergence is the best guide for spray timings. Growth stage is not a good guide as leaf three normally emerges somewhere around GS 31 to GS 32. This can vary between seasons, sowing dates and varieties. "It's important to dissect a number of plants in the field to be sure you are spraying the correct leaf," says Stuart Graham.

Target a fully emerged leaf three for the first main timing and fully emerged flag leaf for T2. If you apply a fungicide before the leaf is fully emerged, part of the leaf is unsprayed which will result in poor control due to the inability of fungicides to move back the leaf.

Applying a fungicide too late (leaf fully emerged for five to 10 days) means the disease may have already established and poor control can be expected. We now expect little curative properties from fungicides due to the changes in septoria populations. Regard fungicides as "protectant fungicides". We do not target leaf two because part of it will be sprayed with the T1 and the remaining unsprayed section will be sprayed at the T2 timing.

The final spray (T3) can be used to top up septoria control especially in high-disease pressure seasons and on susceptible varieties. This should be targeted at mid-flowering, which will help protect developing grains from fusarium but this timing often gives a poor response especially in low disease pressure years.

Precision ag systems: worth the money?

Dermot Forristal
Teagasc Crops, Environment and Land Use Programme, Oak Park

There is likely to be a lot of interest in buying guidance and auto-steer systems once the TAMS grants are announced. Like any other input, there are costs and benefits and while these may not be simple to calculate, estimates must be made before a decision is made.

Costs

- Depreciation of the equipment.
- Interest paid.
- Maintenance including down-time costs and back-up systems.
- Other costs such as training, annual licence for correction signals, time input.

Benefits

- Input savings (herbicides, fungicides and fertilisers).
- Machinery cost savings – due to fewer overlaps.
- Time saving (on marking out bout widths on ploughed fields, for example).
- Reduced operator fatigue and mistakes.
- Management knowledge gained and yield optimised through more accurately applied inputs.

Simple cost estimates

Four guidance systems for use on tillage farms are costed in Table 1.

Annual costs over a five- to eight-year period were calculated and presented as “annual costs per hectare” over four different grower areas with and without a 40% grant (TAMS) assumption.



Table 1: Cost estimates

	Simple Guidance	Autosteer (6cm)	Sprayer Section control	Autosteer RTK (2cm)
Cap. cost (€)	2,000	9,000	3,000	25,000
Area (ha)	Annual cost €/ha (grant)			
50	11 (8)	45 (34)	10 (6)	116 (65)
100	6 (4)	23 (17)	5 (3)	58 (33)
200	3 (2)	11 (9)	3 (2)	29 (16)
500	1 (0.8)	5 (3)	1 (1)	12 (7)

These are only examples; the costs can be machine specific. Adding section control to a sprayer, for example, could cost from less than €1,000 to €8,000 depending on the sprayer controls and the GPS guidance system being used.

Whether the use of these units will add to profit, depends on what benefit they can bring and those potential benefits will vary depending on factors such as:

- Equipment being used: e.g. a trailed wide boom sprayer will benefit more from section control than a mounted 12m.

- Skill and practices of the operator: a good operator with good work practices may benefit less from using these technologies than a less careful driver.

- Field shapes and size, etc: irregular smaller fields in combination with large equipment and a less skilled operator may benefit more than where fields are regular and machine runs are long.

- Setting up guidance equipment: while the operator's task can be eased, guidance systems and particularly section controls, need to be set up properly.

CASE STUDY Basic autosteer with sprayer section control

Benefits

Depend on field size; assume 300m runs (4ha to 10ha field):

- Correcting 3m error at headland: 2% chemical saving.
- Reducing losses on four short runs: 0.5% chemical saving.
- Accurate tramline placement 24 v 23m: 4% chemical saving.
- Total: 6.5% chemical saving.

- Value: winter wheat: €16/ha; spring barley: €8.75/ha.

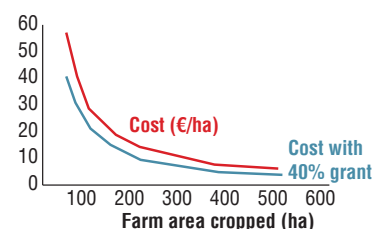
Breakeven area

Based on fungicide and herbicide savings only:

- WW: 128ha with grant; 172ha without grant.
- SB: 230ha with grant; 315ha without grant.

Cost example

Autosteer and section control



Before we see
infection, this is
what's happening
inside your cereal leaf

Designed to control
all major cereal diseases
and to deliver consistently
higher yields.

ELATUS™ ERA
POWERFUL, CONSISTENT, COMPLETE

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®

Working towards sustainability

Andy Boland

Teagasc Crops, Environment and Land Use Programme

Increasingly, international buyers will only pay a premium price for products which can be demonstrated to be verifiably sustainable. This report from the recent Teagasc environment conference shows that researchers are finding new techniques to verify that our farm output is environmentally sustainable.

Habitats

According to researcher Dr John Finn of Teagasc Johnstown Castle, many sustainability assessments struggle to include and implement assessments of farmland biodiversity. This is despite farmland habitats (e.g. hedgerows, ponds, woodlands and species-rich grasslands) being quite common on Irish farmland and biodiversity being an important pillar of environmental sustainability.

In addition, many Irish agri-food companies are seeking environmental accreditation by benchmarking against internationally recognized standards, e.g. the Sustainability Assessment Initiative (SAI) platform.

A common requirement of environmental accreditation standards that include biodiversity is the provision of a farm habitat map. Traditionally, habitat surveys involve visits to individual farms, which is expensive and time-consuming. Teagasc has been working closely with Bord Bia on a pilot project to develop cost-effective and scalable methods to efficiently map farm habitats.

Farmers were invited to participate in the project, with a total of 187 dairy, beef and arable farms agreeing to an ecological survey of their farmland. Three separate methods of habitat identification were conducted and compared: orthophotography, orthophotography coupled with farm-level photos and an on-the-ground habitat survey.

Aerial photography is an excellent starting point for identifying semi-natural wildlife habitats (Figure 1). A habitat map was produced that is the starting point for a farm wildlife plan, e.g. as required by SAI platform (Figure 2).

“Once a habitat map is generated,

we can develop a short customised farm habitat plan that can satisfy the requirements of sustainability assessment criteria, e.g. the SAI platform,” says John Finn. “The farm habitat plan contains a habitat map for a farm, the area of each habitat type on the farm, general information on the wildlife benefits and important management practices of the habitats that occur on an individual farm as well as photos of the habitats that occur on the farm.”

Water

Dr Jenny Deakin, a catchment scientist with the Catchments Unit in the Environment Protection Agency, told the conference that national water quality monitoring data shows that 45% of rivers, 54% of lakes, 68% of estuaries, 24% of coastal waters and 8% of groundwaters that were monitored had unsatisfactory water quality in the most recent period from 2013 to 2015 (DHPCLG, 2017).

When all water bodies, including those that are not monitored, are included, the data show that approximately one third of water bodies are at risk of not achieving their Water Framework Directive objectives. This equates to 1,360 river and lake water bodies.

“The key issue in freshwaters is excess phosphorus leading to eutrophication of our waterways, although there are also excess sediment issues arising in places.

“An intensive assessment process conducted by the EPA with support from RPS consultants, local authorities and Inland Fisheries Ireland, has

““ The farm habitat plan contains information on wildlife benefits and important management practices of the habitats

shown that agriculture is a significant pressure in approximately 60% of impacted rivers and lakes,” said Jenny Deakin.

“The next greatest impact is caused by urban discharge, hydromorphology (pressures causing impacts on



the physical integrity of the aquatic habitat), forestry, peat-cutting and domestic wastewater.

“The next step is to conduct a series of investigative assessments or stream walks, to narrow down precisely where and what the problems are in the catchment areas of each water body that is at risk, with the specific aim of figuring out how best to address them.”

Resources are being sought from the Department (DHPCLG) to enable this to be carried out. Community and stakeholder engagement will also play an important role in the process which is being facilitated by the new Waters and Communities Office (<http://watersandcommunities.ie>). The philosophy is that to see water quality improvements we need to invest in identifying and implementing “the right measure in the right place”, and to support local communities in playing an active role in protecting their water resources.



Recent research shows that the form of fertiliser used on farms has the potential to decrease greenhouse gas emissions without reduction of the fertiliser rates which underpin productivity.

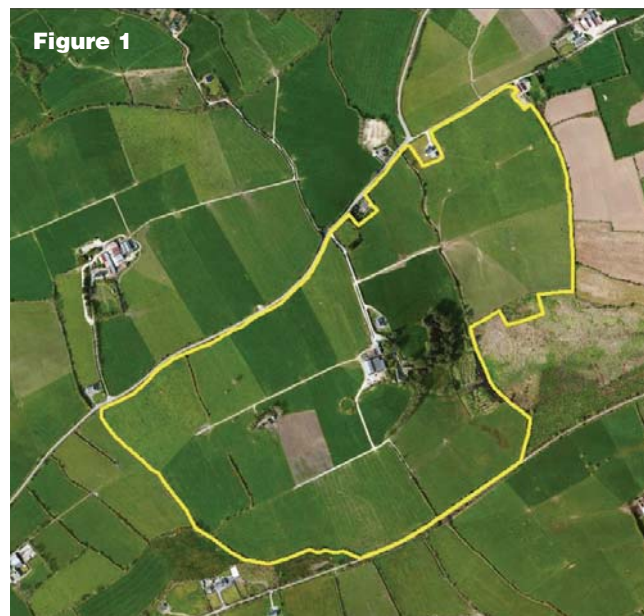


Figure 1

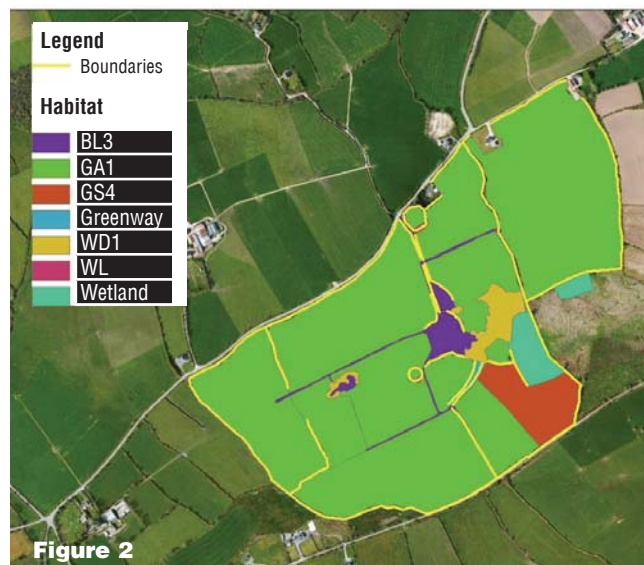


Figure 2

Fertiliser

Recent research led by Dr Patrick Forrester at Teagasc Johnstown Castle shows that the form of nitrogen fertiliser used on farms has the potential to decrease greenhouse gas emissions without reduction of the fertiliser rates which underpin productivity. The type of nitrogen used, as well as the quantity, is therefore a key metric in sustainability.

In Patrick Forrester's work, un-protected urea had a lower recovery efficiency compared with CAN and protected urea had the highest N recovery efficiency. At lower N application rates (<40kg/ha/application) differences were non-significant, but as the N rates increased the efficiency gap between urea and the other two products widened. The practical implication of this is that protected urea is consistently as efficient as CAN, and urea is less efficient during the summer or at higher N rates, e.g. silage.

When applied throughout the year CAN, urea, and urea protected with the urease inhibitor NBPT gave comparable annual grass dry matter yields. On average, urea was a little better yielding than CAN for spring with 103.5% of the yield of CAN. In contrast, summer-applied urea was a little poorer yielding than CAN with 98.9% of the yield of CAN.

These results are as important for the environment as they are for production costs. When N fertiliser is applied to soil, a portion of this N is lost as the very potent greenhouse gas (GHG) nitrous oxide. Nitrous oxide is approximately 300 times as damaging as CO₂ emitted from your car and 12 times more damaging than the methane emitted by dairy cows. Ireland has committed to reducing national greenhouse emissions and the agriculture sector, which is growing, accounts for one third of these emissions.

Recent research has shown that of

the three fertiliser N options, CAN has the highest and most variable GHG loss in Irish grassland conditions. In comparison, the urea-based options reduce losses of the potent GHG by approximately 70%.

Ireland has committed to reduce ammonia gas emissions by 5% by 2030. This is a significant challenge for a growing agricultural sector which produces 98% of national ammonia emissions. Urea protected with NBPT has been shown to cut ammonia loss by 79% on average compared with untreated urea under Irish conditions. The result is that ammonia loss from protected urea was not significantly different to CAN which has minimal ammonia gas loss. Each fertiliser N option has strengths. However, based on research in Irish grassland conditions, across three contrasting soils and two years, protected urea fertiliser (urea plus NBPT) is a promising option for an agriculture industry seeking to grow sustainably.

forestry

Valuing the family forest

Moving on from valuing premiums to valuing your forest crop

Frances McHugh
Forestry Development Officer,
Teagasc Crops, Environment and
Land Use Programme

Forty-six percent of the forest estate in Ireland, 336,000ha, is in private hands. These forests are owned by almost 20,000 individuals and families (84% are farm families), many having planted on more than one occasion.

While this private forest estate is generally very young; with almost all forests less than 30 years of age; much of it has reached timber production. This could be as first thinnings or where trees are rapidly approaching final harvest. The National Forest Inventory (NFI 2012) found that over 70% of grant-aided forest was over 11 years of age, with more than 16% over 20 years of age.

Many forest owners are therefore moving from a stage where having a forest means an annual premium payment to the point where there is a tangible timber crop with valuable harvests in sight.

For those who have only taken a passing interest in their forest, the end of premium payments seems to be a very challenging point and yet it is the point at which forestry investors become most interested in privately owned crops. In many productive conifer crops, final harvest can occur within 10 to 15 years of the final premium payment (at 20 years).

So what is your forest worth? There

are several tools or sources of support available to private forest owners to quantify the potential value of their forest. These are certainly worth considering before any decision is made to harvest or sell a forest crop:

1. Employ a qualified forester to assess your forest.
2. Join a forest owner group and learn with fellow forest owners about marketing/measuring/valuing timber crops.
3. Talk to your local Teagasc Forestry development Officer/attend a Teagasc timber measurement course.
4. Use existing tools to calculate indicative forest values and timing of harvesting.

- Teagasc FIVE programme (available in consultation with Teagasc forestry development officers).

FIVE is a decision-support tool for forestry advisors, using discounted cashflow to model indicative financial returns for a potential forestry land-use option.

Figure 1 presents an example of an indicative FIVE cashflow analysis for 8ha of fully stocked productive crop of Sitka spruce under normal management. Yield class is how forest productivity is measured. Thus, a yield class 24 forest has the potential to increase its volume by 24m³ per hectare each year over its lifetime, which in this example is assumed to be 33 years.

The annual equivalent value (AEV) is an indication of the annualised value of timber crop per hectare in today's money; in this case it's €543/ha. Within a single tree species, the AEV figure will vary according to a range of factors including growth rate, rotation length and management history among others.



- The Forest Service's new felling decision tool <https://www.agriculture.gov.ie/forests-service/> This is an online tool hosted by the Forest Service webpage which estimates yield class and timber revenues for the main conifer species based on assumptions regarding growth models, access, harvestability, timber quality, product recovery, timber price information and stocking.

Taking control

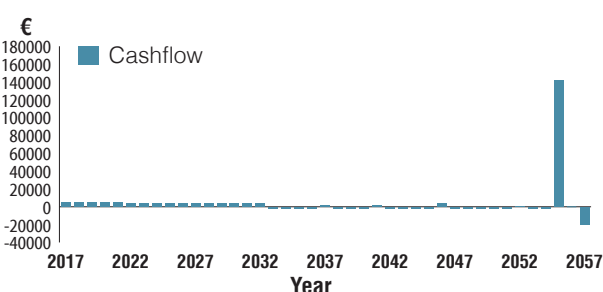
Carlow man Martin Flynn took on the management of a 30ha forest from his late father. Planted in 1993, this mainly Sitka spruce forest has already been thinned twice and is now undergoing a third thinning. Coming

Estimated cashflows for 8ha Sitka spruce

- YC: 24.
- Balance: €203,000.
- Rotation: 33 years.
- AEV/ha: €543.

Figure 1

Estimated cashflow



VALUE TO ECONOMY

The private forest estate is vital to the forest sector in Ireland, which has an estimated overall value to the economy of €2.3bn of which the net contribution to gross domestic product from growing and harvesting is estimated at €137m (DAFM, 2014).

TIMBER 2017

Teagasc's Forestry Development Department is delighted to be in attendance at Timber 2017, the Irish Forestry, Woodland & Bio Energy Show on Friday and Saturday, 5 and 6 May in Stradbally Hall Estate, Co Laois.

Teagasc will have its own marquee and demonstration area highlighting its extensive advisory, research and training services.

Forestry advisers, researchers and specialists will be available over the two days to answer your questions on how best to incorporate a forest into your farm and to provide on-the-spot advice regarding your existing forests.



Martin keeps an eye on stakewood being loaded at his woodland during third thinning.

from a background of tillage farming, Martin decided to approach the management of his forest as he would any other farm enterprise. He realised that if he was going to take an active role in its management he needed to gain the knowledge to do so.

Martin attended many forest walks, demonstrations and events. He also attended a timber measurement course run by local forestry development officers in Teagasc Portlaoise. He is an active member of the Laois forest owner group, a group initiated by Teagasc, which aims to allow forest owners increase their knowledge through peer-to-peer learning and also coordinate the marketing of their timber.

While Martin doesn't claim to be a qualified forester; forestry events and courses have given him the confidence to take ownership of his forest. This knowledge has allowed him to take basic measurements to estimate stocking rate, average tree diameter and timber stack measurement; each of which are essential in order to plan for thinning but also to monitor harvesting while it is taking place.

To many of us, 1993 does not seem long ago and yet Martin's forest will be due its final harvest within the next five to 10 years.

Martin is of the strong opinion that forest owners need to take an active approach to forest management. He urges farmers to look critically at land use on their farm. He sees forestry as an enterprise whose value goes far beyond the annual premiums. In fact, Martin began harvesting at year 17; three years before the premiums finished. His second thinning followed four years later in 2015.

Martin is on site during each harvest; monitoring progress, checking that the agreed thinning intensity is reached and that average tree size increases after each thinning, all which can be done with a simple measuring tape. For those seeking information regarding a future or existing forest enterprise, help is available. A good starting point is to contact your local Teagasc forestry development officer.



OTHER PRODUCTS FROM THE WOOD: Martin adjoining sycamore woodland has also been thinned. Although most of the thinnings were used as firewood there was a small exception. Martin was delighted to supply some sycamore to a local men's shed in Tullow, Co Carlow. The picture shows Martin being presented with the fruits of their labour; a beautiful turned lamp.

botanic gardens

The search for the Young Horticulturist Of the Year

Paul Fitters
lecturer at the Teagasc College,
National Botanic Gardens

The Chartered Institute of Horticulture runs the Young Horticulturist of the Year competition to encourage excellence among those starting out in a career in horticulture.

The competition is run in three phases: local heats that run in the horticultural colleges in both the UK and Ireland; regional finals (Ireland is one region of the CIH) and the grand final where regional winners battle it out to become the Young Horticulturist of the Year.

Each year, a list of 40 multiple choice questions for the local heats is created. Contestants complete the quiz at a set time in their respective colleges and the top eight contestants progress to the regional (Ireland) final.

The regional final on the other hand is more akin to a show, where the eight contestants sit in front of an audience and battle it out through 10 gruelling rounds of questions in various formats: buzzer rounds, plant identifications, directed questions, and even a pest and diseases identification round.

This is a step up from the multiple choice questions of the local heats and rather nerve racking.

Winner

This year, the winner of the Ireland (regional) final is Egle Zinkute, a fourth year student of the DCU/Teagasc, College of Amenity Horticulture course in the National Botanic Gardens. She will now go to Shrewsbury in Shropshire, UK, in May for the grand final.

The overall winner of the competition at the grand final will receive a £2,500 travel bursary from The Percy Thrower Trust, generously provided by the Shropshire Horticultural Society, to undertake a trip, anywhere in the world, to study a subject related to



The Irish Young Horticulturist of the Year 2017, Egle Zinkute, with (from left) Michal Slawski (Bord Bia), Paul Fitters (College of Amenity Horticulture) and Owen Doyle (president of the Chartered Institute of Horticulture).

A set of questions from the buzzer round of the regional final

Find the answers to the questions across the bottom of the page

- 1 Bhutan, Monterey and Scots are all common names for different species of which plant?
- 2 What is a polyphagous pest?
- 3 How many square metres are there in a hectare?
- 4 Name TWO common symptoms of nitrogen deficiency in plants.
- 5 What does the scientific name "Pyracantha" mean?
- 6 The size of young trees in a nursery is normally measured by what?
- 7 Chillington, Draw, Dutch and Trenching are all different types of which garden tool?
- 8 Name TWO major differences between top soil and sub-soil.
- 9 What growing conditions are required to grow Athyrrium, Brunnera and Epimedium?
- 10 The famous Keukenhof Gardens are in which European country?
- 11 What does a dendrologist study?
- 12 Moss growing in lawns is said to be encouraged by three conditions. Name TWO of them.
- 13 What type of storage organ does Zingiber officinalis grow from?
- 14 *Lysichiton americanus* is known as the skunk cabbage but where in a garden might you find it growing?

their chosen field of horticulture.

Finally, the local heats are open to all students of horticulture and young horticultural professionals working in the industry.

So if you are no longer in college,

still under 30 years of age, and are interested in participating, please contact a horticultural college near you next year and ask to be included. In Ireland, the quiz has been generously sponsored by Bord Bia.

ANSWERS: 1 Pinus (pine). 2 One which attacks a wide range of plants, eg slugs. 3 10,000m². 4 Smaller leaf size, older leaves are affected first, yellowing and reddening of older foliage, crop yields are reduced. 5 Pyra means fire. Carthia means thorn. Fire thorn. 6 By stem circumference at 1m above soil level. 7 Hoes. 8 Top soil is darker in colour and contains more organic matter/humus/living organisms. 9 Shady conditions. 10 The Netherlands. Open in spring with mainly bulbs. 11 Trees. 12 Acidic soil. Poor surface drainage. Overhead shade. 13 It grows from a rhizome that is used in cooking. It is stem ginger. 14 It is classified as a marginal aquatic that grows alongside streams and on the edges of ponds and lakes.

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