



Today's Farm

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

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COMMENT



Mark Moore
Editor,
Today's Farm

New technology for a very old trade

At the end of the article on equine marketing by Declan McArdle (pages 34 and 35), you will see a peculiar box which is called a QR code. By downloading some software onto your Smart phone you can scan this Quick Response code and be connected immediately to a video.

This video will expand on the information in the article. This is highly appropriate in a story where Declan is explaining how best to market your horses. The buying and selling of horses has been going on for tens of thousands of years. And while viewing the animal yourself is the best way to decide if it meets your needs, a video is possibly the next best thing.

Teicneolaíocht nua le haghaidh gnó ársa

Ag deireadh an scéil le Declan McArdle (34 agus 35) feicfidh tú bosca aisteach, a dtugtar Cód QR air. Tar éis duit roinnt bogearraí a íoslódáil chun d'fhóin chliste, beidh tú in ann an Cód Mearfhreagartha sin a scanadh agus tabharfar chuig físeán thú láithreach bonn.

San fhíseán sin, feicfidh tú tuilleadh faoin méid a bhí san alt. Rud an-oiriúnach is ea é sin i gcás scéil ina míníonn Declan cad é an bealach is fearr le do chuid capall a chur ar an margadh. Tá capaill á gceannach agus á ndíol againn leis na mílte bliain. Agus cé gur fearr súil a chaitheamh ar an ainmhí féin lena fháil amach an oireann sé duit, b'fhéidir gurbh é an chéad rud eile ab fhearr ná físeán.



Liz Duffy and Cork dairy farmer Maurice Smiddy at the Teagasc office in Midleton.

Nitrates derogation
Remember, there is still time to apply
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Cover | Teagasc tillage advisor Mike McCarthy and farmer/contractor Willie Hanrahan from Clogheen, Tipperary, discuss the importance of getting seed rates right. See article on page 30. Picture: Mark Moore.

A smart approach to managing open drains

A recent study by the Teagasc Agricultural Catchments Programme (ACP) has shown that sediments in drains in several Wexford farms were trapping phosphorus that had been washed off the land. Sediments were drawing phosphorus out of the overlying water and locking it up, reducing the chances of the phosphorus moving into downstream rivers or lakes where it could cause environmental damage.

Sediment itself can also directly damage rivers and lakes so any processes that retain sediment in ditch networks would have the dual benefit of reducing both sediment and phosphorus losses downstream. Phosphorus loss to streams tends to be highest on poorly-drained soils, so farms that are considered to be vulnerable will likely already have many open drains.

The Teagasc studies found that flat drains (slopes less than 2%) had the greatest potential to retain sediment and are therefore valuable landscape features. However, over time, these flat

ditches can get clogged up with sediment, and this sediment can hold large amounts of phosphorus, which will eventually begin to be released back into the drainage water.

Regularly cleaning out ditches would ensure that this sediment and phosphorus is kept on the farm where it can be spread on a dry area away from drains to add to soil fertility and prevent it getting back into drains.

Drains with steeper slopes were more vulnerable to phosphorus being washed downstream during rain storms. Encouraging vegetation growth on the drain beds would help to stabilise the sediment and reduce the potential for movement during storms.

The ACP also found that small streams don't tend to retain much sediment but can erode the bank sediment, causing water-quality problems downstream. Planting and maintaining hedgerows alongside channels could stabilise banks and reduce erosion.

– Mairéad Shore

Silage season is coming

What is high-quality?

High quality silage has a dry matter digestibility (DMD) of over 72% and is well preserved. Silage quality varies depending on the stage of maturity of the grass when ensiling is taking place. The grass leaf adds feeding value while the stem reduces feeding value, similar to a grazing sward.

First-cut silage has the optimum rate of leaf to stem in late May, but it reduces by about 0.5% DMD per day from a peak of 75% DMD.

With a target of 72% DMD silage, farmers must cut silage in late May to achieve this. In the pit, this silage will have a high proportion of visible leaf present.

The weight gain of store cattle fed on silage has been recorded since the late 1970s in Ireland. Cattle weight gain of up to 80kg for the winter period has been recorded, when the silage DMD is 72% or better. Also, weight gain as low as 20kg per head has been measured when the silage DMD is low, and it was cut after the

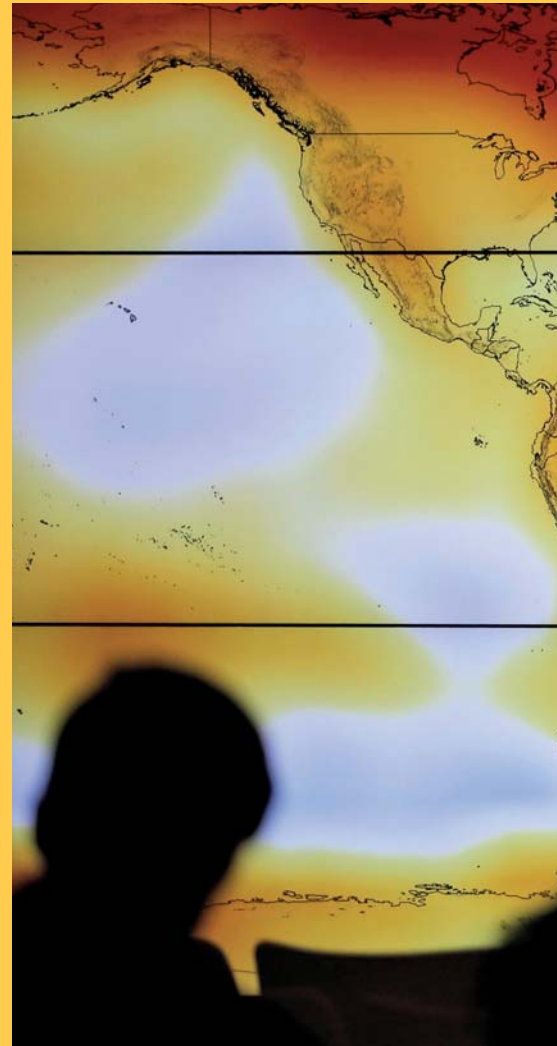
target stage of growth. This extra 60kg liveweight from silage arises due to the cutting date decision. Valuing it at €2.20/kg, it is worth over €130 per store animal.

There are several key steps:

- Fertilise the silage ground adequately. For soil index 2 soils, three bags 0.7.30 plus four bags 27% N per acre is required if no slurry is applied, or if 3,000 gallons cattle slurry is applied, three bags of 27.2½.5 should suffice. Apply fertiliser in March and definitely before 10 April.
- Graze the sward in early spring, to remove winter growth of grass.
- Close each field as soon as possible, ideally around 25 March.
- Book your contractor to cut your silage between 21 and 25 May.
- Ensilage and cover the pit as quickly as possible. When the silage is in the pit, it is always wise to measure the pit and estimate the tonnage made. On highly stocked farms where further cuts are required, this will help to calculate how much more land needs to be cut.

– Joe Hand

BURNING AND HEDGECUTTING: both must cease on 29 February this year. They remain prohibited until 1 September with no changes to the dates in 2016.

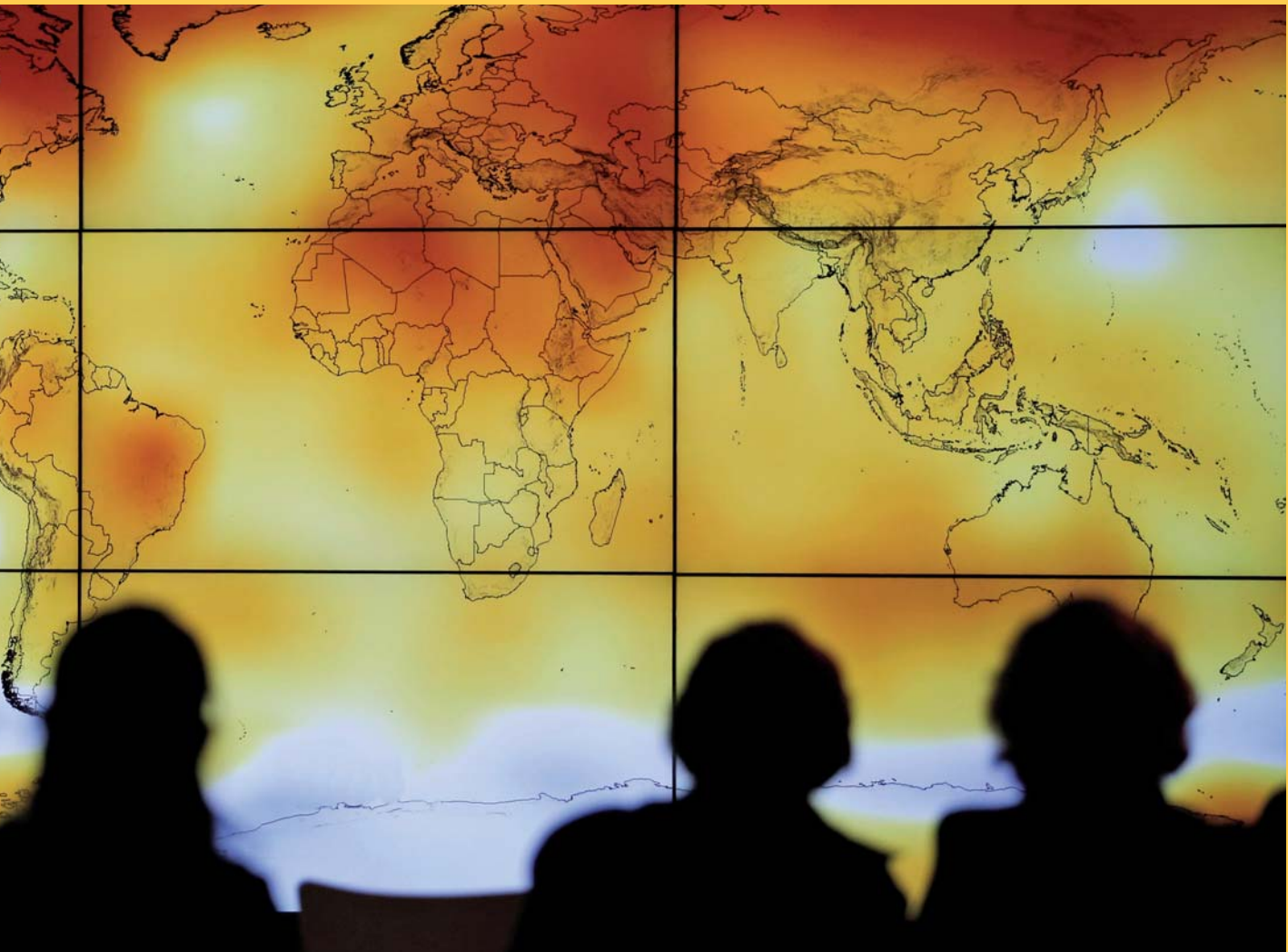


World climate summit 2015

Last December, world leaders met for the World Climate Summit (COP21) in Paris. The meeting ended with widespread optimism over a new collective approach to combat climate change.

So what was agreed?

The Paris Agreement is more ambitious than its predecessor, it seeks to keep the global temperature rise "well below 2°C" and "ideally below 1.5°C". Previous negotiations had sought to limit global warming to a 2°C temperature rise (compared to pre-industrial tempera-



tures). However, low-lying island nations and other countries most vulnerable to climate change had argued that a 2°C increase and the associated sea level rise would be devastating to their economies and to the livelihoods of their people: they pushed for a more ambitious target of 1.5°C.

How will this be achieved?

The agreement aims to achieve climate change mitigation through so-called Intended Nationally Determined Contributions (INDCs). Basically, this means that each country pledges how far it intends to reduce emissions. These pledges and their implementation will be reviewed and commented upon by other countries. However, countries face no formal consequences if their targets show low ambition or even if they fail to meet their commitments.

By October 2015, INDCs had been submitted by 147 parties, including China, the US, the European Union and Russia. Together, these parties are responsible for about 86% of global greenhouse gas emissions.

The major part of global warming is

a result of historic and present greenhouse gas emissions of industrialised countries. However, emissions from deforestation and inefficient emission-intensive technologies in developing economies also play an important role. Those countries must contribute as well if global warming is to be limited to less than 2°C and ideally less than 1.5°C. However, without financial and technical support, developing economies would be unable to efficiently reduce emissions or to adapt to the negative effects of climate change. Therefore, the plan is to set up a climate fund, financed by contributions of developed countries, that supports mitigation and adaptation measures with a minimum of US\$100bn per year.

How is Teagasc helping Irish farmers to address the challenge?

Over the last seven years, Teagasc's Greenhouse Gas Working Group has been developing solutions for both farmers and policymakers. The group has researched the most cost-effective ways to reduce greenhouse gas emissions from farming. The answer lies in

farm efficiency: if we can produce food with fewer inputs, then this reduces emissions to the atmosphere and costs to the farmer.

Efficiency means more productive animals, extending the grazing season, informed nutrient management (eg NMP online). We are now turning our attention to emerging technologies that promise to reduce greenhouse gas emissions even further. Examples include the development of sexed semen and the development of novel, low-emission fertilisers.

How can farmers decide which of these options work for them? To help with this decision-making, Teagasc has developed the Carbon Navigator, together with Bord Bia. The Carbon Navigator is a simple tool, free of jargon, to help farmers decide what will work on their farm. It is currently being rolled out as part of Bord Bia's Quality Assurance Scheme, and in the Teagasc discussion groups. For more information, contact your Teagasc advisor.

**- Carsten Gutzler
and Rogier Schulte**



A Teagasc open day will take place at the National Botanic Gardens on 10 March.

COLLEGE OPEN DAYS

What you will get

- Information on all further and higher level courses in agriculture, horticulture, horses and forestry.
- An outline of careers in agriculture, agribusiness, amenity and production horticulture, forestry, horse-breeding and training and career profiles of graduates.
- Guided tours of college teaching and recreational facilities and visits to the colleges' modern farming and horticultural enterprises

Who you will meet

- Talk to college teaching staff and educational experts.
- Students who are currently attending the courses.

- Hear from potential employers of course graduates.

Thursday 10 March

• **2pm to 4.30pm: College of Amenity Horticulture, Teagasc, National Botanic Gardens, Glasnevin, Dublin 9.**

Principal: John Mulhern.
Phone: 01-8040201.
Email: botanic.college@teagasc.ie

• **10am to 1pm: Ballyhaise Agricultural College, Teagasc, Agricultural College, Ballyhaise, Co Cavan.**

Principal: John Kelly.
Phone: 049-4338108.
Email: ballyhaise.college@teagasc.ie

Wednesday 16 March

• **10.30am to 2pm: Gurteen Agricultural College, Ballingarry, Roscrea, Co Tipperary.**

Principal: Mike Pearson.
Phone: 067-21282.
Email: info@gurteencollege.ie

• **11am to 2pm: Clonakilty Agricultural College, Teagasc, Agricultural College, Darrara, Clonakilty, Co Cork.**

Principal: Majella Moloney.
Phone: 023-8832500.
Email: clonakilty.college@teagasc.ie

Thursday 24 March

• **10am to 2pm: Pallaskenry Agricultural College, Salesian Agricultural College, Pallaskenry, Co Limerick.**

Principal: Derek O'Donoghue.
Phone: 061-393100.
Email: info@pallaskenry.com.

» More events on pages 10 and 11

RESEEDING IN 2016? THIS YEAR SOW A DIAMOND



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Mind your inner army

Good gut microbes have a positive influence on our health...including weight. And they love to be fed dairy proteins, writes **Mark Moore**

When Mike Ross takes to the field, his most numerous army of supporters is sitting not in the stand or at home but all along his digestive system. Our mouths, stomach, small intestine and large intestine are home to literally billions of micro-organisms.

These minute organisms have evolved with us, providing benefits in return for a "home". What sets Mike and other elite athletes apart from the general population is that he has a greater range (diversity) of microbe species living there. Food products which encourage gut microbe diversity look set to generate huge benefits for farmers and consumers.

Different bodies for different jobs

"A diverse population of these micro-organisms can protect against diseases such as allergies, some cancers and even obesity," says Paul Cotter, who works at Teagasc Moorepark. Paul and colleagues are attempting to understand how the microbes deliver these benefits and why some people have more species than others.

To investigate whether diet and exercise might influence microbe

diversity, the Teagasc Moorepark scientists conducted a study on 40 members of the Irish rugby squad. "The elite athletes had a much greater range of microbe species than people who are more sedentary and have poor diets," says Paul Cotter. "Because building and repairing muscle is very important to them, elite athletes eat very large quantities of protein. And, of course, they do a huge amount of exercise."

By contrast, the average western diet is high in fat and carbohydrates and many consumers live relatively sedentary lives.

Mike Ross, speaking at a seminar on nutrition at Teagasc Moorepark, described the practical value of drinks rich in the milk protein whey. "It's a lot easier to drink a protein-rich sports drink based on whey than to eat seven or eight chicken breasts to get your protein."

The study showed that the athletes had a greater number of gut microbe species than sedentary people eating a diet low in protein, fibre, fruit and vegetables. So, is it simply the case that "couch potatoes" eat more and move less than the athletes? "We believe it's not as simple as that," says Orla O'Sullivan who also works at Teagasc Moorepark. "The athletes' varied diet, in particular increased

How to boost your inner army

- Consume resistant starch (complex carbohydrates) i.e. fibre... some good microbes like those.
- Consume lots of fruit and vegetables... it's better to get your vitamins from natural sources than tablets.
- Do regular exercise.

protein intake and exercise levels, were associated with a greater diversity in the gut microbes and this may be influencing health."

Research on mice supports this idea. "Studies from other labs have shown that when thin mice were inoculated with the gut microbes from obese mice and remained on the same diet they tended to become fat," says Orla O'Sullivan.

"Also, when mice that are genetically programmed to become fat were inoculated with gut bacteria from thin mice, they tended to remain lean."

The Teagasc scientists have recently completed a piece of research that compares three groups of people in an attempt to identify how new microbes could be encouraged. One group received extra protein; the next group undertook an exercise programme and the third group received both protein and exercise.

The results are in but have yet to be fully analysed. "My guess is that it's probably a bit of both," says Paul Cotter. "A more varied and protein-rich diet and exercise combining to encourage a greater range of gut microbes which, in turn, is supporting general health."

Greater demand for protein, be it from whey or other animal-derived protein, can only boost the price of these foods and help farmer incomes.

Innovative food products

Teagasc scientists and colleagues in the APC Microbiome Institute – an SFI-funded research centre based at Teagasc, UCC and CIT – are working to understand the role of the gut microbiota on human health and how this can be manipulated using food and develop innovative products which could simultaneously benefit consumers and farmers. Some of these products add value by boosting gut microbe diversity.

Some products contain prebiotics (which encourage the growth of

microbes) and some contain probiotics (beneficial microbes).

As part of the Infantmet project, Catherine Stanton of Teagasc Moorepark is developing probiotics particularly aimed at boosting infant health.

Products containing whey proteins seem to be particularly valuable in encouraging gut microbes.

"Athletes are increasingly consuming drinks containing whey to build muscle and it's likely that they are boosting their gut microbes too," says Paul Cotter.

Work by Kanishka Nilaweera, also at Teagasc Moorepark, seems to show

that consuming whey can help to control weight gain.

Paul Cotter noted that the science of changing the microbiota is not new and is the principle that underlies the use of prebiotics and probiotics. He indicates that consumers should be aware that not all probiotics and prebiotics are the same and that consumers should enquire about the research behind products. Some of those available on the market have a lot of research demonstrating how they can provide benefits in particular situations. Others, unfortunately, have very little/no scientific basis.

Diet: the young and the old

While diet and exercise may be seen as lifestyle choices, some sectors of the population suffer medical conditions related to their gut microbes. Many scientists already advocate more prudent use of antibiotics to lower the risk of resistance but there's another reason to avoid unnecessary use, particularly in children: broad spectrum antibiotics can damage gut microbes as an undesirable side-effect of treating disease.

Paul Cotter urges the more prudent use of antibiotics and the development of new, more narrow-spectrum, targeted antibiotics, which are less likely to kill off the good gut bacteria as a side effect.

Elderly people who are taking broad-spectrum antibiotics should be particularly careful to protect their gut microbe diversity. "The negative impact of antibiotics on the gut microbes in these individuals can allow an undesirable species called *Clostridium difficile* to become dominant and cause illness. Once it becomes established, it can be particularly difficult to remove this disease-causing species," says Paul Cotter.



Teagasc scientist, and runner, Paul Cotter says regular exercise and a varied diet are good for gut, and all-round, health.

SPRING-GRAZING FARM WALKS 2016

"You cannot buy a better feed than spring grass"

Following the spring-grazing farm walks held in late January and February, Teagasc has organised a

second round of farm walks focusing on spring grassland management on dairy farms. Join us and see how these farmers have coped with challenging grazing conditions and achieving their spring-grazing plans.

Farm walks scheduled for March

Date	Location
Tues 8 Mar	Padraig Condron, Dullas, Croom, Co Limerick
Wed 9 Mar	James Kennedy, Bawn, Nenagh, Co Tipperary
Mon 14 Mar	Peter Hynes, Aherla Village, Co Cork (off N22 Cork-Macroom Road)
Tues 15 Mar	Eugene Lawler, Portersize, Ballitore, Co Kildare
Tues 15 Mar	Teagasc, Curtin's Research Farm, Fermoy, Co Cork
Wed 16 Mar	Teagasc, Johnstown Castle Dairy Unit, Co Wexford
Mon 21 Mar	Francis Clune & Family, Newgrove, Tulla, Co Clare
Tues 22 Mar	Teagasc, Clonakilty Agricultural College, Clonakilty, Co Cork
Tues 22 Mar	James McCarthy, Castleisland, Co Kerry
Tues 22 Mar	Edmond Hearne, Ballyneale Castle, Ballyneale, Co Tipperary
Tues 22 Mar	PJ O'Keeffe, Callan, Co Kilkenny
Tues 22 Mar	Teagasc, Ballyhaise Agricultural College, Ballyhaise, Co Cavan
Wed 23 Mar	Michael Ryan, Deansgrove, Cashel, Co Tipperary
Wed 23 Mar	Sean Daly, Banagher, Co Offaly
Thurs 24 Mar	Oliver Looney, Burnfort, Mallow, Co Cork
Thurs 24 Mar	Mark Cassidy, Cookstown, Kells, Co Meath
Thurs 24 Mar	John Payne, Torboy, Moydow, Co Longford
Thurs 24 Mar	Ronan Joyce, Carrowjames, Belcarra, Castlebar, Co Mayo
Thurs 24 Mar	Conor Beausang, Churchquarter, Grange, Co Waterford

All farm walks start at 11am and run for 90 minutes



TEAGASC CROP WALKS



Septoria control is one of the topics that will be discussed at the walks.

Teagasc crop walks begin in April with walks taking place across the country.

The focus of the crop walks this year is how farmers can get the most efficiency from all inputs.

Information at the walks will help growers to identify key timings and

rates of inputs to maximise yields. Topics such as aphid resistance and septoria control will be thoroughly discussed at each meeting. All farmers (clients and non-clients) and trade are welcome. IASIS credits are available. See www.teagasc.ie for dates and locations.

TECHNOLOGY CONFERENCE

The Teagasc Technology Foresight 2035 conference will take place at the Aviva Stadium, Dublin, on Tuesday 8 March.

The project aims to identify the breakthrough technologies, which will transform the Irish agri-food and bioeconomy sector by 2035.

The conference will feature presentations from a number of high-profile keynote speakers on the global effect of powerful new technologies in transforming economic activity and social relations across all economic sectors, including agri-food.

Changing concept

Dr Banning Garrett, Washington-based strategic thinker, writer and entrepreneur, and founding director of Atlantic Council's Strategic Foresight Initiative, will deliver the keynote address entitled "Technology will keep changing everything – and will do it faster".

The conference will conclude with a panel discussion on the report's key findings and on the opportunities arising for Ireland.

ORGANIC FARM WALKS

Teagasc, the Department of Agriculture, Food and the Marine and organic organisations invite all farmers and members of the public to see organic farming in practice and to meet and speak with the producers and sector experts at an organic farm walk focusing on horticulture, salads, poultry and direct sales.

• Thursday 10 March: farm of John Purcell, Ross, Golden, Co Tipperary.

Teagasc Green Acres calf-to-beef farm walk

• Tuesday 12 April: farm of John Lator, Ballyfin, Co Laois. The event runs from 11am to 1pm.

Teagasc/Irish Farmers Journal BETTER farm beef conference

• Tuesday 19 April: Tullamore Court Hotel, Co Offaly.
 • Tuesday 26 April: farm of Rory Magorrian, Kildinan Farm, Ballyhooley, Co Cork.

While every effort is made to ensure that the information is correct at the time of going to press, we cannot guarantee that some event dates will not have passed before the publication date.



A number of spring-grazing farm walks will take place nationwide in March.

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Compact calving: what to do

Active intervention may have a role in your strategy to achieve compact calving

George Ramsbottom
Teagasc Animal and Grassland
Research & Innovation Programme

Compact calving around the time of turnout to pasture allows you to maximise the use of grass in the cow's diet. Teagasc has established a target of achieving 90% of the herd calving in the first six weeks after the planned start of calving – a figure well above the national average of 57%.

This article lists the four principles of achieving high dairy cow fertility and focuses on active intervention as an option based on recent research findings from Mary Herlihy and Stephen Butler of Teagasc Moorepark.

Why the 90% six-week calving target?

Using farm data, Moorepark researcher Laurence Shalloo has found that every 1% lower than target calving rate results in a €8.22 reduction in profit per cow. In other words, it's costing the average herd €264 per cow per year.

There are four key factors influencing compact calving.

•**Nutrition:** Appropriate nutrition during the dry period and in early lactation reflects itself in the body condition score of the dairy cow.

Pre-breeding, the herd average target body condition score is 2.9 and all cows should be between 2.75 and 3.25 for optimum fertility. If cows are thin now, consider milking them only once a day until condition score improves. Feeding more meal is unlikely to result in improvements in body condition score before breeding – it is more likely to increase milk yield.

•**Disease control:** Protocols for minimising the risk of disease in the dairy herd around breeding are widely available. Where possible, ensure that all vaccinations are completed at least a month before cows are bred.

•**Genetics:** Always select high fertility sub-index bulls irrespective of whether or not you are in spring or winter/liquid milk production. It's now possible to select teams of bulls with fertility sub-indices of greater than €160. In the long-term, this will result in more fertile cows with a longer productive lifespan.

•**Mating management:** A cow typically takes 30 to 35 days between calving and the first (often silent) heat. This first cycle is usually short and in 90% of cows, the first standing heat will be observed by around 45 days or so after calving.

As a result, the late calving cows will be slower to show heat after the breeding season begins. Heat lasts for an average of only nine hours and most standing heats begin at night so heat detection aids such as tail paint, scratch cards or vasectomised bulls are vital to achieving a high heat detection rate.

In addition to these four principles, rearing and management of the replacement heifer is critical. All replacement heifers should be bred in the first three weeks of the breeding season – synchronisation with prostaglandin will aid compactness.

Delaying breeding because heifers are underweight is costly. You still have time to get the heifers out to grass – from 1 March to 20 April, replacements have the potential to gain 50kg to 60kg liveweight outdoors.

Active intervention

Cows that calve early in the calving season are more likely to go back in calf. They have more time to recover from calving, are likely to be in positive energy balance and have started cycling again before the breeding season begins. Cows that are thin at



calving, lose more than half a unit of condition score between calving and breeding and calve later in the calving season are more at risk of culling.

The principle behind active intervention is that increasing submission rate in the first three weeks of the breeding season increases the likelihood of achieving a high six-week calving rate. Active intervention is a two-step process.

Step one

Metricheck all cows calved more than 14 days – approximately one month – before the breeding season begins. Up to 80% of cows will have some level of infection in the reproductive tract three weeks after calving, and this will decline to about 50% by seven weeks post-calving.

The proportion of cows with an infection (and the severity of that infection) will continue to decline as the time interval from calving increases. It is estimated that on Irish dairy farms an average of 20% of cows have a reproductive tract infection at the start of the breeding season.

These cows are slower to commence breeding, have a poorer chance of conceiving and are more likely to go in calf later or not at all. The use of the Metricheck device, which detects the presence of pus in the vaginal discharge, will help to identify cows with poor reproductive tract health. The Metricheck device and scores are presented in Figure 1.

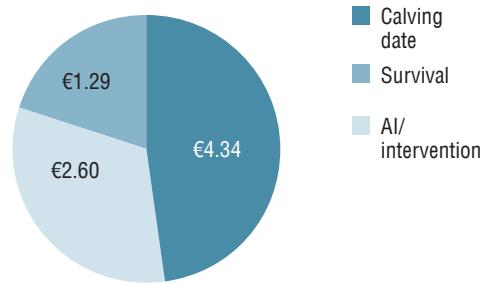
The Metricheck device itself is a rubber scoop approximately the same size as a squash ball. It is inserted into the vagina and against the mouth of the cervix.

As the device is withdrawn, dis-



Figure 2

Breakdown of where the costs are incurred (€/cow) per 1% lower six-week calving rate



charge located around the cervix is collected into the scoop.

This material is then scored from one to five (score one is clean mucus; scores two and three contain increasing amounts of pus; score four is almost all pus; score five is visually mostly pus and is also smelly).

If cows are examined one month before mating start date, cows that have a score of two or greater should be treated with Metricure. This intra-uterine pessary is a prescription-only medicine, available from your vet.

Step two

Begin pre-breeding heat detection at least three weeks before mating start date. Identify cows with tail paint removed at least once a week. This will allow you to identify non-cycling cows for veterinary intervention before the breeding season begins.

Once they are a minimum of 30 days calved, treat these cows with a progesterone-based timed AI programme (Progesterone-Ovsynch), which will ensure 100% submission rate to first AI. Conception rates will be comparable to non-treated cows, but cows will be bred earlier. A progesterone-based timed AI programme is presented in Figure 3.

Teagasc has established a target of achieving 90% of the herd calving in the first six weeks after the planned start of calving.

Figure 3

A 10-day progesterone-ovsynchronised AI programme for use on lactating dairy cows. This programme is suitable for cows that are at least 30 days calved.

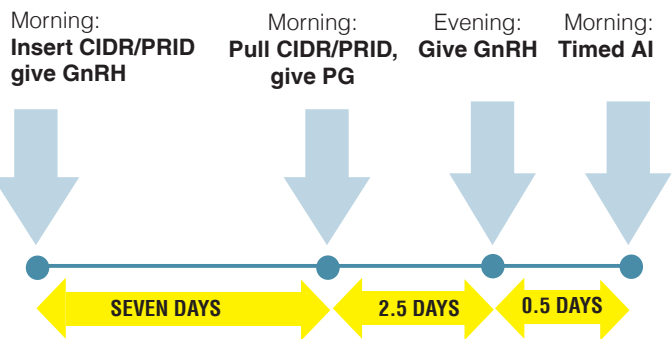
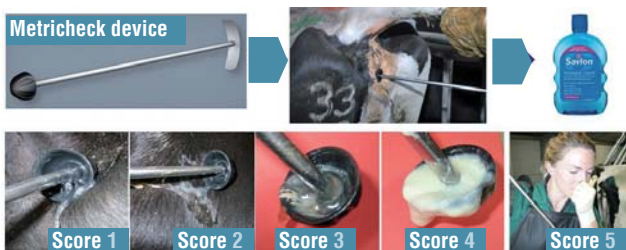


Figure 1



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Looks aren't all

The Beef Data and Genomics Report helps to separate those cows and heifers that might appear superior from those who are genuinely high performers

Aidan Murray

Teagasc Animal and Grassland Research & Innovation Programme

There are currently around 26,500 suckler farmers signed up to the Beef Data and Genomics Programme (BDGP). A good proportion of these received their first payments under the programme in December. The remaining farmers will receive their payments when they return the genotype tags and complete the survey information. So it is important to do this.

Those of you in the programme will have received a BDGP report in the autumn and if you go into ICBF's online HerdPlus system, you can get an updated report with the current stock in your herd. Your Teagasc advisor can help you to access this report.

Understanding what is in this report is important for several reasons:

- It will tell you the current Eurostar replacement values of the females in your herd (cows and heifers) and how many of them are four- and five-star.
- It will indicate how many four- and five-star females you need in your herd in 2018 and 2020.
- If you have a stockbull(s), it will also show his terminal and replacement values.

Key dates

It is important that you make yourself aware of this because there is a requirement in the programme to have a minimum number of four- and five-star females and suitable sires AI or stockbulls in the herd as outlined on page 16.





Martin O'Hare farms a 70-cow suckler herd in Co Louth.

Summary

- Make sure you understand what is in your BDGP report.
- See which category best describes your herd.
- Identify the breeding changes you might have to make to comply with the programme.
- Where your report is telling you that you will be short on four- or five-star females and you want to breed your own, you need to start making breeding decisions this spring if the heifers are going to be on the ground and eligible for October 2018.
- Be aware that the Eurostar index of your herd will be continually changing as more and more animals are genotyped and as you cull animals.
- The index is only a tool to help you make better breeding decisions. Use it in conjunction with visual assessment and pedigree information on the animals you have in your herd.
- Everyone participating in the BDGP will have to complete a four hour Training Course in 2016. Courses will start this month and people will be contacted directly when courses are coming up in their area. These courses will further explain your reports and how the indices work.



Continued on next page

CASE STUDY

Martin O'Hare farms a 70-cow suckler herd at Little Ash near Knockbridge in Co Louth.

"My report told me that I have cows ranging from one to five stars," Martin says. "While you would predict that some cows would have higher stars you get some surprises. The scheme does help you to identify which animals are genuinely better than others."

Since he returned home to farm in 2007, he has been aiming to improve the genetics of the herd, encouraged by his Teagasc advisor Hugh Rooney. "I have been using AI on a percentage of the cows and fortunately about 61 of the cows/heif-

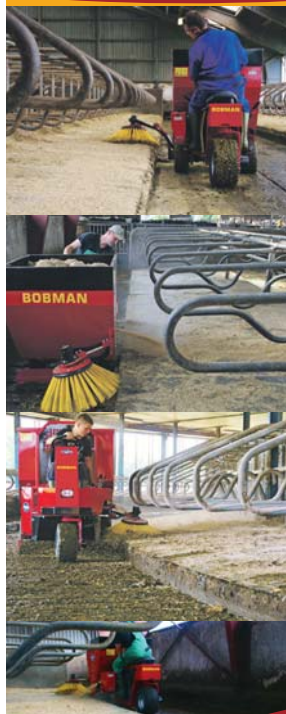
ers are four- or five-star animals," he says. "We will increase that percentage over the coming years."

Martin is a member of the all-Louth beef discussion group facilitated by Hugh Rooney and Conor Dobson. He grows 80 acres of barley, some of which is fed to entire bulls which are finished at approximately 16 months and heifers which go to the factory at 20 to 24 months.

Commercial

"I would describe my animals as commercial sucklers," says Martin. "They have Limousin, Simmental and Hereford blood and the stock bull is a Charolais. So we have a range of crosses. As I said, you can't always tell if an animal has a high star rating just by looking at her. The Beef Genomics Scheme helps us to identify the really good animals."

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Female requirement

- On 31 October 2018, you are required to have a minimum 20% of your reference number of the females in the herd four- or five-star on replacement index (across or within the breed).
- On 31 October 2020, you are required to have a minimum 50% of your reference number of the females in the herd four- or five-star on replacement index (across or within breed).

Heifer requirement

- Homebred heifers must be four- or five-star at the time of genotyping.
- Purchased heifers must be genotyped four- or five-star at the time of purchase.
- Heifers that are purchased and not genotyped will have to be genotyped four- or five-star before they are eligible.
- Heifers must be at least 16 months old on 31 October 2018 or on 31 October 2020 to be eligible. They do not have to be in calf on those dates.

Sire requirements

Stock bull

At least one stock bull on 30 June 2019 should be four- or five-star genotyped on terminal or replacement index (within or across breeds at the time of purchase).

If this bull is replaced after 30 June 2019, then he should be replaced by 30 June 2020, so that you have at least one stock bull that is genotyped four- or five-star on terminal or replacement index (within or across breeds at the time of purchase).

Using AI bulls

From June 2016, at least 80% of AI used must be four- or five-star genotyped on terminal or replacement index (within or across breeds).

Which category does your herd fall into? On the ground, we are broadly seeing that herds are falling into one of three categories when they examine their BDGP report.



Approximately 26,500 farms in Ireland are signed up to the (BDGP).

• **High numbers of four- and five-star animals:** The report is showing a high number of four- and five-star cows in the herd and equally there are high numbers of young heifers coming through as potential replacements. These herds have focused on breeding maternal traits into their herds over the years and provided they maintain a similar breeding strategy, they will more than meet the requirements of the BDGP. Some of these herds will find that there will be a demand for their surplus high-replacement index heifers as other farmers move to upgrade their herds.

• **Average numbers of four- and five-star animals:** In these herds, probably over a quarter of the cows are coming up as four- and five-star on the replacement index but less

than a third of their young heifers will be four- or five-star. So, on the surface, they will be alright in 2018 but with average culling rates, these herds may well fall short of their requirements in 2020 unless they take some corrective action.

In their favour, these herds have a base of good cows that with targeted AI on their high index cows can breed suitable replacements by selecting AI sires with high replacement values. Equally, they may look to buy in a genotyped stock bull that has a high replacement value to breed future replacements.

• **Low numbers of four- and five-star animals:** On examination of their BDGP (see below) report, these herds will have less than 25% of the current cows with four and five stars. There may be little, if any, suitable heifers coming through. The focus of these herds has been mainly terminal because they were finishing their own stock or have been targeting high value weanlings or stores. Often, these herds buy in their replacement cows and are focused on using terminal sires.

These herds probably have more immediate decisions to make. If they decide to continue to use terminal sires, then they will have to source suitable (four and five-star) replacements from other suckler herds or even some dairy crosses. If this is the option they run with, then they should buy a few suitable replacements each year rather than waiting until nearer the deadline.

There is an argument that smaller herds that have been breeding mainly for terminal traits and have a good terminal sire would leave themselves with a less complicated system if they could source high health status heifers from outside. But that is up to each individual herdowner.

Larger herds with more than one stock bull might decide to introduce a stock bull with high replacement values if they want to breed sufficient replacements or, if AI is an option, they may target the higher index cows with high replacement index sires.

Synchronisation programmes for beef cows

In 2014 and 2015, a large Department of Agriculture, Food and the Marine-funded beef cow fertility experiment was carried out on 74 commercial suckler herds to develop a heat synchronisation programme to facilitate fixed-time AI (FTAI). The average

pregnancy rate following examination of three synchronisation/FTAI programmes was 55%. Benefits of synchronisation/FTAI include:

- Meeting the requirements of the Beef Data and Genomics Programme by using high maternal index AI sires to

produce replacements.

- Less bull(s) required on the farm.
- No heat detection.
- Only a single insemination.
- All cows are submitted for breeding.

– Federico Randi, Mervyn Parr and David Kenny, AGRIP, Teagasc, Grange

Improve flock performance

Improving grassland management on sheep farms could radically increase grass dry matter production

Phil Creighton and Ciaran Lynch
Teagasc Animal and Grassland Research & Innovation Programme

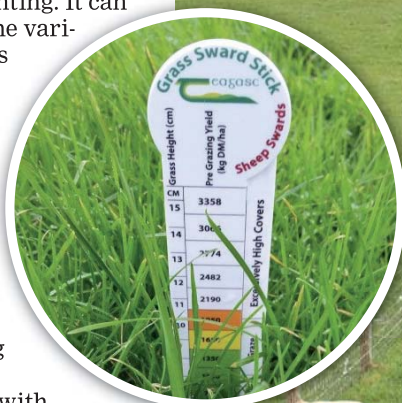
Improving grassland production and utilisation is one of the biggest challenges, and opportunities, on sheep farms. There's always scope to improve some aspect of grassland management irrespective of location, land quality or prevailing weather conditions.

The main hurdle is making the decision to address this key task. But experience from the BETTER farms sheep programme shows that managing grass effectively has given the best return on investment on the farms.

Where to start

Striking the balance between meeting current demands and maintaining sward quality can be daunting. It can also be hard to relate to the various guidelines and targets reported from research. The best way to learn and make progress is by getting out there and gaining the necessary experience by seeing what is happening on your own farm. Simply measure your grass supply and use this information to make your grazing decisions.

To help you get to grips with grass measuring and management, Teagasc has released a sward stick (see picture).



The aim is to have enough grass to match ewes' demand.



» Continued on next page

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The sward stick will help you to train your eye to measure the amount of grass on the paddocks. It also provides some useful guidelines for management.

For those who want to go a step further, a platometer or the cut-and-weigh method using a shears and quadrat will enable more accurate measurements. To get the most from these measurements, Teagasc has developed the Pasturebase Ireland system.

This web-based grassland management tool assists with recording and budgeting of grass supply. Furthermore, it also has a facility for farmers to view the supply and demand of other farmers in their own area with similar systems.

Pasturebase also has a capability that will allow your Teagasc advisor to log in and view your weekly measurements and offer real-time advice where needed. If you are a sheep farmer interested in measuring grass this season, contact your local Teagasc advisor who can explain the necessary steps involved and help get you enrolled on the Pasturebase Ireland system.

Benefits include:

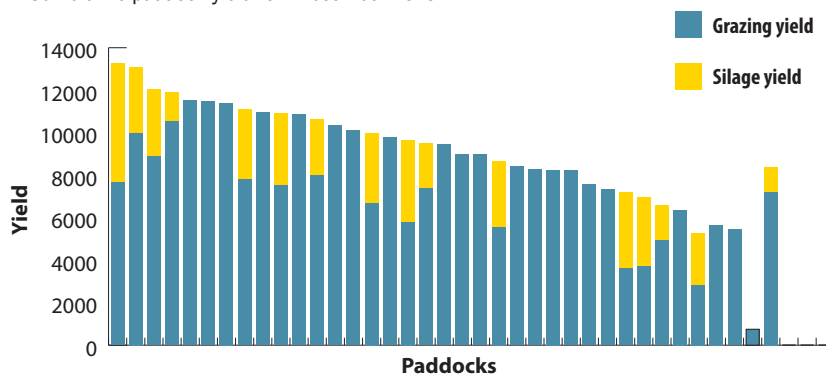
- Improved animal performance.
- Knowing the optimum stage to graze and remove sheep from paddocks.
- Matching grass supply to demand.
- Comparisons with other farmers in your area.

How well are your fields performing?

In an era where measuring performance has become ever more important, how does our grassland actually perform? You may be familiar with figures quoted of 12t DM/ha being produced on dairy farms but how do drystock farms compare? The research demonstration farm in Athenry is producing an average grass yield of 11.5 t/ha per annum, with the BETTER farms producing between 7.0 and 8.5 t DM/ha in 2015. In most cases, the area you farm is

Figure 1

Cumulative paddock yield to 1 December 2015



Key messages

- On this farm, the top-performing paddocks are producing nearly twice as much grass as the poorest paddocks.
- In practical terms, the top performing paddocks are being grazed 10 to 12 times within the grazing season. By comparison, the poorest paddocks are only being grazed five to six times.
- Identifying these poorer paddocks and putting a plan in place to deal with them is critical to increasing the performance of your farm.
- The difference is most likely due to soil fertility issues, sward type (reseeding needed) and grazing management.
- Addressing these areas has led to an increase in total grass production per annum on the BETTER farms.

limited so it's vital to achieve good performance from the land.

There are many factors influencing grass production, not least N input. So, what about grass production on your farm? One of the many useful applications of Pasturebase is in quantifying how much grass is

produced within each paddock, as measured on the farm, within each grazing season. We know from the grass-measuring being done on the BETTER farms that there is huge variation in individual paddock yield. Taking the performance from one of the BETTER farms as an example, the total grass production per paddock for the 2015 grazing season is displayed in Figure 1.

Spring targets

The aim in spring is to have enough grass to match ewes' demand until supply increases and matches demand (called Magic Day). For an early/mid-March lambing flock, we would like to see an opening farm cover of 600kg to 700kg grass DM/ha (average sward height of ~6cm across the farm) or 20 to 25 days ahead.

How do we come up with the figure of kg grass DM/ha? A ewe's average daily grass requirement in early lactation will be 2.5kg DM/head/day. If we take a farm stocked at 10 ewes/ha, this equates to a daily grass requirement of 25kg DM/ha. If we had an average farm cover of 650kg DM/ha, this would support the flock for 26 days ($650/25 = 26$ days ahead). If we estimate average grass growth rate of 15kgDM/ha/day in early/mid-March, this will add another 10 to 15 days, so we have 35 to 40 days which should bring us to mid-April (Magic Day).

ISSUES & CHALLENGES

Issues

Having sufficient grass supply in spring for sheep farms operating a grass-based system requires planning.

There are a number of factors influ-

encing it on sheep farms, but experience from the BETTER farms has highlighted some of the key areas to consider:

- Insufficient area closed in autumn to build covers for spring.
- Suitable lambing date to match grass growth.
- Soil fertility issues
- No N applied to boost covers and enhance March growth rates.
- Lack of reseeding in previous years.

Challenges

The benefits from improving grassland management are clear; the challenge for most farms is taking the necessary steps to improve their own farming system. Individual farmers or groups interested in improving their grassland management through measuring and budgeting should make contact with their local Teagasc advisor who can provide the relevant information to get them started.

The nitrates derogation

There's still time to apply...the benefits can be far greater than simply receiving the derogation itself

Liz Duffy
Teagasc Dairy Advisor, Midleton

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

Many farmers complete the derogation plan and records because they have to for cross-compliance, stock density reasons and to protect their Basic Payment. They sometimes don't see the potential benefits from discussing all aspects of nutrient management.

Maurice Smiddy who farms dairy cows near Ballymacoda, Co Cork, says that completing the application is a great way to ensure he gets the most from slurry and fertiliser.

"You assess slurry capacity of the farm, which means you'll know you have enough storage in place for the animals you intend to carry. By discussing future plans, you'll know how much additional capacity you might need and whether that will require investment," Maurice says. "Doing the derogation also means that you'll have a full profile of the soil fertility status of the farm. You'll have identified areas that need lime – and you can manage your spending on lime by targeting the low pH areas first.

"You'll have ongoing monitoring of the soil fertility status – is it getting better or worse, for example? And you will have a record of areas that need P and K. You'll also know which fields will respond to slurry/FYM or soiled water application. All of this means you know exactly how much fertiliser to buy and what types. Fertiliser is a big cost and I want to manage it well."

While completing the derogation application with your Teagasc advisor, you will also discuss feed and fertiliser purchases for the previous year, stocking rates and any plans you may have to increase this, the implication of dropping rented land/taking on extra land, the amounts and types of fertiliser you should be purchasing, fertiliser allowances for



Liz Duffy and Cork dairy farmer Maurice Smiddy at the Teagasc office in Midleton.

different crop types, etc. On the day you come in, there are three main jobs to be done: complete records for the year just gone, apply for the derogation and prepare a fertiliser plan for the coming year.

What you should bring

- **Feed for 2014:** to complete records for 2015.
- **Fertiliser for 2015:** to complete records for 2015.
- **Feed 2015:** to prepare a plan for 2016.
- **Soil samples:** must be dated after 15 September 2012 to be valid for 2016.
- **Stock figures for 2016.**
- **Any changes to land area for 2016.**
- **Any changes to yard, e.g. new buildings, slurry storage facilities, etc.**
- **Copy of your 2014 fertiliser records (any opening stock of chemical fertiliser in 2015).**

What you will have when leaving:

- Completed records for 2015.
- Updated plan for 2016 taking account of any changes.
- Clarity about what your fertiliser N and P limits are.
- Remember there are no limits to potash (K) or lime and these should

be spread in line with soil analysis reports.

- Info about when your soil samples need to be retaken.
- A full understanding of what is in the fertiliser plan, particularly what the soil analysis is saying.
- Details about the waste storage capacity of the farm – what is the limit of the stock you could keep over a winter based on your current facilities? This is one major area that will be checked if you get a cross-compliance inspection.

"Whenever you have to fill out an application, it's a bit of a chore," concludes Maurice Smiddy. "But it's easier if you have help and as well as actually getting the derogation it's a useful opportunity to touch on aspects of the farm today and future plans."

How is the NPH figure arrived at?

The kilos of nitrogen per hectare figure is arrived at by dividing the total kilos of nitrogen produced on the farm by the eligible area under the Basic Payment Scheme.

» Continued on next page

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The annual nutrient excretion rate for dairy cows in the regulations is 85kg, so if for example you had 30 dairy cows on the farm (with a farm size of 20ha) for the full year, the total N figure would be 2,550kg and the NPH would be 127.5kg, rounded to 128kg, ie 2,550kg divided by 20.

- N figures for cattle are calculated on a daily basis using data from AIMS.
- Maximum kilos of organic fertiliser you're allowed to apply to land = your hectares x 170kg (or 250kg for derogation farmers).

Table 1: Nitrogen excretion figures for typical animals

Animal type	kg/head/year
Dairy cow	85
Dairy cow	85
Suckler cow	65
Cattle > two years	65
Cattle (one to two years old)	57
Cattle (newborn to one year old)	24

- E.g. 20ha x 170kg per ha = 3,400kg nitrogen.
- E.g. 20ha x 250kg per hectare = 5,000kg nitrogen.
- To get your nitrogen per hectare (NPH) divide your total kilos by your hectares.

Example of a farm with 30 dairy cows and 10 sucklers on farm for 12 months: [30 x 85 + 10 x 65] = 3,200kg N. 3,200kg N divided by 20ha = 160NPH.

Derogation statistics

- 6,323 farmers applied for a derogation in 2015.
- Teagasc helps to support 70% of the derogation applicants.
- 2,336 farmers breached the 170NPH limit in 2014 and did not apply for a derogation. Some of these farms may have exported slurry, rented/grazed other lands not declared on SPS 2014 or some farms may have been locked up with TB in 2014 and were unable to reduce cattle numbers. All of these can help reduce the NPH on farms. See Table 2.

Penalties

DAFM nitrates penalties for exceeding the stocking rate limits are shown in Table 3.

Farmers who exceeded 170NPH without a derogation or those derogation farmers who exceeded 250NPH, will receive letters from the DAFM this spring indicating the breaches; and they will be penalised on payments from EU-funded schemes of which they are in receipt, unless they could provide an adequate explanation which shows that the farm was

Table 2: Derogation statistics

Year DAFM data	Approved derogation applicants (REPS and derogation farmers)*	Farms > 170 who did not apply for a derogation **	Farms > 250 who did not apply for a derogation ***
2007	4,133	3,600	700
2008	3,855	3,700	500
2009	4,909	3,477	470
2010	4,190	3,520	496
2011	4,600	2,800	450
2012	5,214	3,047	446
2013	4,932	1,511	158
2014	5,120	2,336	250
2015	6,323	Not available yet	Not available yet

* Derogation applications rising steadily since 2007.

** Farms >170NPH who did not apply for a derogation have reduced significantly since 2007, but in 2014 and 2015 these have risen due to increased stock numbers on mainly dairy farms.

*** Farms > 250NPH reducing gradually as farmers are proactive in reducing stocking rates to comply with the nitrates and derogation terms and conditions.

not above the 170kg NPH in 2015. The DAFM recommends that all recipients of these letters should contact their agricultural consultant for advice.

The DAFM letters will contain the following text "according to our records you are in breach of the nitrates regulations. Our records indicate that the total amount of nitrogen from livestock manure applied on your farm for [YEAR] was XXXkg per hectare (kg N/ha), which is more than the limit of 170kg...."

What happens if I exceed the limit more than once?

Penalties will be multiplied by three for repeated breaches within three calendar years. On a first repetition, the current sanction is multiplied by a factor of three. For second or further repetitions (reoccurrences), the previous percentage sanction is multiplied by three, up to a maximum of 15% for negligent sanctions. Repeat breaches after this will be deemed intent, and will lead to higher sanctions up to the loss of the current calendar year's entire payment(s). It can also lead to the loss of any payment(s) due in the following calendar year.

Table 3: DAFM penalties

Band for non-derogation applicants	% penalty
>170 <=180	1%
>180 <=210	3%
>210 <=250	5%
>250	20%
Band for derogation applicants	% penalty
>250 <=300	5%
>300	20%

Derogation requirements

- All terms and conditions of the derogation must be adhered to.
- You must make an annual application online to DAFM.
- You must be farming a holding which is at least 80% grass.
- You must have grazing livestock – a derogation is only available in respect of grazing.

Livestock

- Derogation applicants cannot import

organic manures from a grazing live-stock enterprise.

- You must have a fertilisation plan in place for your holding by 1 March each year. This plan must be submitted online to the Department along with your application form unless you have an approved REPS4 plan in place OR unless you had an approved derogation in 2013, 2014 or 2015 nitrates derogation application and have not had significant change.

• You must keep fertiliser accounts. After the end of each calendar year, your fertiliser accounts must be submitted online no later than 31 March of the following year.

• Derogation fertiliser plans in 2016 must be based on soil analysis results dated after 15 September 2012.

• Applicants who have applied for a derogation for the first time in 2015 must have taken soil samples in 2015 to be approved for the derogation.

• New derogation applicants in 2016 must have valid soil samples at the time of application or must have soil-sample results on the holding by 31 December 2016. Otherwise, the derogation application in 2016 will be deemed invalid by DAFM.

• New derogation applicants who do not have soil analysis results must assume Index 3 for 2016.

• Soil samples must be for every 5ha of land declared on BPS 2016 (including owned, leased and conacre lands).

• New derogation applications in 2016 require a farmyard sketch that provides a link with the buildings outlined on the fertiliser plan.

• Application deadline is 31 March 2016 and can only be submitted online.

• Fertiliser records for 2015 must be submitted online by the deadline for 2015 of 31 March 2016.

• Fertiliser records need to include details of chemical fertiliser bought in 2015 (including any opening stock on 1 January 2015, and concentrate bought in 2014). These can only be submitted online in 2016.

• Derogation farmers are liable to a 5% DAFM inspection if in derogation.

• Full details of the scheme are available on the DAFM website.

Basics of the Basic Payment Scheme

Eamonn Lynch

Teagasc B&T Tillage Advisor, Midleton

In January 2015, the new Basic Payment Scheme was introduced. Let's review its key elements.

All eligible farmers will receive the Basic Payment and Greening Payment. Over 90% of applicants will automatically qualify for the greening payment on the basis of their current farming practices. The exception to this are the arable farmers who fall into the category of 10ha or more land under arable production. Farmers who fell into this category in 2015 are aware of the rules, but new arable farmers or arable farmers who are increasing their acreage should be aware of the following:

- Greening comprises three parts:
- Crop diversification.
- Ecological focus area (EFA).
- Ploughing permanent pasture.

Crop diversification

- If you farm between 10ha and 30ha of arable land, then you are obliged to grow at least two crops. Any one crop cannot exceed 75% of the arable area i.e. spring barley and winter barley are considered two different crops.
- If you farm more than 30ha you are obliged to grow at least three crops. The main crop cannot exceed more than 75% of the arable land and the two main crops together cannot cover more than 95% of the arable land.

Permanent grassland does not count as a crop for the three crop rule. Temporary grassland can be counted as a crop and therefore comes into the calculation, if required.

The main exemptions are as follows:

- Where 75% of the eligible land is grassland and the tillage area is not greater than 30ha.
- Certified organic farmers.
- Arable area less than 10ha.

Ecological focus areas (EFA)

For 2016, there will be no changes to EFA rules. EFAs only apply to farmers with 15ha or more of arable land. EFAs need to be equivalent to at least 5% of the total arable land. Land that is considered as EFA may include any one or more of the following:

- Hedges (1m length = 10m² EFA).



Arable applications of 10ha or greater must be completed online.

- Drains (1m length = 6m² EFA).
- Fallow (1m² = 1m² EFA).
- Cover crops (1m² = 0.3m² EFA).
- Protein crops (1m² = 0.7m² EFA).
- Buffer strips (1m length = 9m² EFA).
- Short rotation coppice (1m² = 1m² EFA).
- SPS eligible forestry (1m² = 1m² EFA).

The calculation of EFAs is more complex when there are both tillage and grassland areas on the farm.

Permanent grassland

There are no restrictions in ploughing permanent pasture except in areas of natural habitats. Ploughing grassland will be monitored at national level. In effect, Ireland would have to convert more than 5% of its grassland area into arable crops for individual farmers to be affected.

At this stage, every farmer should have received a provisional statement of their entitlements. This will show how many entitlements are issued to them for the duration of this CAP agreement. The statement should also show any entitlements leased onto the holding. The amount of land needed for 2016 can then be calculated based on this statement. One important point to note is that there may be some errors in the calculation of entitlements and the Department will be issuing a definitive statement of entitlements in March/April.

What is different this year?

- Entitlements can now be leased without land. Up to now, you could only lease entitlements with land.
- There is no rotation of entitlements,

i.e. you must use 100% of your entitlements once every two years otherwise you will lose undeclared entitlements. Previously, if you used 50% or more every year you wouldn't lose entitlements.

- 50% clawback applies to sales of entitlements without land.
- There is no consolidation of entitlements (even where land is lost e.g. CPO).

How to prepare for 2016 application

Applications can be completed either online or manually. Arable applications of 10ha or greater must be completed online. This can be done through a nominated agent such as Teagasc or by an individual through agfood online services.

The online system will allow you to view how greening might affect your farm. You can adjust maps, add/delete hedges drains, etc. It is important to note that calculations are based on "reference areas" and not claimed areas. If you have nominated an agent to complete your application it would be important to do the following before your appointment:

- Check maps, both land parcel maps and ecological focus maps (arable farmers only).
- Check statement of entitlements – either provisional or definitive statement if you have received it. If there are errors, they need to be checked out (contact Department or advisor if required).
- If you are an arable farmer, familiarise yourself with the terms and conditions for a greening application. The "Guide to Greening" produced by DAFM can help with this.
- Check that the crop diversification two and three crops rule is calculated in advance.

Errors: Make sure to check the statement of entitlements 2015-2019. Unseen errors could lead to reductions in payment for the next four years. Check the number of entitlements (should be the lesser area declared in 2013 or 2015 Single Payment Form). Also check unit value and estimated payments.

Basic Payment Scheme: new developments

James McDonnell
Financial Specialist, Teagasc Rural
Economy & Development Programme



The 2016 application forms and information packs will be posted towards the end of March

As we go to print, the 2016 Basic Payment Scheme (BPS) application process is about to open. This is despite the fact that the process of changing from the old CAP to the new CAP is not complete yet. The final payment for 2015 has yet to be calculated. This payment of about 3% will be paid after a calculation is completed on the 31 March 2016.

The 2016 application forms (where online is not mandatory) and information packs will be posted towards the end of March, similar to other years. It is not necessary to wait for these to complete your application. In some cases, it would be prudent to get your preparatory work completed in the interim. This will be discussed later in the article.

The final calculation is to work out the definitive convergence path for all qualifying farmers. This could not be completed until all 2015 applications are completely processed (land and entitlement transactions). All farmers will then receive a final balancing payment and convergence path letter in April.

The Department of Agriculture, Food and the Marine has added extra functionality to the online process this year. This extra functionality is part of building the system to handle all applications online eventually and it will be mandatory to apply online for all by 2018. The online system this year incorporates some GLAS screens and extra warnings, if you are a GLAS participant.

There is another new element to the process this year called 'preliminary checking'. This extra functionality to the system will allow the Department to cross-check online applications for dual claims and other small errors.

It will allow the applicant to make late changes to the application prior to any penalty being applied, but it only works for online applications. This is another advantage of the

online system and will allow much faster processing of applications.

The 2016 application

As with all the predecessor schemes, the BPS is an application that must be made if you wish to qualify for other schemes, for example: GLAS, TAMS, and organics.

In the BPS application process, there are other schemes intertwined with it. It encompasses:

- Basic Payment Scheme.
- Greening payment.
- Continuation of the Young Farmers Scheme if you applied in 2015.
- Aid for protein crops (peas, beans and lupins).
- Areas of natural constraint.

Making changes to the herd identifier

Last year, many applicants made changes to the herd/crop/flock number to maximise payments to the farm family or perhaps minimise tax. For example, a herd number in a single name was "joined" with a child to avail of the National Reserve and/ or the Young Farmer Scheme. Registered farm partnerships and farming "Companies" are other examples.

If you are planning to make changes to the herd identifier number, it must be completed in good time to allow the District Veterinary Office to process the application; otherwise, it may not be possible to complete the BPS application.

The partnership registration office will not accept applications between 31 March and 1 June this year. This is to help make the BPS application process more efficient. If you are planning to make changes to your farm, be sure to consult with your Teagasc advisor early, so that all the relevant application forms and tasks can be lined up and completed in time.

National Reserve (NR)

In 2015, there was just shy of €25m available for distribution to successful applicants. This was funded by a one-off cut to the national BPS fund. From now on, this fund will be significantly less. I expect it will be replenished



If you are planning to make changes to the herd identifier number, it must be completed in good time to allow the District Veterinary Office to process the application.

GETTING HELP

If you intend to get help completing your application form for the Basic Payment Scheme or any of the other CAP schemes, it is important that you make an appointment with your advisor immediately. Completing the form this year should be more straightforward than last year. The online system should be more robust after having coped with the 2015 process. Before you visit your advisor, review all the documentation you have received from the Department.

If you plan on making significant changes to the 2016 application, state that you may require a longer appointment than usual, so that it can be completed in one visit. The more complex cases may also involve a solicitor, accountant and valuer and some or all of the following transactions:

- Adding and/or changing the name(s) on the herd number.
- Completing a partnership application.
- Transferring entitlements using the transfer application.
- Completing a capital gains tax return.
- Completing a VAT return.
- Updating your will.



from unused funds from the previous year (2015), unused entitlements and clawbacks.

The unused 2015 moneys are currently unknown. All entitlements were used in 2015, so there are none available from that source. To date this year from speaking to advisors, few farmers seem interested in selling entitlements due to the 50% clawback applied to sales. So this is unlikely to yield a large pot for the NR.

In 2015, the NR granted BPS entitlements to successful applicants worth €173. On top of this, all of the applicants were paid Greening which was worth a further 44% (€77). Some of these applicants also qualified for the Young Farmer Scheme (€65).

The rules of this year's NR scheme have not been announced yet. The scheme is expected to open in late March after the Department consult with the farm organisations on the shape of the scheme. The scheme is mandatory as part of CAP with two mandatory categories.

- Young farmers.
- New entrants.

If the funding available is very limited this year, there is a possibility of a lower allocation to successful applicants or perhaps tighter conditions.

Young Farmers Scheme

This scheme delivers a top-up to young farmers who have recently taken up farming. To be eligible you must have started in the last five years and you must be 40 years or less in 2016. Once you qualify, you can avail of the payment for up to five years. The date your name appeared on the herd number is the year you started.

If you start farming in 2016, you are guaranteed to get at least four payments – the fifth and final payment depends upon what happens in the next CAP negotiations. The payment is payable on a maximum of 50 entitlements. The payment is worth about €65. I expect that the terms and conditions will be broadly similar to last year. The funding for this scheme is

similar every year during the current CAP agreement. Those who applied last year must reapply for the next payment on the online BPS application system as part of the BPS application. New applicants must complete a separate online YFS application. This application is in the Department's online application system.

Deadlines

The deadline for all schemes (BPS, NR and YFS) will be Monday 16 May 2016. This will not be extended. As for other years, amendments can be made after submission of the application until the end of May. Reasons for making an amendment include:

- Correcting an obvious error (minor clerical error).
- Adding or deleting a parcel.
- Change of use of a parcel.
- All amendment forms will be acknowledged in writing.
- Ticking/unticking the ANC box.
- Ticking of the YFS box (where applicable).

Taking the 'con' out of conacre

Why both farmers and landowners should seriously consider long-term leasing

Tom Curran
Teagasc Rural Economy & Development Programme

Long-term leasing BOOKLET

Long-term leasing makes a lot of sense for both the landowner and the active farmer in terms of land use and maintaining the land in a good productive state. It also makes sense financially to both parties as it allows the active farmer to better justify any required investments and the landowner has the benefit of the income tax incentives.

A booklet on long-term land leasing is available at <http://www.teagasc.ie/publications/>

Short-term, 11-month land rental has long been part of Irish farming. But there are a number of significant negatives attached to it. For the active farmer it's difficult to plan the business and invest in the rented land. For the landowner, conacre offers flexibility but the land may become rundown; the income is taxable and there may be implications for capital taxes in transferring the land to a family member. Long-term leasing offers a number of really significant benefits compared with conacre.

What is a land lease?

A land lease is a written legal agreement between a landowner (lessor) and an active farmer (lessee). It is signed by both parties, witnessed by an independent person and stamped by Revenue. Details to be included:

- Term of the lease.
- Annual payment and payment procedure.
- Details of the land use and the upkeep of the land.
- Insurance.
- Treatment of Basic Payment entitlements.
- A clause preventing subletting.
- The lease must be stamped by Revenue and registered with the Property Registration Authority (PRAI).

Legal advice

The people involved in the lease must sign up to the conditions contained in the written lease agreement. While there are template lease agreements available, it is important to tailor the lease agreement to the needs of both the lessor and the lessee. An example of this would be the upkeep of fences or hedges on the farm. The responsibility for this should be clearly stated in the lease. Have a solicitor review

the terms of the lease before signing.

Farm buildings should generally be dealt with in a separate agreement to avoid any issues with the Landlord Tenant Act. Alternatively, a separate renunciation clause may be signed by both parties where the tenant waives any rights under the Landlord Tenant Act at the outset of the lease.

So, why should landowners consider long-term land leasing?

1. Enhanced tax relief incentives

The income tax incentives were enhanced by Revenue and the Department of Agriculture, Food and the Marine in 2014 to make leasing more attractive to landowners who did not wish to farm the land themselves. The changes were also designed to encourage landowners who already had their land let out on conacre to change to long-term land leasing.

Since the introduction of these new income tax incentives, a survey carried out by the Department of Agriculture, Food and the Marine showed that the use of long-term land leasing increased by 27% in 2015. The tax-free thresholds are shown in Table 1.

Some further changes introduced were that land can now be leased for up to 25 years without affecting the landowner's right to qualify for retirement relief on capital gains tax. Limited companies can now qualify for the landowner for the income tax incentives.

Payments received under the Basic Payment Scheme and the agreed land lease fee per acre (or per hectare) can be added together as tax-free income under the relevant threshold. The landowner must still pay PRSI and USC on this income. The amount of income involved may determine the length of the lease agreed. If land is co-owned between a husband and wife, the relevant thresholds shown in Table 1 can be doubled.

Table 1: Income tax incentives for long-term land leasing

Term of lease	Max tax-free income/year
Five to seven years	€18,000
Seven to 10 years	€22,500
Ten to 15 years	€30,000
More than 15 years	€40,000



Where land is let on conacre for more than 10 years, the landowner may not qualify for retirement relief on capital gains tax if the farm is sold or transferred to a family member.



CASE STUDY

John and Mary are in their early sixties and they want to step back from farming. They are looking at the option of leasing the farm to a third party to avail of the income tax incentives. John is the sole owner of the 32ha farm and there are 32 entitlements worth €260/ha. The farm is a grassland farm and is very good quality land.

To maximise the income that is covered by the income tax exemption, they are looking at leasing the farm and entitlements for 15 years.

The total potential income is €24,320 including a lease payment of €500 per hectare and entitlements worth €260 per hectare.

All of this income would be tax free as it comes under the threshold of €30,000 for a 10- to 15-year lease. Table 2 illustrates the advantages of leasing the land long-term and availing of the income tax incentives.

Table 2: Net lease income

32ha at €500/ha (plus lease of 32 entitlements at €260/ha)	Total lease income (land and entitlements)	Lease income threshold for 15-year lease	Income tax payable with lease income exemption	Income tax payable without lease income exemption*
Long-term lease (10-15 years)	€24,320	€30,000	€0	€4,864

* NOTE 1: Assumes all lease income is taxable. It also excludes tax credits, USC and PRSI.

To qualify for the income-tax incentives, land can only be leased to non-relatives. The only exception to this is the uncle/aunt to nephew/niece relationship.

2. Providing an opportunity for lessee to invest in the land

By opting for a long-term lease, the landowner is providing the opportunity to the active farmer to invest in the land during the term of the lease. This means that the land may be better looked after and more productive both during and at the end of the lease.

3. Qualify for retirement relief on transfer or sale of the farm

Where land is let on a long-term lease for more than 10 years, the landowner may not qualify for retirement relief on capital gains tax if the farm is sold or transferred to a family member. Leas-

ing the land long-term provides the structure to avoid this happening.

Why should active farmers consider long-term land leasing?

1. Security of tenure

An active farmer (lessee) who is using long-term leased land as part of their farming operations can better plan their business in terms of lands farmed, stock carried and crops grown. It gives more certainty to the business, the scale of farming operations and may provide expansion opportunities. This is the key advantage for the active farmer.

2. Better financial justification for the required investment

With a long-term lease, the active farmer (lessee) can justify financial investment in any improvement

works that are necessary to the land in order to farm it productively. Such investments may include: reclamation, soil fertility, reseeding, roadways, fencing and the provision of adequate water supply.

3. Farm buildings may come with the land which will reduce capital investment

In a situation where the active farmer is expanding their farm business, making use of existing facilities can greatly reduce any capital investment required in buildings. Such investment may include the provision of animal housing, slurry storage and silage facilities.

A good reference is the publication *Guidelines to Long-term Land Leasing*, which can be found on the Teagasc website.

The bank – the business partner you can't do without

Kevin Connolly
Finance specialist, Teagasc Rural
Economy and Development
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Banks have two primary functions. Firstly, to provide finance and secondly, to help you manage the day-to-day dealings of your business by providing your current account, deposit accounts and short-term borrowing facilities, such as overdrafts, stocking loans and credit card accounts.

The current account – the basics

The current account acts as the main point of contact between you, your business and the bank. The account has a fairly complete record of how much money came in (usually income from sales or direct payments) and how much was paid out to meet the running costs of the business and your personal drawings.

Banks refer to the current account as the “track record” of a customer’s dealings with them. More importantly, you can also make use of your own bank account data to help manage day-to-day cashflow and track spending.

Using a cashier in a bank branch to lodge a cheque or cash or to make a withdrawal is becoming more expensive as a result of transaction charges and is less convenient, as cashiers become rarer than hens’ teeth.

Farm businesses are increasingly using modern direct debits, standing orders, on-demand electronic transfers, mobile or internet banking, credit cards and debit cards.

All of these methods of transferring funds usually cost less in bank charges and allow speedier movement of funds between accounts.

Standing order (SO) v direct debit (DD) – what’s the difference?

A standing order is set up by the bank account holder to create an ongoing (for example, every week or month) transfer of a fixed amount of money to another bank account. To set one up, you need the bank account details of the receiving bank – the bank identifier code (BIC) and international bank account number (IBAN).

Most online banking systems allow you to set up standing orders your-



For any business looking to avail of bank finance, it is worthwhile preparing well and having a clear idea of what the loan will be used for

self, so you can easily move money between your own accounts – such as from your current account to a deposit account for regular savings.

A direct debit is a request from another bank account for the transfer of a variable amount of money from your account. It requires that you have pre-authorized this transfer, but rather than being initiated from your account (as with a standing order), the order to transfer funds comes from the payee’s account.

The organisation requesting the transfer must issue you with an invoice a number of weeks in advance of the direct debit so that you have a chance to query the payment before it is made.

The bank charges, but also the taxes imposed by Government on financial transactions, are all encouraging less cash and cheque transactions and more electronic or card transactions.

From 1 January 2016, there was a change in the charge for withdrawing cash from a “hole-in-the-wall” ATM as 12cents stamp duty is levied on each use of a card to withdraw cash – subject to a maximum yearly charge of €2.50. Electronic transfers usually still incur transaction charges, imposed by the bank, and stamp duty charges, such as the annual charge on the use of credit or debit cards.

These stamp duty charges are much less in that there is usually just an annual charge for the use of a credit or debit card, rather than the current stamp duty of €0.50 on each and every cheque.

Many people still prefer using cheques, as it allows them to record the details of the transaction on the stub. They feel it will be easier to categorise the expense for accounts purposes.

But online transfers of money also allow you to add a message or further information to a transaction, so that

you can trace what it was for at a future date.

Become account vigilant

As electronic payments increase, it becomes more important than ever to monitor your business’s current account. Many businesses still receive a monthly bank statement on paper, although some banks incentivise customers to move to an electronic statement received via email or viewed online.

It is a good idea to “check in” with your current account more than once a month.

- What is your balance? Is it around what you would expect?
- Do you know what all the various transactions (transfers in and out) listed for the account were for?
- Can you see what future transfers are pending (due to happen in the next month) and will there be funds there to meet them?

Online and mobile banking has improved a lot with screens that are easier to navigate around and there’s a lot more options to use to help manage your accounts.

You can group transactions together by category (using the description attached to the electronic transactions) and search for a specific cheque by number or date.

Apart from monitoring your current account it is also a good idea to check, at least once a year, the total debt on the business. A simple list of all the debts with the main terms and interest rates will focus the mind on how to manage the current debt, as well as assisting in decisions about taking on additional loans to fund new investments.

The golden rules of current account management

Never write cheques for amounts that exceed the account balance plus maximum overdraft facility – if there is one. Regularly incurring referral fees due to unpaid direct debits or bounced cheques is seen by the bank as an indication of your inability to properly manage cashflow.

Similarly, not abiding by conditions such as bringing the current account back into the black for at least 30 days during the year is seen as a black mark on your current account track record.

Figure 1: A useful table to help monitor your debt

	Loan Name/ Lender	Initial Amount Borrowed	Initial Loan Term (years)	Current Amount Outstanding	Rem aining Loan Term (years)	Current Interest Rate	Total Repaym ent per year
<i>Example</i>	<i>Land Purchase Loan / Z Bank</i>	€120,000	<i>12 yr</i>	€84,800	<i>7 yr 9 mth</i>	<i>6.70%</i>	€14,868
Term Loans (incl house mortgage)		€		€		%	€
		€		€		%	€
		€		€		%	€
		€		€		%	€
Stocking Loans		€		€		%	€
		€		€		%	€
		€		€		%	€
Hire Purchase/ Finance		€		€		%	€
		€		€		%	€
		€		€		%	€
		€		€		%	€
Overdraft		€		€		%	€
		€		€		%	€
Merchant Credit		€		€		%	€
		€		€		%	€
		€		€		%	€
		€		€		%	€
Other		€		€		%	€
	TOTALS			€			€

You can help avoid this by keeping the overdraft facility exclusively for meeting short-term demands for funds such as the regular running costs of the business, rather than spending it on large outlays.

These might include spending on large-sum investments, such as buildings or machinery, which usually don't generate enough income in the short-term to recharge the account with funds.

Apart from tarnishing your account management record, exceeding the overdraft means you can end up paying surcharge interest on top of the substantial overdraft interest rate.

Preparing a loan application

Another very useful support that banks offer is to assist businesses in financing large investments. There is scope to negotiate rates, but the bank will work through a formula to set its rate after assessing the risk and the repayment capacity.

Most banks price their interest rates based on a margin over the "cost of funds" – i.e. what it costs them to borrow the money on the money markets.

Calculating a borrower's repayment capacity involves assessing the amount of free cash that the business potentially has available to make

repayments on the new borrowings. The following formula gives an idea of how this repayment capacity is calculated in practice:

Calculating repayment capacity

Net Profit (from accounts or eProfit Monitor).

Plus Non cash deductions (e.g. inventory change, depreciation charged).

Less Living expenses (household running costs, pension and health insurance payments).

Less Expected Income Tax to be paid.

Less Principal to be repaid on current loans (the interest fraction is already deducted in the calculation of net profit).

Less Annual cash spend to fund small investments and other outlays

Equals Free Cash available to make repayments on new loans.

Apart from repayment capacity, the bank will also look at your previous track record at managing your current account (as outlined earlier), the amount of your own funds you will be contributing to the investment and the security you have available.

A detailed loan application form will supply the bank with much of the information they need, but ad-

ditional information can also be used to support an application.

Banks are now routinely requesting three years of tax accounts, eProfit Monitor reports and ICBF reports, if available, to help give a picture of the farm financial and production characteristics.

Projected cashflows for three to five years with a projected balance sheet for the same period can also be useful to demonstrate to the bank that the investment is going to have a positive effect on the financial status of the business over the term of the loan.

The bank uses these projections to satisfy itself that the loan can be repaid and the business can still meet its other obligations over the term of the loan. Stress-testing these cashflows by assessing the effect of higher interest rates and lower prices for sales product are also routinely carried out by the bank.

For any business looking to avail of bank finance, it is worthwhile preparing well and having a clear idea of what the loan will be used for and what effect it will have on your business. Backing this up with well-prepared financial projections (cashflows) can greatly help in getting the best deal and best terms possible from the bank.

tillage

Aim for high yields and premium crops

Preventing or minimising possible losses on production eating into the Basic Payment Scheme and Greening payments will be a challenge in 2016

Tim O'Donovan
Crop Specialist, Teagasc Crops, Environment, and Land Use Programme

Larry Murphy
Teagasc B&T tillage advisor

Several years of record global harvests of wheat, maize and soya, average yields rising at 1.1% and demand at 0.9%, plus adverse currency movements add up to a chastening background for tillage farmers.

Teagasc budgets (Table 1) forecast a green grain price of around €135/tonne. The current forward price is closer to €120/t and it is changing every day as currency markets exert their influence. Yields in 2015 were exceptional and will be hard to match let alone beat. Savings on fuel and fertiliser may not enough to offset the fall in grain prices.

What can you do to protect your income?

Lower-yielding fields, or parts of fields such as headlands, will not leave a margin. Could a tonne of lime, alleviating compaction, or remedial drainage help? In most cases – no, but examine all the options. Look to beans and oilseed rape to spread drilling and harvest windows.

When deciding whether or not to drill land, knowing the fixed machinery costs such as HP payments, insurance and depreciation as opposed to the variable machinery costs, such as labour, fuel and wearing part repairs, is very useful.

Your budget may show a field making a loss but take off the overheads such as car, phone, electricity and fixed machinery costs and it shows a profit. So, a block of land may be diluting the burden of overhead costs on your remaining land. Of course, the risk and labour input must be balanced against this.



Where possible, maximise the area of premium crops for human feeds, seed, milling and malt. Fodder beet and maize can leave very good margins but you need a keen buyer.

There may be valid entitlement or greening reasons to stick with a block of rented land.

However, from my analysis of growers' figures from 2015 and projecting forward for 2016, most rented land will only leave a margin where wheat yields are over 5t/ac or barley yields are over 4t/ac. And that's when rents are modest, say €150/ac, and everything goes your way. Other crops on rented land need equally high yields or must attract a premium to leave a margin.

In summary, only the highest yielding land will leave a margin in 2016, especially on rented ground and if you are producing feed grains. Maximise premium and break crops where

Table 1: Teagasc spring crop margins 2016 (€/ac not incl VAT)

	Wheat (spring)	Barley (spring)	Oats (spring)	Rape (spring)	Beans (spring)	Fodder beet	Maize
Seed	34	34	32	36	56	73	81
Fertilisers	142	127	116	101	61	214	184
Sprays	77	56	52	15	67	105	45
Miscellaneous	28	25	23	11	19	54	164
Hire machinery	175	160	168	187	159	248	264
Total variable costs	466	403	392	352	363	695	739
Break-even yield	3.1	3.0	2.9	1.0	2.1	19.9	16.4
Net price (€/t)	145	135	135	350	170	35	45
AID/subsidy	0	0	0	0	101	0	0
Straw	32	40	36	0	0	0	0
Target yield	3.6	3.2	3.0	1.4	2.4	26	22
Margin at target yield	98	70	50	138	146	215	365



Robert O'Connor and Larry Murphy in a crop of oilseed rape for seed. Male and female plants are grown in separate lines to facilitate cross-fertilisation at flowering.

possible and consider their benefits across the whole rotation.

Crop selection and rotations

Results from the CROPQUEST study carried out by Teagasc researchers tell us that using break crops will give a 10% yield benefit, on average, to the following crop versus continuous cropping.

We have a low level of crop rotation in Ireland. We need rotations for many reasons, such as disease break, weed control and soil fertility, especially now that land is in continuous cultivation. Good break crops are beans, oilseed rape, fodder beet, maize and, of course, grass.

Robert O'Connor who farms at Cushinstown, New Ross, Co Wexford, says he is fortunate to have acid brown earth soil which is suitable for growing many crops. His crop choices are focused on high value rather

than high output. "I try to go where the demand is," says Robert. "That often means growing premium crops like malting barley or crops for seed production."

“ Results from the CROPQUEST study carried out by Teagasc researchers tell us that using break crops will give a 10% yield benefit on average

"I have a figure in my mind for, say, malting barley and if markets offer that (he gets a text with a price/tonne each week from Boortmalt), I'll sell some grain forward but not more than 70% of the projected crop. The days of

waiting until the day of harvest are gone."

Robert's main crops are spring malt barley and over the last few seasons, he has also grown winter oats, spring wheat and winter oilseed rape. Like most malting barley farmers in the area, the contracted tonnage is static .

"We aim to select crops that are likely to give the best return and three tonnes of spring barley at €130/t is not worthwhile, so we grew beans and oilseed rape last year. Having some winter crops in the ground reduces the workload in the spring and spreads the harvest risk when it comes to weather and harvesting."

This is Robert's third year growing winter oilseed rape for seed and it is overwintering well. "It's the ideal crop," he says. "It leaves a decent margin and it's a break crop... unfortunately, you can really only ever grow it once on a piece of land."

Spring barley – know how much to sow

Michael McCarthy
Teagasc B&T tillage advisor, Thurles



Barley will compensate somewhat for higher or lower plant numbers by producing higher or lower tiller numbers

Research has shown that there is a direct correlation between grain numbers/m² at harvest and barley yield. So it's vital to establish and manage the crop well.

Grain number is the key determinant of yield in spring barley (assuming weeds, disease, weather and fertility are right). Wheat grains will plump up if their numbers are few and conditions good. But if you don't have enough barley grains on the field at grain-fill, yield will go a-begging.

So how do you make sure you give the crop every chance to harvest the potential yield? Grain number per square metre is mainly influenced by ear number which, in turn, depends on plant number and the number of shoots per plant. Establishing the correct number of barley plants is essential to achieving high yields.

Barley will compensate somewhat for higher or lower plant numbers by producing higher or lower tiller numbers but there is a limit to how much the crop can adjust.

How many plants do I need to establish?

In order to achieve maximum yield you need to establish the right number of plants to produce enough good sized ears of grain at harvest time. Research from Teagasc Oak Park shows a spring barley plant population of approximately 300 plants/m² is required to achieve maximum yield. Such a plant population should in turn produce a canopy of 1,000 to 1,100 shoots/m². Use the table as a guide to target plant populations, in order to achieve 1,000 shoots/m².

Don't confuse establishment with germination percentage. Essentially, establishment rate is the percentage of seed that will survive to create a viable plant count. If we sow a random sample of 100 seeds (assuming the minimum standard of germination of 85%), we can expect 85 to germinate. However, slugs, crows, stones and compaction can all reduce the number of plants that make it above ground (generally we assume this loss to be 10%), giving us an establishment rate of 75%. When sowing into a cold seed bed, it is not uncommon for only 60% to 70% of seeds to establish. This is where your previous experience and



Grain number is the key determinant of yield in spring barley.



LEFT: Mike McCarthy and Willie Hanrahan examine barley seed.



Table 1: Sowing targets

Sowing date (week)	Up to mid-March	Mid late March	Early to mid-April	Late April
Target plants m ²	280	300	300	325

seedbed conditions need to be taken into account.

Willie Hanrahan and his father, also Willie, grow or contract over 700 acres of winter wheat, winter barley, winter oats and spring barley centred on Crough Keal, Clogheen, Co Tipperary.

“We use exclusively certified seed,” says Willie senior, “We feel it’s worthwhile to use certified seed but with the expense involved you want to get the seed rate absolutely right.”

The Hanrahans take into account advice from their merchant, Dairygold, their customers such as Bretts and also Teagasc. “We’ll certainly take into account the 1,000 grain weight, the date of sowing and weather conditions but soils are reasonably uniform around here so that’s somewhat less of a factor,” says Willie Hanrahan.

What is the correct seeding rate?

Once you have decided how many plants you would like to establish, you need to calculate your seeding rate. If you sow too few seeds, you are then depending on the tillering capacity (i.e. the ability to produce a number of seed heads from one seed) of the crop to achieve this. Sowing too many seeds will result in unnecessary expense and a crop of tall and weak

plants. This will lead to increased risk of lodging and a lot of small ears at harvest time. To determine the correct seeding rate for your fields, take the following factors into account:

- Seed quality (germination%, thousand grain weight, variety).
- Soil conditions.
- Time of year.
- Anticipated pest problems.
- Previous experience.

Thousand grain weight (TGW) is the weight of a thousand grains and is expressed in grammes. It varies according to seed size and variety. The DAFM provides standard TGWs associated with each variety but these should only be used as a guide, and it’s more appropriate to establish the TGW of the relevant seed lot. If you cannot locate the TGW on the label; ask the merchant. Seeding rate can be calculated using the following formula:

$$\frac{\text{TGW} \times \text{target plant population/m}^2}{\% \text{ establishment}}$$

Let’s assume a TGW of 45. Sowing date is 20 March and conditions are good and dry but cold so establishment will be 75%.

$$\frac{45 \times 300}{75}$$

75% = 185kg/ha or 11.5 st/acre

If you were to repeat the same equation but with a TGW of 43 for instance the result would be as follows, $\frac{43 \times 300}{75}$

75% = 172kg/ha or 11st/acre

As you can see, a difference of just three grammes in a TGW resulted in a variation of 13kg/ha. Varieties can often vary like this in TGW, so calibration is key. It can be very tempting to just keep planting when people finally get out into fields, but this variation should be taken into account especially when changing variety.

Your machine may have been accurately sowing one variety, but changing to another without re-calibration may result in a seeding rate either too heavy or too light. This can result in unnecessary expense or loss of yield. In my experience, certain seed dressings can also have an effect on seed rate. Sometimes seed dressing can vary between seed suppliers so, again, calibration is necessary.

So, there is no direct answer to the question “At what rate do I sow barley?” No general seeding rate exists and several factors can influence the result. However, one thing is certainly clear. The seed rate calculator must be used if correct establishment is to be achieved.

“Particularly when margins are tight it’s essential to establish the right number of plants, ears and grains,” concludes Willie Hanrahan.

Lime: the forgotten fertiliser

Mark Plunkett & David Wall
Teagasc, Johnstown Castle, Wexford

It is well recognised that liming is an essential ingredient in maximising the production potential of our soils. Liming acidic grassland soils can release up to 80kg of nitrogen (N), which is worth €80/ha annually.

Maintaining the soil pH in the optimum range of 6.3 to 6.5 will also increase the availability of stored soil P and fresh fertiliser and manure P.

The application of lime is often influenced by factors such as cashflow and weather conditions. Based on soil test results and lime use statistics over the last three decades, there are clear indications that lime is the forgotten fertiliser on the majority of Irish farms.

Soil testing and lime advice – what should you do?

Test soils on a regular basis (once every three to five years) to monitor soil pH levels. This will provide a reliable basis for calculating the rate of lime required to suit the soil types on your farm. It is also important to select the correct type of lime; i.e. calcium (C) v magnesium (Mg).

Where soil magnesium levels are low (<50ppm), apply magnesium limestone to correct soil pH and Mg levels. Knowing the lime requirement for your soils is the starting point to planning and organising what and where lime applications are needed.

Liming strategies – which scenario does your farm fall into?

The following are three possible scenarios that you may identify for your farm when you receive your soil test results.

LIME THE FACTS

- 65% to 70% of grassland soils are below the target soil pH6.3.
- 60% of tillage soils are below the target soil pH6.5.
- National lime use currently ~50% of what it was in the 1980s.
- Grassland mineral soils release up to 80kg N/ha once restored to soil pH6.3.
- Maintaining the correct soil pH is critical for nutrient availability of N, P and K.
- Lime will increase the production potential of acidic soils by $\geq 1.0t/ha$ of grass DM.

1. Maintenance lime applications

Soil testing on a regular basis and liming as per recommended on your test report is a good approach to liming. In this situation, a comparatively small quantity of lime may be required on a regular basis, depending on the farming system.

This can be applied at any time of the year to maintain optimum soil pH. For example, lime can be applied at sowing time on tillage farms or on grassland farms when covers are low (e.g. post-silage harvest).

It is good practice to apply lime to 20% of the farm annually. This strategy has many benefits. Firstly, spreading the cost of lime over five years. For example, take a 100-acre farm that requires a maintenance lime application of 2t/ac over each five-year period. If lime was applied



to 20 acres per annum, it represents a relatively small annual farm lime maintenance cost of €5/ac/year (total €500 per year) with ground limestone costing €25/t.

Secondly, on farms with a risk of high molybdenum (Mo), treating 20% of the farm annually reduces the risk of acute copper deficiency across the entire farm from occurring in cattle.

2. Half of the farm requires lime

Soil test results indicate that 50% of the farm requires lime. Therefore, target lime applications to those fields based on soil results. It is not advisable to exceed 3t/ac in a single application.

Apply lime when soil conditions are suitable, for example early spring time, after grazing, after first-cut silage or at reseedling. On tillage land, apply lime to ploughed soils after rolling or pressing and work into the seedbed during crop establishment. Alternatively, you could apply lime to stubble fields after harvest.

In this example, our 100-acre farm requires 4t/ac of lime on 50% of the area. This approach will require additional cashflow to cover the cost. Apply 50% now and the remainder in year three. The cost of lime is now

Liming
TIPS

- Calcium (Ca) limestone is faster acting than magnesium limestone in lifting soil pH.
- Magnesium (Mg) lime has a somewhat slower reaction time and is more suitable for soils with high Mo risk.
- Leave a minimum of three months between lime application and closing for grass silage.
- Leave a minimum of three months between liming and the application of urea or slurry
- For crop establishment apply lime at sowing time and work into the seedbed
- On soils that are prone to poaching a 'little and often' approach is best.



Based on soil test results and lime use statistics over the last three decades, there are clear indications that lime is the forgotten fertiliser on the majority of Irish farms.

spread over a three-year period, with an initial whole-farm cost of €25/ac in year one and the remaining €25/ac in year three. In subsequent years, lime should be applied on a maintenance approach for the remainder of the farm.

3. All of the farm requires lime
Where soil test results show that the whole farm has sub-optimal soil pH, a different approach will be required. Low soil pH will be a major limiting factor to the productivity of the farm.

Therefore, if grass or crop production is required across the whole farm (i.e. for grass with reasonably high stocking rate), it's important to focus on the whole farm to increase performance, rather than a proportion of the farm.

It will be important to examine the costs and budget accordingly to spread the cost of lime. The strategy is to apply 50% of the recommended lime across the whole farm. For example, where the recommended rate of lime is 3t/ac, apply 1.5t/ac now and apply the balance in year three.

This will allow the opportunity to capitalise on the benefits of liming from increased N, P and K availability to enhance grass and grain produc-

tion. This strategy incurs a higher annual lime cost in the initial years. The typical cost of lime in this situation will be €38/ac in year one and €38/ac in year three.

The main difficulty with this scenario is getting suitable times of the year to apply lime, as the whole farm requires an application. This can be done in a staged approach over time by selecting smaller proportions of the area (e.g. treating silage ground, spring and autumn applications).

In this scenario, every opportunity should be taken to improve soil pH levels by applying lime over time.

High molybdenum soils

Take care when liming high molybdenum-risk soils, as increasing soil pH above 6.2 exacerbates the problem. Increased Mo availability can lead to reduced copper uptake in the rumen and deficiency in cattle (rusty coats).

Maintain a soil pH of less than 6.2 on these high Mo-risk soils. An alternative strategy on these soils is to lime to the target soil pH 6.3 as normal and to provide copper supplementation to the animals as routine.

Consult with local advisory services to develop a liming strategy in situations where soil Mo is an issue.



Time to get your horse noticed

Importance of taking a good photograph to promote your animal

Declan McArdle
Equine Specialist,
Teagasc Rural Economy and
Development Programme

We live in a digital age where the world is our oyster with regard to promoting stock for sale. It is the norm to upload photographs and videos of horses for sale on the web, as clients are reluctant to travel without seeing a photograph and/or video of the animal first.

In fact, I have heard of occasions where buyers purchased horses from photographs and videos posted without ever actually seeing the horse in the flesh! Although a rare occurrence, it illustrates the influence a good photograph and video can have on potential clients, assuming the horse meets their requirements.

It is imperative when uploading photos of your horse or pony that you realise that this is your sales pitch and presentation to potential customers. No amount of words will make up for a bad photo or video.

However, unfortunately, many adverts posted of horses for sale do not show the horse looking its best which, in many cases, can have a negative impact on the marketing campaign.

More often than not, you find that people upload any old photograph at hand to promote their stock. Many are left subsequently scratching their heads as to why they had difficulty selling their animal or why in a lot of cases they got no enquiries at all.

It takes considerable time and preparation to take a suitable photograph

of your horse. Put yourself in the shoes of the potential purchaser.

If you were to buy a horse in the morning, how would you like it presented to you? For example, if you went to buy a car and visited a car lot with two identical cars on offer, except one is valeted and clean and the other is not, which one would you go for?

The age and the market you are targeting should influence the types of photos you will post. One photo that should be consistent for all animals and all marketing campaigns is that of the horse standing in open stance.

Sequence of legs for open stance

Near fore directly under the shoulder, near hind directly under the point of buttock, with the off fore slightly behind the near fore leg and off hind leg slightly in front of the near hind leg (near side = side closest to viewer; off side = side furthest away from viewer).

You don't need to be a professional photographer to take a good photograph of your horse. The most important thing is that the horse is well presented and in the centre of the photograph.

The quality of photographs taken by smart phones today is quite high. If the lighting is poor, even the most sophisticated cameras will struggle to take a good photograph though.

Taking a good photograph of your horse requires planning:

- Pick a location which has a neutral background, preferably a hedge or wall. The surface should be hard and level.
- Pick a day when the weather is good, preferably with the sun shining, and when taking the photograph, the sun is behind the camera.
- At a minimum, two assistants are required to aid the photographer; one to hold the horse and the other to get the horse's attention, i.e. so that the horse



stands alert and is looking forward with its ears pricked forward.

- Helpful things to have at hand include a bucket with feed in it, something that rattles or something to wave in the air.
- The horse should be in good health and have its feet trimmed. The mane should be lying neatly to the off side or plaited.
- If younger than three, the animal should wear a clean, correctly fitted leather head collar.
- If three years of age and over, it



should be wearing a clean and correctly fitted bridle.

Photographs to consider including, depending on the age of animal:

- A side-on shot of the horse/pony standing in open stance, alert but relaxed, with ears pricked forward.
- A photo of the horse loose jumping or under saddle, preferably side on-with the fence. If being ridden, the rider should be smartly dressed and wear a helmet.

- A good head shot of the horse.
- The horse should be in good health and well turned out.

If selling a foal:

- The foal should be in good condition and finished coating or shedding.

The marketplace is very competitive, particularly the middle market for clients. Therefore, it is in your best interests to upload photographs of your horse looking its best in order to give you the greatest possibility of attracting clients through the farm gate.

Forestry clinics: key messages

Frances McHugh
Forestry specialist, Teagasc Crops
Environment & Land Use Programme

Over 500 appointments were made during the recent nationwide series of Teagasc forestry advisory clinics. Here are some of the most frequently asked questions.

What do I need to know about changing land-use to forestry?

- Forestry is a permanent change of land use. Before trees are harvested, it is necessary to acquire a felling licence. In the case of a clearfell, there is normally a requirement to replant (there is no grant at present for replanting a forest).
- A well-managed plantation is a valuable asset. However, if we look at land value in isolation, it is clear that in some cases afforesting land can have a negative effect on its value. This of course depends on the pre-planting value and care must be taken when considering planting high value land.

How does the grant work?

Forestry grants are available from the Forest Service (Department of Agriculture, Food and the Marine) under the Forestry Programme 2014-2020. DAFM sets the standards and approves grant and premium payments.

Grant and Premium Categories (Table 1) fund the establishment of a 'conventional' forest with the main objective being to produce commercial timber. GPC 9-12 present other woodland establishment options.

The first grant is available to cover the costs associated with the establishment of the forest and is payable after planting. The balance is paid by way of a second grant four years after planting following successful establishment. Grant levels depend on tree species and soil type.

Is there any reason why I wouldn't get grant approval?

Grant approval is not guaranteed. A basic requirement is that the land in question can support a productive timber crop. Of course, each site must be checked against any relevant environmental restrictions, e.g. NHA, SAC, hen harrier SPA.

Relevant bodies are consulted in

Q&A

relation to approval for planting but the final decision is with the Forest Service, DAFM. For those planning to buy land specifically to plant, it is vital that the relevant checks are carried out to assess a land parcel's suitability.

How long do the premiums last?

Annual forestry premium payments are available to compensate landowners for the loss in income earning potential from the afforestation of their land. New entrants are entitled to annual forestry premiums based on tree species and soil type. This premium is payable for 15 years (with the exception of agroforestry and forestry for fibre schemes where premiums are paid for five and 10 years, respectively). See Table 2 for premium rates.

What happens my Basic Payment Scheme payments if I change land use to forestry?

Eligible land planted with forestry since 2009 and which will be afforested under the new Forestry Programme 2014-2020 can be used to activate BPS entitlements. This is a major advantage for applicants who are in a position to benefit. Landowners should ensure that land to be planted satisfies the rules around "eligible land".

What are the best trees to plant?

A professional forester is required to put together a forestry grant application. This includes tree species recommendations. The forester should consult with the landowner to ensure they understand the choices being made and that they satisfy the landowner's overall objectives.

How long will it take until harvest?

Anyone interested in planting some land must have a clear appreciation of the timescale of the proposed crop. The 15-year duration of the premiums

will usually bring a well-managed crop to first thinning. Thinnings can be carried out multiple times.

If a plantation is to be clearfelled; a typical age for this for conifers would be around 35 years whereas broadleaves can vary but usually take at least 50 years. In the case of many broadleaf woodlands; a final clearfell might never happen but rather replacement trees are planted, while larger trees remain at wide spacing.

What are the predicted returns from forests?

How returns from forestry are presented is always a debatable issue. For example, presenting present-day returns as an indication of what might be achieved in 30 to 40 years' time goes against basic economics. However, it is important that potential forest owners have some idea of potential returns from forestry.





Forestry grants are available from the Forest Service (Department of Agriculture, Food and the Marine) under the Forestry Programme 2014-2020.

Table 1: Grant rates/ha

Grant/premium category (GPC)	First grant (€/ha)	Second grant (€/ha)	Additional fencing allocation (IS436)	Alternative fencing allocation (non-IS436)	Total available funding (€/ha)
GPC 1 - unenclosed	1,575	525	500	350	2,600
GPC 2 - Sitka spruce / LP pine	2310	735	500	350	3,545
GPC 3 - 10% diverse	2,360	790	500	350	3,650
GPC 4 - diverse	2,625	840	500	350	3,965
GPC 5 - broadleaves	3,780	1,155	500	450	5,435
GPC 6 - oak	3,990	1,260	500	450	5,750
GPC 7 - beech	3,990	1,260	500	450	5,750
GPC 8 - alder	2,250	840	500	450	3,860
GPC 9 - native woodland estb (a)	3,990	1,260	500	450	5,750
GPC 10 - native woodland estb.(b)	3,780	1,155	500	450	5,435
GPC 11 - agroforestry	2,960	990	500	450	4,450
GPC 12a - forestry for fibre	1,460	490	500	450	2,450
GPC 12b - forestry for fibre	1,245	420	500	450	2,165

Table 2: Premium rates €/ha

Grant/premium category (GPC)	Annual premium (€/ha)	Duration (years)
GPC 1 - unenclosed	185	15
GPC 2 - Sitka spruce/lodgepole pine	440	15
GPC 3 - 10% diverse	510	15
GPC 4 - diverse	560	15
GPC 5 - broadleaves	575	15
GPC 6 - oak	615	15
GPC 7 - beech	615	15
GPC 8 - alder	575	15
GPC 9 +10 - Native Woodland Estab.	635	15
GPC 11 - Agroforestry	260	5
GPC12a +b - Forestry for fibre	180	10

Table 3: Comparing timber crop value based on land quality scenarios for Sitka spruce

Soil type	Grass/rush wet mineral soil	Less fertile rushy peaty soil
Growth rate (yield class)	YC 24	YC 16
Crop rotation	35 years	40 years
NPV	€9,849/ha	€7,113/ha
AEV	€602/ha	€415/ha

These are indicative values, and calculations are based on premium and timber sales revenues minus costs, including inspection paths, maintenance, insurance, roading and reforestation. These figures do not take into account that the Basic Payment Scheme can also be drawn down on eligible forestry ground.

It is important to recognise the variation in forest productivity. Therefore, it is useful to compare returns from forestry on different site types on an annual per ha basis. This can be done by calculating the net present value of a forest (the total net value of a timber crop over the rotation expressed in today's money).

This net present value can then be presented as a series of equal cash-flows over the forest's rotation length. It is this annual equivalent value, which can be used to compare returns from forestry against other farm enterprises.

What happens after final harvest?

The felling of trees is controlled by the Forestry Act. This act requires that a felling licence is in place for any tree-felling (with some minor exceptions). In the case of a clearfell, replanting is compulsory. There is no

reforestation grant at present. The cost of reforestation of a conifer crop is estimated to be €2,500/ha whereas clearfell revenue could be in the region of €20,000 to €25,000/ha (site dependant).

Are there any other options than conventional plantation forestry?

The latest Forestry Programme 2014-2020 includes some new options for woodland establishment. These options still come under the Forestry Act and so replanting is required in the case of a clearfell. These options include:

- **Native woodland establishment:** the focus is on native species with minimum site disturbance with long-term close-to-nature management. It presents opportunities for planting on environmentally sensitive sites.
- **Agroforestry:** combination of forestry and pasture, between 400 and

1,000 trees/ha. Trees are protected so grazing by sheep or small domestic stock is permitted.

• **Forestry for fibre:** the growing of productive tree species to produce wood biomass over 10 to 15 years. Trees are planted at a minimum of 2,000 trees per hectare. Species such as Italian alder, hybrid Aspen, eucalyptus and poplar are used.

The forestry option presents many opportunities for landowners, but it is important to base any decision on sound advice and information tailored to individual cases.

As a follow-up to the forestry clinics, the Teagasc forestry development department will be running a series of forestry management walks from 18 to 29 April.

Further details on these events will be advertised closer to the dates or can be seen on www.teagasc.ie/forestry/events.

Enjoyable spring chores

Chris Heavey

Lecturer at the Teagasc College in the National Botanic Gardens

It's that time of year again, the season when everything is renewed and we can look positively towards the prospect of summer ahead. Spring is a beautiful time in the garden but often we don't make enough of it. On the farm, everything is so busy we don't have time to think about all the things we could be doing to improve our gardens and, as a result, the enjoyment we can experience from them.

As I look out the window I can see shoots from spring bulbs beginning to emerge. Always first up are snowdrops, closely followed by the crocus and then ultimately the various daffodils bring us right into summer.

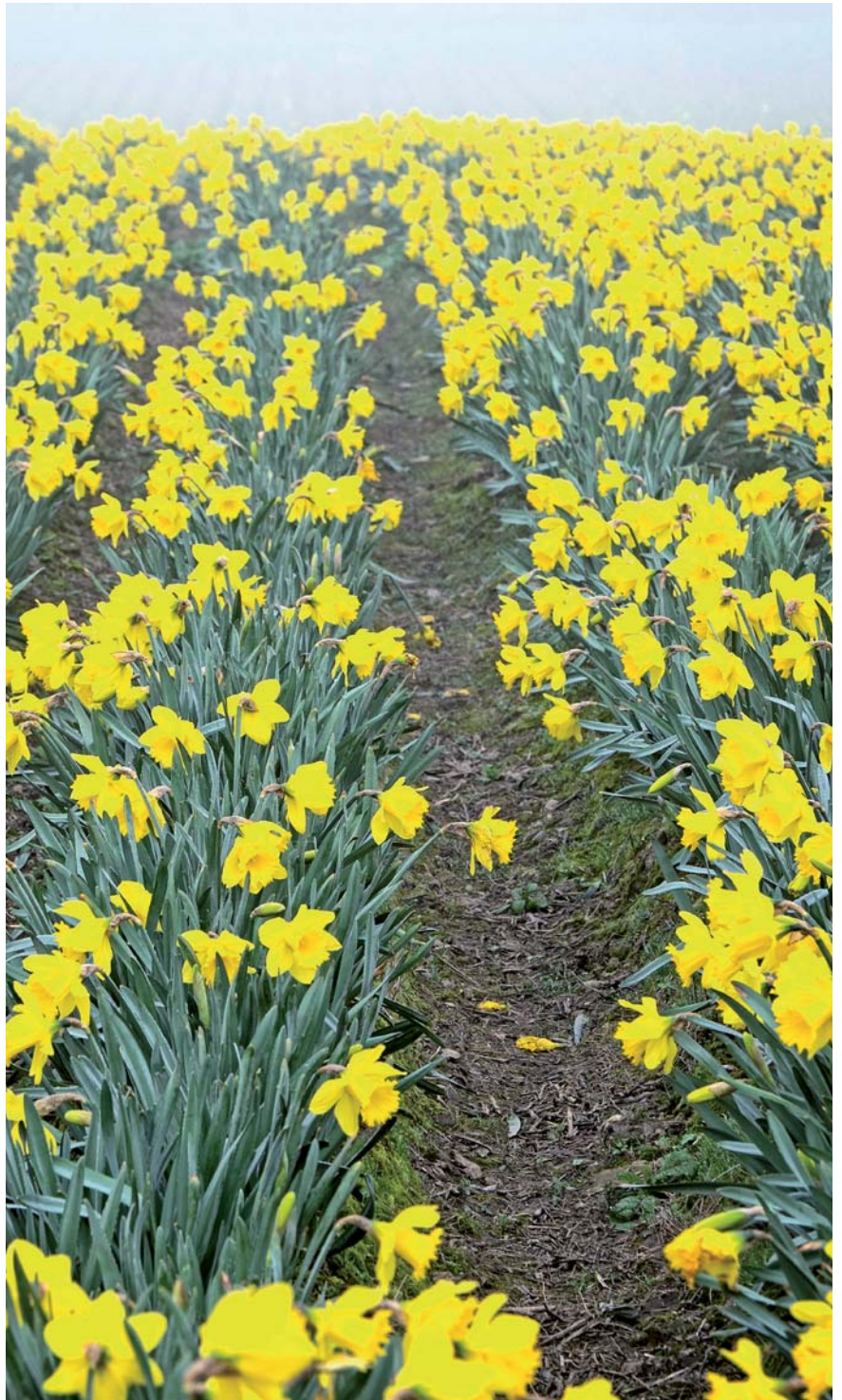
One of the many jobs we could be doing at the moment is splitting up our bulbs, in the green, either just before they flower or just after, to ensure a greater spread. A small clump of bulbs of snowdrops, for example, can be easily split at this time of year into eight or 10 smaller clumps.

I split a small clump of crocus last year and there were so many corms that they covered an area the size of a car trailer. They have flowered this year and been more visual than ever before – carpeting the ground.

Pruning is another good spring pursuit and now is the time of year to do it. I am a great believer in pruning in spring rather than winter. Roses can be pruned now, just as they are coming into growth. The saying goes that "You should let your enemy prune your roses" inferring that the more severe the cut, the better the rose.

When pruning roses, aim for a wine glass shape with an open centre and prune all old shoots out if possible, leaving three or four good young shoots to form the new plant. Shrubs also need attention. It is important to know if the shrubs you want to prune are plants which flower in spring, or later, in the summer. If they are spring flowering like Forsythia then leave pruning until after flowering.

If you prune now, you will remove too many flower buds and lose the plant's effect. Pruning once flowering



Spring is a beautiful time for flowers but often we don't make enough of it.

has passed will mean the plant has time to make sufficient new growth to allow it to flower again next spring. If the plants flower in the summer, you can prune them now as they flower on the growth they will make after this pruning.

Chore

Not wanting to make spring too much of a chore for you I will mention just one more job you might think about now. Division of your herbaceous plants and grasses. Just like the bulbs they can be divided and you can have

an abundance of new plants to plant or give away to your friends with a little effort and no cost. Dig up the plants you want to divide and break them up into manageable clumps.

Replant some in the border again and pot up the surplus in compost. It is not easy to make mistakes with division as most plants respond well to this sometimes rough treatment. You will find yourself delighting in divided agapanthus or iris or phormium and so on for the rest of that much looked forward to summer we mentioned earlier.

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