



# Today's Farm

Business, production, environment and countryside issues [www.teagasc.ie](http://www.teagasc.ie)

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**New CAP  
may benefit  
farmland birds**

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Editor: Mark Moore | Editorial team: Alison Maloney, Joanne Carroll & Eric Donald  
Group production editor: Garrett Allen  
Sub-editor: Regina Horan  
Cover design: Design at DBA | Imaging: Owen McGauley  
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All Media Matters (01) 4941071 086-8111567 sales@allmediamatters.com

All editorial enquiries to: Teagasc, Oak Park, Carlow  
Tel: (059) 9170200 Fax: (059) 9183498  
e-mail: mark.moore@teagasc.ie | web: www.teagasc.ie

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**Cover** | Arable farmers spend a fortune on crop protection. A perfectly functioning sprayer and a good crop protection strategy are essential. Kilkenny farmer Tommy Prendergast and Teagasc tillage specialist Tim O'Donovan check sprayer setup. See also the story beginning on page 35.

## COMMENT



**Mark Moore**  
Editor,  
Today's Farm

## Don't tolerate 'slacker' paddocks

Faced with unusually cold, miserable weather last spring, the national grass crop went on strike.

Production plummeted and there was a serious fodder crisis. But every year, on every farm, there are paddocks which don't pull their weight even in good weather.

These 'slackers' may point to a lack of soil fertility, infrequent reseeding, poor drainage or loose grazing management for their below-par grass production.

Regular grass measurement will identify these lead-swingers and steps can be taken to boost their output of quality feed.

Good grass is cheap and highly nutritious; these poor performers are costing you money.

## Ná cuir suas le banracha 'falsa'

Mar gheall ar dhrochaimsir fhuar neamhghnách an earraigh seo caite, chuaigh barr féir na tíre ar stailc. Thit an tairgeadh as a chéile agus tháinig géarchéim throm chun cinn maidir le fodar.

Mar sin féin, bíonn banracha ar gach aon fheirm gach aon bhliain nach ndéanann a gcion féin den iomramh fiú in aimsir mhaith.

D'fhéadfadh easpa ithirthorthúlachta, athshíolú annamh, drochdhraenáil nó drochbhainistíocht féaraigh a bheith mar chúis leis an tairgeadh féir faoi bhun an chaighdeáin ar na banracha falsa sin.

Is féidir na falsóirí seo a shainaithint ach an féar a thomhas go rialta iontu, agus is féidir bearta a ghlacadh chun an méid fodair ar ardchaighdeán uathu a fheabhsú. Tá féar maith saor agus tá go leor cothaitheach ann; tá tú ag íoc go daor as na banracha falsa seo.





## TEAGASC BEEF OPEN DAY

The major outdoor event for Teagasc this year will be the Teagasc National Beef Open Day on 18 June at the Teagasc Animal and Grassland, Research and Innovation Centre, Grange, Co Meath. This open day will bring together all of the Teagasc expertise in research advisory and specialists to present the latest information. The event will consist of:

- Systems (profitable beef production) Village
- Breeding & Reproduction Village
- Animal Health Village
- BETTER Farm Beef Village
- Grassland Demonstration
- CAP Reform Village
- Environment Village
- Soils & Drainage Village
- Bio-Science & New Technology Village
- Food Science Village (Ashtown)



The Teagasc National Beef Open Day will bring together all of the Teagasc expertise in research advisory



- Meat Village
  - Health & Safety Village
- Updates on the Derrypatrick and the Beef Maternal Index Herd will be presented. A discussion forum will take place at the end of the open day.

## INTERNATIONAL CATTLE FERTILITY CONFERENCE

The International Cattle Fertility Conference 'New Science – New Practices' will be held in Westport, Co Mayo from 18 to 21 May. Among the proposed series of workshops, there will be a strong emphasis on the translation of new knowledge to practice. Many of the top cow fertility experts from around the world have agreed to speak at the conference.

Details of registration are available at: [http://booking.bsas.org.uk/fertility2014\\_bookingform.php](http://booking.bsas.org.uk/fertility2014_bookingform.php)

» Continued on page 6



# DIAMOND

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## MAJESTIC

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» From page 4

## HEAVY SOILS FARM WALKS

A series of Heavy Soils Farm Walks will take place across the country in May. These are scheduled for:

- 21 May: John O'Sullivan, Castleisland, Co Kerry.
- 22 May: John Leahy, Athea, Limerick.
- 28 May: TJ Ryan, Rossmore, Tipperary.
- 29 May: Danny Bermingham, Doonbeg, Co Clare.

The Heavy Soils Programme aims to improve the profitability of dairy farms on heavy soils through the adoption of key technologies, including high quality pasture management, land improvement and efficient herd management.

## CROPS & SPRAYING OPEN DAY

A major national Crops Open Day will be held on Thursday 3 July in Teagasc, Kildalton College, Piltown, Co Kilkenny from 11am to 4pm. This once-off event will focus on the new Sustainable Use Directive and will feature the following topics:

- How to prepare your sprayer for the new sprayer test
  - The opportunity to register to be a professional sprayer operator (Both required as part of the SUD)
  - CAP reform and Greening
- Live demonstrations on the day designed to help you spray more effectively and efficiently will include:
- Efficient use of nozzles
  - Tips and tricks from previous 'Sprayer Operator of the Year' competition winners
  - Winter wheat and spring barley disease control
  - Wheat, barley and oat varieties – Department of Agriculture trials
  - Fertilizer management in cereals
  - Oilseed rape cultivation demonstrations



The West's biggest free family festival, Féile na Tuaithe, takes place on 24 and 25 May



A major national open day focusing on crops and spraying will be held on Thursday 3 July at Kildalton College, Piltown, Co Kilkenny from 11am to 4pm.

- Bean disease control
  - Energy crop supply chains for the heat market
- For more information, contact Teagasc Kildalton on 051-644400.

## FÉILE NA TUAITHE

The West's biggest free family festival, Féile na Tuaithe, takes place at the National Museum of Ireland – Country Life in Turlough Park, Castlebar, Co Mayo on Saturday and Sunday, 24 and 25 May, starting at 12 noon daily. The festival is expected to attract up to 20,000 visitors. Food is a central focus of the festival, emphasising premium quality artisan fare from the region.

Artisan crafts, live music, beekeepers, vegetable growing, gundog demonstrations, scarecrows and a barrel top wagon are just some of the fare on offer for all the family.

Teagasc will have a stand at the event, so come and see us on 24 and 25 May.



## Book review

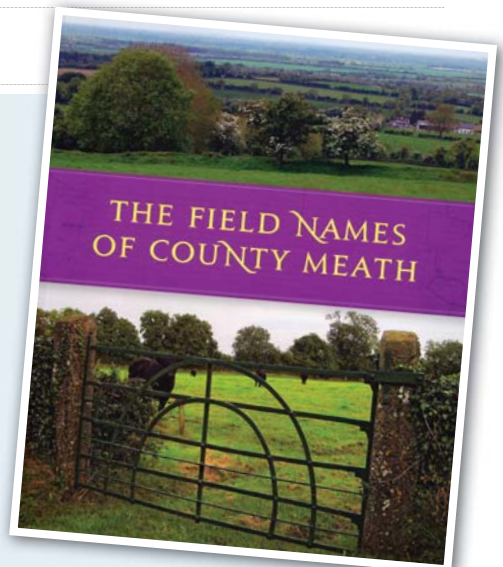
### The Field Names of County Meath (The Meath Field Names Project, 2013)

This is a tremendously important book, the result of the work of a voluntary group, established in 2008, that set out to record the field names of Co Meath. The published book is no mere list but a fascinating and engagingly well photographed account of the history, origins and folklore of the field names. What makes it invaluable is that so much of the information, destined to otherwise disappear, was of a highly perishable kind, depending on oral evidence and memories passed down

across generations. It does not do to contemplate how the same kind of information for other counties is perishing as modern farm practices and economic developments change the landscape in small but precious ways. If you live in or know Co Meath, this book needs to be on your shelf; for everyone, it is worth reading if only to encourage and sustain similar efforts in the rest of the country. For more information, consult [www.meathfieldnames.com](http://www.meathfieldnames.com).

- *The Field Names of County Meath* costs €20 and is available in bookshops in Meath and from [www.kennys.ie](http://www.kennys.ie)

– Sean Sheehan





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Bayer CropScience



# drainage

**Owen Fenton,**  
Teagasc, Crops Environment and Land  
Use Programme, Johnstown Castle.  
**Pat Tuohy,**  
Teagasc, Animal and Grassland  
Research & Innovation Centre,  
Moorepark

**I**t is important to make the most of what you already have. Many land drainage systems are poorly maintained. Maintenance or re-instatement of outfalls and open drains are great ways to begin. Open drains should be clean and as deep as possible. Field drains feeding into them should be regularly rodded or jetted.

## Investigate

Establish the source of your problem. The water to be drained may be falling from above (as rain) or coming up from below (a rising water table). Sometimes, you are dealing with both.

Never carry out land drainage work before you have investigated the drainage characteristics of the soil. Don't accept an 'off the shelf' drainage design or pre-determined depth for the drainage pipes from a contractor. The drainage design should maximise the rate of water discharge from the soil and the means of achieving this will vary with soil type.

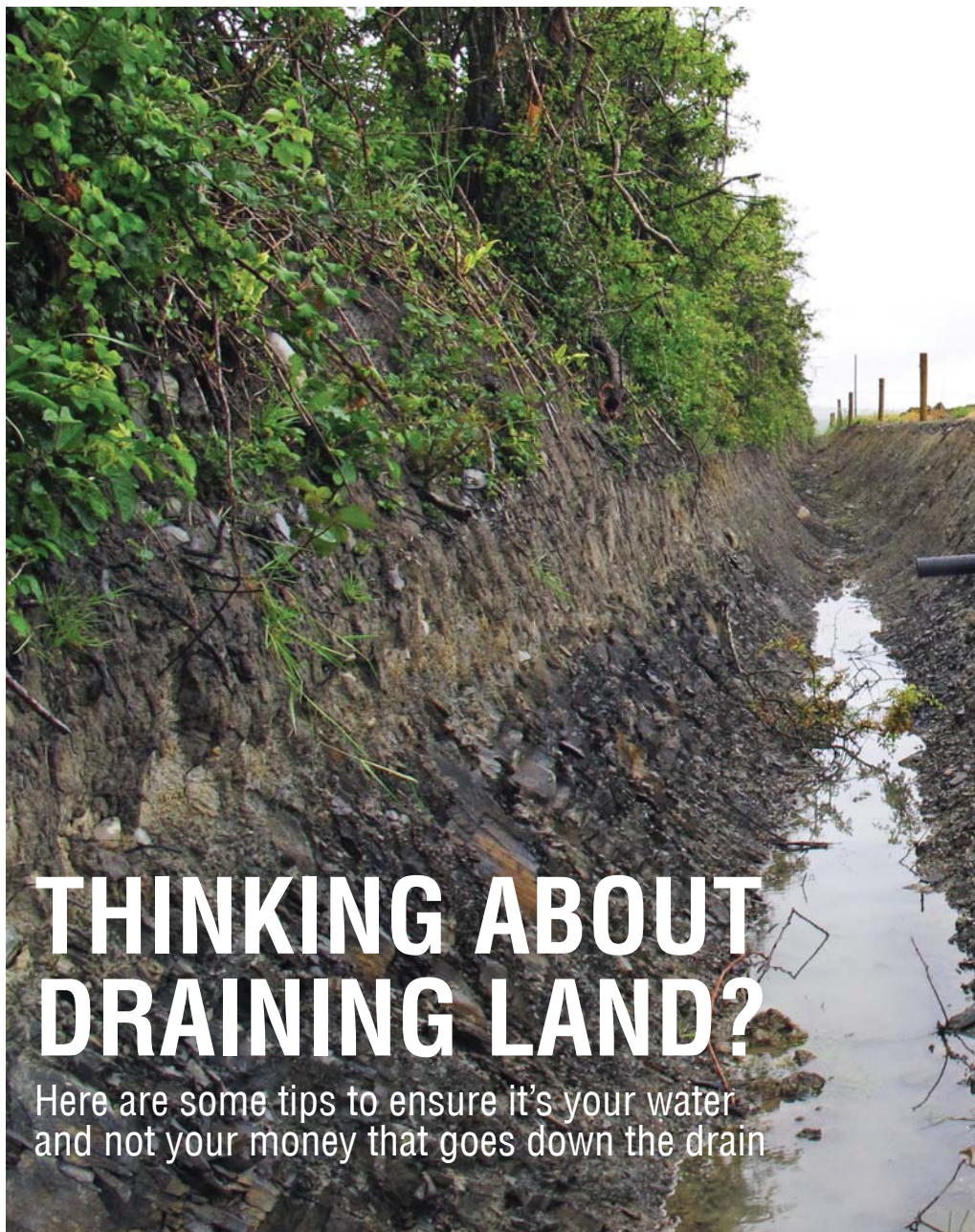
Vital information can only be gathered through a thorough soil test pit investigation on your land. Dig a number of soil test pits (2.5m deep) on the land to be drained to capture any differences in the soil profile. You are looking for a representative soil profile which best describes your drainage problem. Dig a soil test pit in both wet and dry areas of the field and compare the two.

Soil test pits are potentially very dangerous because the walls are prone to collapse so don't get into the soil test pit. Instead, observe from a safe distance and inspect soil profile material as it comes up in the digger bucket.

There are two types of drainage systems: groundwater drainage systems and shallow drainage systems. Choosing between the two types of drainage system comes down to whether a permeable soil layer is present (at a workable depth) in the soil profile which water flows through easily.

If there is a permeable layer present, a piped drain system at that depth is likely to be effective.

If no such layer is found during soil test pit investigations, your only option is to improve the drainage capacity of the soil. This involves soil disruption techniques, such as moling, gravel moling or sub-soiling in tandem with collector drains.



## THINKING ABOUT DRAINING LAND?

Here are some tips to ensure it's your water and not your money that goes down the drain

### Groundwater drainage

Groundwater drainage is the most effective way to drop the watertable and dry out the soil.

Having tapped into the permeable layer, the drain will be discharging water throughout the year, even in dry summer conditions. This will lower the water table and will allow for natural (cracking, root penetration and biological activity) or artificial (sub-soiling/ripping) improvements in permeability in the shallower layers over time, facilitating surface drainage. The outfall level must not dictate the drainage system depth. If a free draining layer is present, it should be utilised.

### Shallow drainage

The aim of shallow drainage techniques is to improve permeability

by fracturing and cracking the soil to form a network of closely spaced channels allowing for improved surface water drainage.

Mole drainage requires soils with high clay content that form stable channels. Gravel mole drainage is an alternative technique in soils where mole drains are unstable, due to low clay content or the presence of sands, gravels or stones. Sub-soiling usually refers to a more general loosening of the soil and provides another alternative method of improving permeability.

All disruption techniques are most effective when carried out in dry soil conditions which ensure maximum soil disturbance.

A well-laid piped collector system is essential as an outlet for these systems. The collector drains are installed across the slope of the field



## Pipe and stone

Drain pipes should always be used for drains longer than 30m. If pipes get blocked, it is almost certainly a drainage stone and not a drainage pipe issue.

Drainage stone should not be filled to the top of the field trench except in unusual conditions (the bottom of an obvious hollow for example). Otherwise, it is an extremely expensive way of collecting little water. In groundwater drains, stone should be filled to a minimum depth of 300mm from the drain bottom and usually to the top of the high permeability layer.

In collector drains, fill the trench to within 200mm of ground surface and provide connectivity with disruption channels and topsoil.

Most of the stone used for land drainage today is too large. Clean aggregate in the 10mm to 40mm (0.4in to 1.5in) grading band should be used. Generally, you get what you pay for.



### OPEN DAYS

The Teagasc Heavy Soils Programme has been working with farmers on difficult soils in designing and implementing land drainage systems. Four open days will be held on these farms in May.

#### Teagasc Heavy Soils Programme open days

Date	Venue
Wednesday 21 May	John O'Sullivan, Castleisland, Co Kerry
Thursday 22 May	John Leahy, Athea, Co Limerick
Wednesday 28 May	TJ Ryan, Rossmore, Co Tipperary
Thursday 29 May	Danny Bermingham, Doonbeg, Co Clare



There are two types of drainage systems: groundwater drainage systems and shallow drainage systems

before mole/gravel mole ploughing or subsoil. They should be 0.75m to 1m deep and spaced at 15m to 40m for mole drains and sub-soiling, and 20m to 60m for gravel mole drains, depending on soil type and slope. The shallow drainage technique of choice is then installed at right angles to these collectors (up-slope).

Land drainage systems will be more sustainable if you follow the steps outlined in the **Teagasc Manual on Drainage and Soil Protection**. This 200-page publication goes into great detail on all aspects of land drainage. It addresses technical, financial and environmental aspects of drainage decisions. It is produced on water-proof, tearproof paper for use in real world conditions. The manual is a vital investment for anyone considering a drainage project. It is available in Teagasc offices.

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# A 60-day turnaround

Most farms have plenty of grass now and it is still worth going for a spring reseed

## Mary McEvoy

Teagasc Animal and Grassland Research and Innovation Programme, Moorepark

It is possible to achieve a two-month turnaround time from spraying off an old sward to grazing a new one, if the job is planned and managed well. It goes without saying that weather conditions can have a major influence.

Ideally, paddocks should have been grazed once or twice, and will be reseeded in early to mid-May and be back grazing in June or early July. Reseeding in spring means there's enough time for successful crop establishment as days lengthen and soil temperatures increase.

There is also a greater window of opportunity for post emergence spraying to ensure successful weed control. Furthermore, the opportunity for several grazings of the new reseed is possible in good ground conditions in the summer. Summer grazing helps ensure you'll have a well tillered and settled sward prior to autumn closing.

By comparison, reseeding in the autumn generally presents greater difficulties. Wet conditions can make it hard to do a post-emergence spray and/or graze the sward before the winter. A post-emergence weed spray is crucial to control weeds where they are a problem in new reseeds. Light grazings have the benefit of encouraging tillering of a new reseed, thus creating a denser sward.

If there is no option but to go for an autumn reseed, target early- to mid-August. With autumn reseeding it's essential to have the seed in the ground and established before soil temperatures drop.

## Soil fertility

To get the most out of a new reseed, it is important to ensure that the soil fertility is correct. Perennial rye grass in particular must have good

fertility if it is to establish well and persist. Soil testing provides information on the soil fertility and lime, phosphorus and potassium requirements of a field. Ensuring adequate pH (6.3 for mineral soils and pH 5.5 for peat soils) and P and K levels (Index 3) will help maximise the performance of a new reseed.

## Selecting the right varieties

Variety selection will depend on a number of factors. The most important traits to look out for when selecting a variety include:

- Seasonal dry matter (DM) yield
- Quality. Is the digestibility value of the variety high?
- Is the ground cover (or sward density) value high?

The Department of Agriculture, Food and the Marine (DAFM) produces a national recommended list of grass and clover varieties every year. This publication outlines the seasonal DM yield, quality values and ground cover scores of varieties which have successfully passed through their evaluation trials, and should be consulted when selecting varieties.

The 2014 list is available on the DAFM website. When selecting varieties for a grazing mixture, three or four varieties should be included. The mixture should contain approximately 33% tetraploid varieties. Varieties should be heading in early June, with a relatively small range in heading dates between varieties.

Varieties which have high seasonal growth (spring and autumn) should be selected if your aim is to extend the grazing season. Quality and sward density are also important traits to consider. A seeding rate of 14kg/acre is usually adequate.

If the sward is intended for sheep grazing, small leaf white clovers are recommended. Medium leaf white clovers are recommended for dairy cows/beef cattle. Clover should be included at a rate of 1.5kg to 2kg/acre in grazed swards. A mixture for silage ground should have up to 40% tetraploid varieties. Depending on harvest date select intermediates or lates, but ensure the range in heading dates between varieties within the mixture is small (less than seven days). Avoid using clover in silage ground.







Mary McEvoy advocates reseeding, preferably in spring.

**Hybrids**



Perennial ryegrass (left); hybrid (right).

Hybrid ryegrass are the result of crosses between Italian and Perennial ryegrasses. They are higher yielding than perennial ryegrass, but less persistent and will require more frequent reseeding. During the summer, hybrids tend to have more stem than perennial ryegrass cultivars. They present an open sward structure and can be difficult to manage on saturated soils as there is an increased risk of poaching. As a result, hybrids are more suited to a two or three-cut silage system with aftermath grazing.

Hybrids are best suited to silage production and the DAFM recommended list says they can yield 16t/ha of dry matter compared with 14.5 tonnes for the best perennials in a silage sward.

## Top 5 Extend

The No.1 choice of grass seed mixture in 2014

**Innovation and Heritage**

	Heading Date	Spring Growth	Yield	DMD
AberGain	6th June	125	107	102.6
AberChoice	9th June	95	102	102
Tyrella	3rd June	113	98	100

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grass

# More grass, more money

Managing grass has a bigger influence on livestock profitability than just about anything else

## Vincent Griffith

Teagasc Animal and Grassland Research and Innovation programme, Moorepark

**M**easuring grass covers and managing grass is the innovation that has had the biggest effect on farm profitability in the last 10 years, according to Billy Heffernan, who milks with his sons, Mark and Liam, near Dunamaggan, Co Kilkenny. "The Profit Monitor is important too and the two are connected because the more grass you use, the better your profits will be."

Confirming Billy's view, research from Teagasc Moorepark has found that increasing grass utilisation is worth €160 per tonne DM/ha utilised and explains almost half of the variation in net profit between commercial dairy farms.

Equally, the competitiveness of the beef and sheep industries is built on efficient, low cost production systems, maximising the utilisation of grazed grass.

PastureBaseIreland (PBI) was launched in January 2013, with the aim of building a large national grassland database which will help increase the level of grass utilisation and production at farm level for all enterprises.

The database shows that the average dry matter (DM) production in 2013 for farms which were doing a high level of grass measurement was 12.5 t/ha. Some of these farms produced as much as 16 t/ha, others as little as 8 t/ha. There was also significant variation between the yield and the average number of grazings per paddock. Some farms grazed paddocks as often as nine times, while others achieved just four grazings. Variation

“The competitiveness of the beef and sheep industries is built on efficient, low cost production systems

## In summary

Reseeding paddocks will change the perennial ryegrass content status in a paddock. However, increasing grass production on farms requires management of other issues to achieve maximum efficiency.

The best farms in Pasture Base Ireland achieve high levels of grass production across all paddocks. Discussion groups focusing on grass measurement and utilisation are a great way to keep up to date on the variation that occurs in grass DM growth between and within farms. There is significant room to improve grass growth and utilisation at farm level. Where paddock under performance is identified, the underlying reasons must be understood and a strategy put in place. Only then will a farm be in a position to reach its growth potential. It is clear that there is huge economic loss on farms due to variation in grass growth. Improving grass growth at farm level has the potential to significantly improve farm profitability provided it is followed by sufficiently high levels of grass utilisation.

in performance between paddocks on the same farm is also common.

This data confirms that there is significant potential on even the best farms to grow more grass. The reasons for poor grass DM production on individual farms include low paddock soil fertility, infrequent reseeding, soil type, drainage characteristics and fertilizer applications.

### Consequences of low grass growth

Not taking action on the low producing paddocks on the farm will lead to the farm producing less grass than its potential. But there are other 'downsides'. Less productive swards usually have less perennial ryegrass and, therefore, are not as nutrient efficient (not as well able to utilise fertilizer) as high performing swards and will have a shorter productive season and animals will be less likely to meet



their potential. It goes without saying that you'll end up buying more expensive concentrates.

Producing less grass dry matter also means that the stocking rate cannot be increased effectively. If this issue is not addressed, farms will incur higher costs than envisaged which is not a sustainable situation for any industry. Farmers need to focus on increasing grass production inside the farm gate rather than importing costly feed.

### Increasing grass growth on farms

"The key thing is regular measurement," says Billy Heffernan. "Liam is our expert but Mark and I keep our eye in too."

"You need to follow a regular routine," says Liam Heffernan. "Follow the same route through the paddock each week, for example, to make sure you are getting an accurate picture





Mark, Billy and Liam Heffernan.

which is not distorted by a different perspective each time.”

The Heffernans have swards with a high clover content. “Clover can make it appear that you have heavier covers than you think but you get used to that,” says Liam.

“You need to do occasional cutting and weighing to make sure you have your eye-in.”

#### Soil sampling and grass measurement

William Dennehy farms just outside Currow village, which is about four miles outside Castleisland, Co Kerry. “Regular soil sampling and a good fertilizer plan are fundamental to high levels of grass production,” says William, who has been measuring his grass covers regularly since 2008.

“Once you know soil P and K levels are right, you can have the confidence that your fields can deliver. With the levels of rainfall we have, I think you

need to test fields every two to three years.”

William measured his covers 44 times last year. “You can buy the shears, scales and quadrant for under €100,” he says. “Provided you use them, it’s the best money you’ll ever spend. But you don’t need to cut and weigh every time. Once you have your eye in, you don’t need to take an actual cut.”

A recent burst of growth took covers on the farm to an average of 340kg per animal. “My target was just 180kg to 200kg,” says William. “I immediately took four acres out for silage to get back on track. Regular measuring is the only way to really know exactly what’s happening in the fields.

“It’s likely that milk prices will fall again at some point (hopefully a long way off),” says William. “And if you want to produce high levels of solids at relatively low cost, grass is king.”

## On-farm factors limiting grass growth and utilisation

1

### Soil fertility

- Test soils and apply P and K
- Develop soil fertility plan for the farm

2

### Low soil pH

- Apply lime as required based on soil test results

3

### Poor drainage

- Identify the source of the problem and use remedial drainage work where it is viable

4

### Excessive poaching

- Use management strategies such as on/off grazing in wet conditions.
- Improve farm infrastructure such as roadways and paddock layout to improve access to paddocks (multiple paddock entries) in wet conditions

5

### Grazing management

- Identify weaknesses in grazing management, such as grazing high covers, excessive post grazing residuals. Implement grass budgeting to manage grass supply more efficiently



## grass

# Why grazed grass is such great value

Grazed grass costs well under half the price of silage and less than one-third of the price of concentrates

**Siobhan Kavanagh**  
Teagasc Animal and Grassland  
Research and Innovation Programme

**G**razed grass, like humans, consists mostly of water. As you can see from Figure 1, there are 83kg of water in every 100kg of grass. The 17kg of dry matter contains the key nutrients that the animal needs.

Again, like humans, the plant is constructed of 'cells' – which are minutely tiny building blocks. The dry matter in grass consists of the cell wall and cell contents of the literally billions and billions of plant cells.

The cell walls make up the grass fibre content. The cell contents include sugar, protein, fats, minerals and other compounds.

## Energy

The energy in grass comes primarily from the sugar and fibre content, with some energy from oil and protein. The higher the proportion of leaf in grass (ideally, you'd like to have over 80% in your swards), the higher the energy content coming from sugars and digestible fibre. Fibre is a key supplier of the energy in grass but it needs to be quality fibre. As the proportion of stem in the grass plant increases the digestibility of the fibre decreases and, as a result, the energy content decreases. Therefore, grazing leafy grass is ideal for maximising animal performance.

The energy content of grazed grass varies from 1.05 UFL/kg DM for

leafy fresh spring grass to 0.85 UFL/kg DM for very stemmy grass in the autumn. This compares well with other feeds (Figure 2). Farmers can maximise energy content in swards by maintaining high levels of perennial ryegrass. Equally important is good grassland management – grazing out paddocks in springtime; maintaining a 21-day rotation through the main grazing season; avoiding grazing heavy covers of grass and grazing down to 4cm.

The energy demands of the dairy cow can be met by a grass-only diet throughout the main grazing season. Some supplementation may be needed at the 'shoulders' of the year, during periods of short supply or poor grazing conditions when grass intake is limiting. The energy demands of the suckler cow, calves, yearlings and finishing steers and heifers can be met by a grass-only diet.

## Protein

The protein in any feed can be measured by both the quantity and quality of the protein. The quantity of protein in grass typically varies from 16% to 28%, depending on the sward type, growth stage, fertilizer regime and time of the year.

Occasionally, protein levels in grass dip as low as 11% to 12%. This can happen during a period of stress on the grass plant, e.g. during a drought spell. The quality of protein is defined by the PDI (Protein Digestible in the Small Intestine) system. This system accounts for the quantity of protein that can be utilised by the animal, i.e. not all protein in a feedstuff is utilisable by the animal.

So, how much protein does the animal need? Protein is a key nutrient for appetite, milk production, reproduction and growth. Young, growing cattle and lactating cows need the most protein.

Young stock need 13% to 15% crude protein (CP) in the diet, lactating cows 14% to 17%, depending on yield and



Figure 1: What's in grass?



finishing cattle need 11% to 12% CP.

Based on this information, it is clear that the quantity of protein in grass is in excess of requirements. In fact, there is an energy cost to the animal excreting the excess protein. Therefore, avoid feeding supplementary protein on grass. There is a cost in buying it, a cost in excreting the excess protein and, potentially, an environmental cost.

There are always exceptions. While protein quality tends not to be an issue for young stock, suckler cows or finishing cattle on grass, freshly calved dairy cows in spring need some quality protein from ration for the first six weeks of lactation. And while autumn grass has adequate protein for late lactation spring-calving cows, freshly-calved autumn calving dairy cows also need quality protein in the ration to meet their requirements.

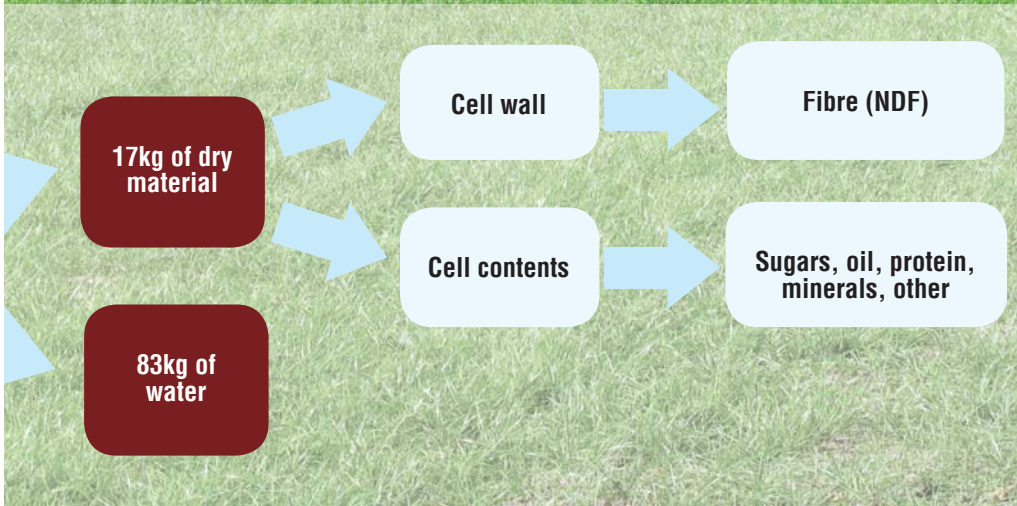
## Fibre

The rumen is the 'engine house' of the ruminant animal and maintaining a healthy rumen is key to good performance. Ruminants are unique

## COST

Grazed grass remains our cheapest feedstuff, costing just €80/1,000 units of energy to produce (Figure 5). It is 2.5 times cheaper than grass silage and 3.5 times cheaper than a ration at €275/tonne.





in their ability to digest fibre from grass and other forages. And fibre is important to maintain a healthy rumen. Cows have a specific requirement for fibre.

When this requirement is not met, rumen pH becomes unstable and animal performance suffers. Too little fibre is a problem but too much is also an issue. Excessive fibre reduces dry matter intake, reduces energy intake, reduces body condition gain and production falls.

Dairy cows need a minimum of 32% fibre (NDF) to maintain a healthy rumen. Beef cattle can thrive with much lower levels of fibre in the diet.

The fibre content of grass is defined by the neutral detergent fibre content (NDF %). The NDF content of grazed grass varies from 35% for leafy fresh spring grass to 50% for stemmy grass. For the most part, there is more than adequate fibre in grazed grass. Rumen pH (the level of acidity) tends to be lower in grazing diets but research work from Northern Ireland, New Zealand and Australia indicates that feeding additional roughage has no effect on animal performance.

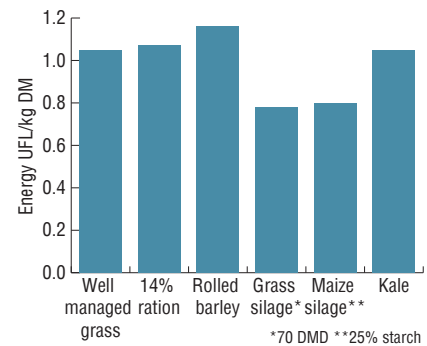
### Minerals

The mineral content of grazed grass can be divided into the major elements (including calcium, phosphorus, magnesium, sodium and sulphur) and trace elements (such as copper, selenium, iodine, cobalt, manganese and zinc). Figure 3 shows that major elements tend to be well supplied in grazed grass but deficiencies of major elements do occur, e.g. magnesium during the tetany period or phosphorus on deficient soils.

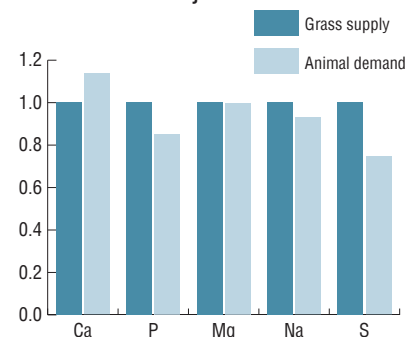
Trace element levels in grass are low (Figure 4) and must be supplemented at key periods during the year including pre-calving, post-calving, during the tetany period and during the breeding season. You can take the guesswork out of mineral supplementation on your farm by having the grass analysed every three to four years. This will establish the mineral status of the grass and the presence of 'antagonists'.

While grass is deficient in trace elements, over-supplementing with trace elements is a problem on some farms and can cause more problems (i.e. toxicity) than it will solve.

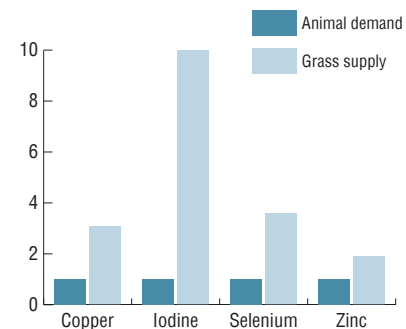
**Figure 2**  
Energy content of various feeds



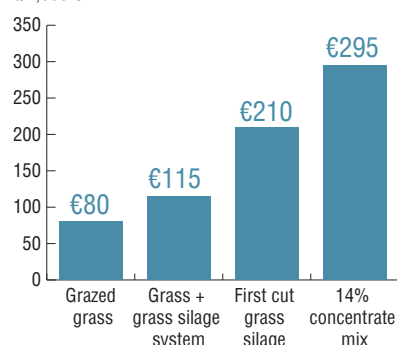
**Figure 3**  
Grass supply relative to dairy cow demand for major elements



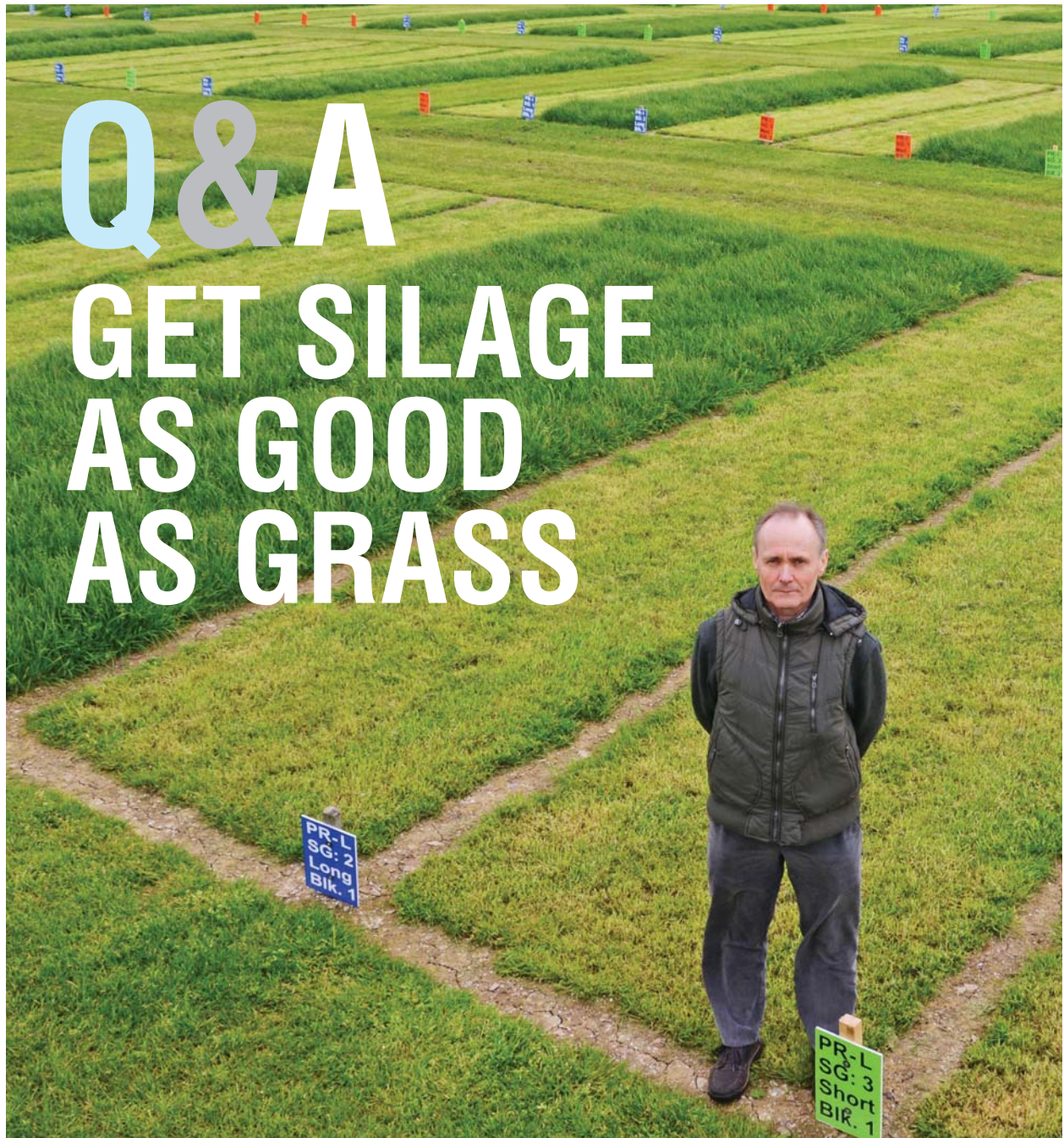
**Figure 4**  
Grass supply and dairy cow demand for trace elements



**Figure 5**  
Cost of grazed grass relative to grass silage & concentrate feeds  
€/1,000 UFL







**Padraig O'Kiely**  
Teagasc Animal and Grassland  
Research and Innovation  
Programme, Grange



Avoid grass contamination with soil or manure as this can cause bacteria to dominate

**How important is sward composition?**

If your aim is to achieve high yields of easy-to-preserve silage, perennial ryegrass dominated swards are an essential long-term investment. Permanent, perennial ryegrass crops, properly managed, are the foundation of a long-term strategy for the more predictable and consistent production of high yields of cost competitive, quality silage.

For all silages, ryegrass swards are considerably easier to preserve than pastures containing little ryegrass.

**What about fertilizer and slurry on silage ground?**

For first-cut silage, apply up to 125kg N/ha, between the combined contributions of inorganic fertilizer and slurry. Excess or late application of N from inorganic fertilizer and/or slurry can seriously reduce grass sugar concentration and increase buffering capacity, thereby making the grass harder to preserve. Similarly, late or uneven application of slurry that leaves the grass contaminated at harvest time inoculates the grass with undesirable bacteria, making the silage more difficult to preserve.

**How do I get maximum silage feeding value?**

Harvest at the right growth stage. Leafy grass will make silage of high

Padraig O'Kiely, pictured above, says perennial ryegrass dominated swards are an essential long-term investment in achieving high yields of easy-to-preserve silage.





**Table 1:** Herbage composition and beef animal productivity in a comparison of harvested grass and excellently preserved silage made from the same grass

	STATE OF HERBAGE	
	Grass	Silage
Dry matter (DM; g/kg)	229	233
DM digestibility (g/kg)	710	710
Silage DM intake, % liveweight	2.0	1.9
Carcass gain (g/day)	421	426

Source: Teagasc Grange

**Table 2:** Silage composition and beef animal productivity in a comparison of silages made from the same crop of grass but differing in preservation

	Standard of silage preservation	
	Good	Bad
Dry matter (DM; g/kg)	162	146
pH	4.2	4.8
Ammonia-N (g/kg total N)	70	180
DM digestibility (g/kg)	735	707
Silage DM intake, % liveweight	1.9	1.4
Carcass gain (g/day)	508	344

Source: Teagasc Grange

## Silage-making in summary

- Avoid mowing and harvesting under wet conditions, particularly with leafy grass.
- Successful wilting will greatly assist preservation and reduce effluent output. It requires at least a half day and not more than 1.5 days of good drying conditions.
- Fill the silo quickly, rolling the herbage throughout, and immediately seal it perfectly. This will help to achieve the air-free conditions that are necessary for good preservation and to prevent mould growth.
- For pit silos, seal immediately and properly beneath two sheets of black 0.125mm polythene. Cover completely with a layer of car tyres, etc, placed edge-to-edge, and seal the edges with a layer of sandbags, silt.
- As the silage sinks somewhat into the silo during the following week or two, check the plastic seal to ensure no air gets in.
- Inspect regularly and repair damage or looseness in the plastic.

feeding value. Grass harvested when stemmy will produce silage of only low to moderate feed value.

### Why is the standard of preservation so important?

Excellent preservation means the silage retains the feeding value of the grass from which it was made (Table 1). Poor silage preservation means the feed value will decline during ensilage in pits or bales (Table 2). Silage feeding value will also be influenced by the amount of effluent lost and by any heating that occurs during feedout.

### How do I ensure the best preservation possible?

The grass must be quickly sealed within a pit or bale so that it has no further contact with air. This prevents all deterioration and rotting processes

that require air. The grass must quickly undergo a fermentation that will limit or prevent protein breakdown. This fermentation is brought about by lactic acid bacteria naturally present on the grass converting grass sugars to lactic acid.

### Do I need an additive?

Grass in Ireland normally has adequate lactic acid bacteria, but avoid contamination of grass with soil or manure as this can cause harmful bacteria to dominate instead.

- Most crops do not require an additive to be applied at harvesting. This is particularly true for wilted or stemmy herbage, or herbage with an adequate sugar content.

- The content of sugar varies widely in grass, and adequate sugars result in the production of sufficient

lactic acid to deliver a satisfactory decline in pH. Overall, the extent of fermentation required, and thus the requirement for sugar to ferment, gets smaller as the grass is harvested at progressively more advanced stages of wilting (progressively drier).

- If an additive is applied to leafy, wet crops of low sugar content, it is important to know the ensilability of the crop (e.g. by measuring its level of sugars with a refractometer), its yield (weigh strips of grass) or harvest rate, and the rate of additive to be applied.

Additives such as beet pulp or citrus pulp, molasses or acid-based products, when evenly applied at appropriate rates, are most effective under 'low sugar' conditions. If a bacterial inoculant is applied, a production response is more likely with crops of adequate sugar content.



## New CAP may improve prospects for farmland birds

**Daire Ó hUallacháin**

Teagasc Crops, Environment and Land Use Programme, Johnstown Castle

**Barry J. McMahon**

UCD School of Agriculture & Food Science

The Bird Atlas (2013) recently published by the British Trust of Ornithology, in conjunction with Birdwatch Ireland and Scottish Ornithologists' Club, has confirmed the decline in the breeding range of a number of the more popular farmland bird species in Britain and Ireland. Farmland birds occupy a number of ecological niches (e.g. seed-eaters, insectivores, predators), forming a vital strand of the food web. They act as useful indicators in determining the environmental quality of farmland habitats, therefore a decline in their populations indicates a more widespread decline in ecology.

In Ireland, while there have been some success stories – a 78% increase in the range of the Tree Sparrow and a 1976% increase in the range of the Buzzard, for example – the results indicate a steep decline in the range of a number of our traditional farmland species and ground-nesting birds (Table 1).

It is as a result of these declines that farmland bird species now constitute the majority of the 26 breeding birds on the current Irish Red-List List (birds of highest conservation concern). Most of us are familiar with species, such as the Corncrake or the Grey Partridge, which have experienced a reduction of more than 90% in their range over the last 40 years. But the dramatic decline in some of our more widespread breeding wader species, such as the Lapwing (53% reduction) and Curlew (78% reduction), may come as a surprise.

### Reasons for decline

Although the exact reasons for the decline of species over the last 40 years are unclear, intensification and specialisation of agricultural management strategies are the most likely causes.

Generally, the main factors that affect declining bird populations are winter survival and/or productivity. For species such as the Yellowhammer (pictured) and Barn Owl, winter survival is likely to be the main reason for their decline in Ireland. A lack of suitable feeding habitats, such as stubbles in the case of the Yellow-



# FARMLAND BIRD NUMBERS STILL DECLINING

## The curlew

The curlew is on the brink of extinction. This well-known large bird with a long distinctive down-curved beak (pictured right) was once common throughout Ireland. Recent findings of the 2007-2011 Bird Atlas show that they have disappeared from over 70% of their former range. Proposals for GLAS, the new agri-environment scheme, list curlew as one of the birds to be targeted under Tier 1 Priority Environmental Actions. This means that farms with curlew may be eligible for priority access to the scheme.

If you see a curlew this spring, phone BirdWatch Ireland on 0749129905.

From April to June, curlew will be nesting and will be quite obvious, mostly in rushy fields and bogs, making their distinctive bubbling call as they circle their territories.

These nesting birds are distinct from the wintering or passage birds seen frequently at the coast from August to April; most of these are visitors to our shores and return to Scotland and Scandinavia to breed in the spring.

– Catherine Keena

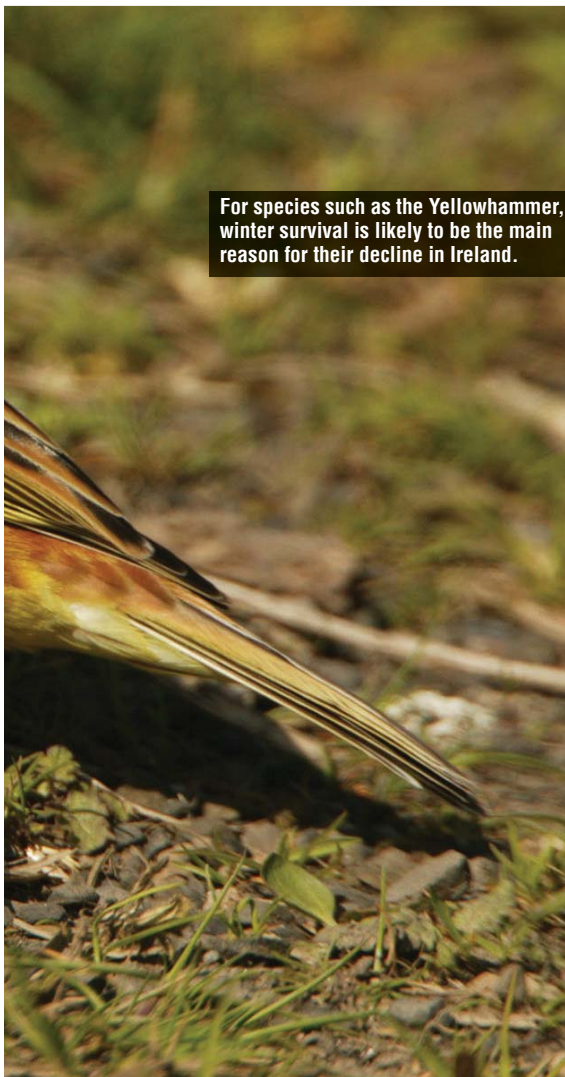
hammer and grassy field margins and rough ungrazed grassland in the case of the Barn Owl, result in reduced over-winter survival rates and a decline in population and range.

For the majority of our declining ground-nesting species (e.g. Skylark, Grey Partridge and Lapwing) a lack of suitable nesting and feeding sites is believed to be to blame for the reduc-

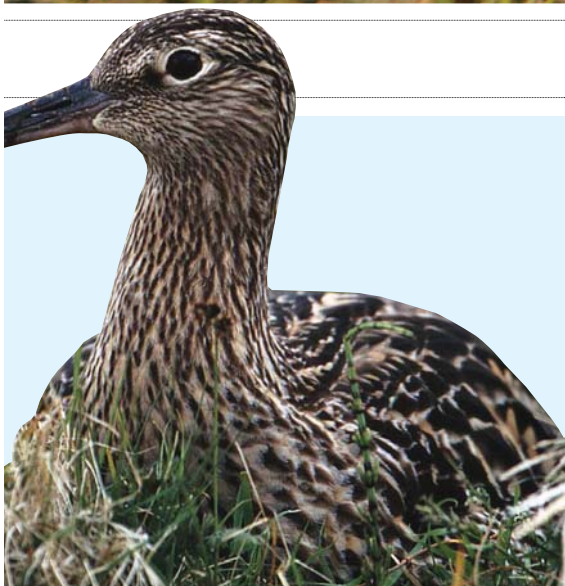
tion in their populations and range. For breeding waders (e.g. Lapwing, Curlew and Dunlin) the lack of medium-length grassy habitats, with an abundant insect supply is reducing the survival of their young.

The switch from hay to silage, earlier cutting dates and the intensification of marginal land have all resulted in a reduction in the avail-





For species such as the Yellowhammer, winter survival is likely to be the main reason for their decline in Ireland.



ability of suitable grassland nesting sites for our threatened ground-nesting species.

**Opportunities**

Many farmland bird species have continued to suffer significant declines in population and range, despite environmental policy (e.g. the Birds Directive) and agri-environment schemes,

**Table 1:** Subset of bird species associated with farmland, their conservation status, breeding range change over the last 40 years and their ecological group

Species	Conservation status	Breeding range over last 40 years	Ecological group
Corncrake	Red	-91%	Grassland
Golden plover	Red	-50%	Upland
Skylark	Amber	-14%	Grassland
Whinchat	Red	-76%	Grassland
Grey Partridge	Red	-95%	Gamebird
Quail	Red	-30%	Gamebird
Black-tailed godwit	Amber	-89%	Breeding Wader
Curlew	Red	-78%	Breeding Wader
Dunlin	Red	-69%	Breeding Wader
Lapwing	Red	-53%	Breeding Wader
Redshank	Red	-55%	Breeding Wader
Stock dove	Amber	-47%	Granivore
Twite	Red	-80%	Granivore
Yellowhammer	Red	-61%	Granivore
Red Grouse	Red	-66%	Upland
Ring Ouzel	Red	-57%	Upland
Barn Owl	Red	-47%	Raptor

such as REPS or AEOS.

Agri-environment schemes have undoubtedly enhanced awareness among landowners in relation to the importance of ecological and environmental conservation. It is also likely that these schemes have slowed the rate of decline of some farmland birds but they have failed to halt it.

The EU Birds Directive requires member states to take appropriate measures to maintain the population of existing bird species. If Ireland hopes to achieve the requirements of the Birds Directive, greater conservation efforts are required.

National and international data have demonstrated that dedicated agri-environment measures under the Rural Development Programme can be successful when targeted to scarce farmland bird species with limited ranges. It is promising that the proposed Green Low-Carbon Agri-Environment Scheme (GLAS) has included Conservation of Bird Species (e.g. Twite, Curlew, Corncrake and Grey Partridge) as a Priority Environmental Action.

A greater challenge lies in targeting measures to more widespread threatened species with a wider geographical range. The species mentioned in the proposed GLAS have greatly reduced populations and restricted ranges. It would be a missed opportunity if the priority action in GLAS were restricted to a small number of high-profile scarce bird species, while other threatened species (e.g. Dunlin, Golden Plover) were excluded. Furthermore, efforts should also be undertaken to target more widespread, declining farmland bird species (e.g. Lapwing, Skylark) while there is still a chance to halt their decline, as opposed to focusing solely on species whose decline may be terminal.

GLAS has a Priority Environmental Action for wild bird cover/wild flower. This measure, if targeted and implemented correctly, could have benefits for threatened grain-eating species such as Yellowhammer and Twite.

GLAS has also proposed a measure in relation to bird boxes under its General Environmental Actions.

If targeted correctly, this measure may be beneficial to Barn Owls in certain locations and may increase awareness of Barn Owl conservation.

There are also opportunities under Pillar I of the CAP. The Ecological Focus Areas (EFA) requirement under Greening Measures could conserve and enhance important habitats for farmland bird species if targeted correctly, i.e. hedges and field margins could provide nesting habitats for Yellowhammer; establishment of arable habitats (similar to LINNET under REPS) could provide overwinter food for grain-eating species. However, EFAs are being targeted solely at arable farmers and, as such, will do little to address the more widespread decline of ground-nesting grassland species.

Furthermore, it seems that some existing habitats (e.g. bog, scrub, woodland) that are not eligible under the Single Payment Scheme, may not contribute to an arable farmer's 5% EFAs requirement under the CAP. Therefore, there is little acknowledgement or incentive for land-owners who have made significant efforts to conserve these important habitats to date.

The current revisions within CAP are an excellent opportunity for Ireland to protect endangered species, which are dependent on farmland habitats.

Such an approach will help farmers to be economically viable custodians of the landscape.



# Hazardous waste collection gives farmers peace of mind

**Mark Gibson**  
Teagasc Crops, Environment and Land Use Programme, Athenry

Last November, Teagasc, in association with the Environmental Protection Agency, Department of Agriculture Food and the Marine and local authorities, operated a farm hazardous waste collection pilot involving six 'bring centres' across the country. The campaign prompted an enormous response, with over 95 tonnes of hazardous waste collected from 864 farmers.

An expanded campaign will be run this autumn at a further eight locations across the country.

**The pilot campaign**

The objectives were to:  
• Get a better understanding of the quantities and types of hazardous

waste that are stored on Irish farms due to the absence of a suitable and affordable disposal scheme;  
• Facilitate the removal of hazardous wastes from farms and ensure that their recovery/disposal was managed in accordance with national and European Waste legislation;  
• Make recommendations on how best to deliver an affordable and suitable national farm hazardous waste collection scheme.

Farmers were charged €2/kg to dispose of their hazardous waste.

Since there is a market for waste oil, farmers were not charged for its disposal. All farmers were issued with a receipt of payment and were then posted a certificate of disposal which could be kept on record for cross compliance or Quality Assurance purposes.

During the campaign, all wastes were weighed and categorised. Figure 1 gives a breakdown of the types of

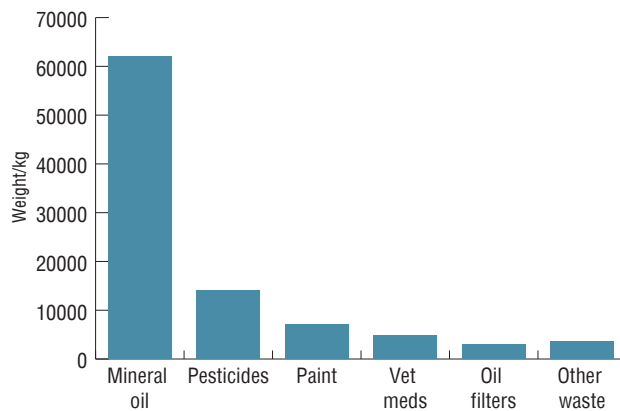
**FARMER REACTION**

It was obvious from the feedback from farmers attending the bring centres that they were relieved to be able to safely dispose of their hazardous waste.  
The majority of consignments were processed within 15 minutes of arrival at the bring centre.

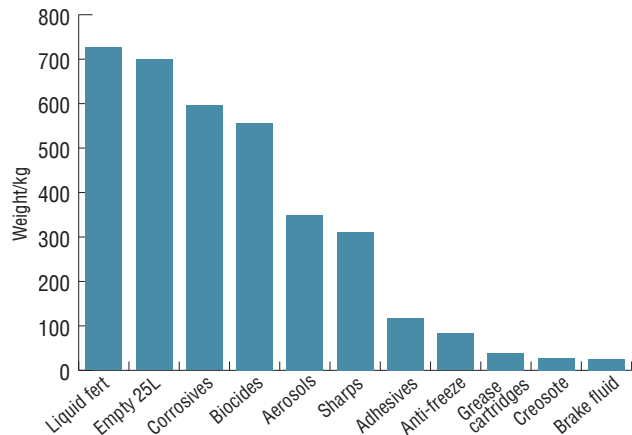


wastes that were collected.  
By far the largest volume of waste was waste oils, which account for 66% of the total waste collected across the six centres.  
It was evident that farmers had no easily accessible route to dispose of waste oils even though it has value. Pesticides contributed to 15% of the

**Figure 1**  
Farm hazardous waste types



**Figure 2**  
Types and quantity of other hazardous waste







The farm hazardous waste collection pilot involved six 'bring centres' nationwide.

## Recommendations

The project team has submitted a formal report to the relevant government Departments and agencies.

The report contains a number of key recommendations that are aimed at putting in place a sustainable mechanism for farmers to dispose of their hazardous waste in a safe and cost effective way.

### Recommendations

The project team recommended that:

1. An additional eight bring centres will be operated by the project partners in November as part of the pilot national campaign for the collection of legacy hazardous waste.
2. Producer responsibility initiative – agri-chemical and veterinary manufacturers, importers and distributors are ideally positioned to contribute financially to a national scheme for the collection of farm hazardous waste. A simplified multiple Producer Responsibility Initiative should be established by the Department of Environment, Community and Local Government whereby producers and retailers of pesticides, biocides and veterinary medicines contribute finances/resources to provide for a national scheme for the management of farm hazardous waste.
3. The pesticide control division of the Department of Agriculture, Food and the Marine should explore the possibility of a levy on the pesticide industry that is ringfenced to support the funding of the disposal of de-registered pesticides.

Given the success of the pilot scheme, the support by farmers, and the clear demand and need for a national scheme to facilitate the collection of farm hazardous waste, the project team has agreed to run another pilot in 2014. An additional eight pilot bring centres will be operated across different locations next November. Details will be available closer to the time.

total waste collected followed by paint (7%) and veterinary medicines (5%).

The six bring centres were geographically spread across the country.

### WEEE and batteries

Each of the bring centres also collected WEEE (Waste Electronic and Electrical Equipment) and batteries.

Electrical and Electronic Equipment (EEE) often contains hazardous components and substances which can be damaging to the environment and have adverse effects on human health. For example, fluorescent tubes contain mercury.

In total, 22 tonnes of WEEE were collected at the bring centres.

“ I think that this campaign is a great idea. It is real problem for farmers to get rid of the oil and filters, and especially the likes of syringes because we just store them up not knowing what to do with them. I want to be responsible and dispose of my waste in an environmentally-friendly way

– Pat Maher, farmer, Freighduff, Cashel, Co Tipperary



**Acknowledgments:** Teagasc would like to acknowledge the enormous input from all of the agencies that we partnered with on this initiative – EPA, Department of Agriculture, Food and the Marine and local authorities. We also want to thank all of the marts and businesses who kindly allowed us to use their premises during this important pilot. We want to acknowledge the highly professional input by our recycling partners, RILTA Environmental and WEEE Ireland.



## farm management

## Review your 2014 SPS application

**James McDonnell**  
Farm Management Specialist,  
Rural Economy Development  
Programme, Teagasc Oak Park, Carlow

**W**e are now in the final few days that are available to submit your 2014 Single Payment Application. With this year impacting on the payment rates for the new Basic Payment Scheme (BPS), it has led to a lot of extra work for advisers and a new set of rules for farmers to become accustomed to.

It is vital that farmers with leases and, in particular, farmers who have leased out 100% of their farm have reviewed their situation and taken action. The majority of farmers will have completed their application already and the following points are merely for your consideration.

**Urgent**

1) If you have not submitted your SPS application, do it now as the deadline is 15 May.

- If this is submitted late, there is a 1% penalty per working day up to 9 June.
- A 100% penalty will be applied to any application received on or after 10 June.

2) The transfer of entitlements application deadline is also 15 May.

- If this is submitted late, it will not be accepted and the future value of entitlements under the new BPS will be affected.

3) If this work is not completed contact your local adviser immediately for assistance – don't assume that an advisor will do this on your behalf.

**Not as urgent**

1) Review your completed application before 15 May.

2) Amendments can be made up to 31 May.

3) Reasons for making an amendment



It is important to check that all the relevant documents are completed correctly and submitted on time

include the following:

- Correcting an obvious error (minor clerical error).
- Adding or deleting a parcel.
- Change of use of a parcel.
- Ticking the box relating to farm companies if you omitted to do so on the original application.
- All amendment forms will be acknowledged in writing.

This is the final year of the Single Payment Scheme. Next year, the new scheme, the BPS, will come into being. It is important that this year's application is correct as the total value of the entitlements definitively held (owned) on 15 May forms part of the calculation of the new BPS entitlements. The latest date for lodging a transfer of entitlements application form is 15 May. This is an important date if you recently purchased or sold entitlements.

**From SPS to BPS**

The changeover will be straightforward for the majority of farmers. However, if you have been leasing out some or all your land, following a succession plan or changing to a company structure, the application process in 2014 and 2015 is a little more complex. It is important to check that all the relevant documents are completed correctly and submitted on time.

The more complex cases may involve the solicitor, accountant and valuer and involve some or all of the following transactions:

- Adding and /or changing the name(s) on the herd number;
- Transferring entitlements using the transfer application
- Completing a Capital Gains Tax return
- Completing a VAT return
- Updating your will

**The new BPS**

The Department of Agriculture, Food and the Marine has made a lot of information available on its website about this new scheme. The CAP 2015 information booklet is useful and there is also a calculator that you can use to work out the values of your own future payments in the scheme up to 2019. This is available at the following address: <http://www.agriculture.gov.ie/farmerschemespayments/methodsofpayments/commonagriculturalpolicycap/cap2015directpaymentsinformationcentre/>

**Preparing your harvest**

*"You're are going to reap, reap what you sow" – Lou Reed wrote in the hit song 'Perfect Day'*

Now that all the major spring work is completed, it is time to take stock of where you are. To date, what have you 'sown' on the farm? In spring, a lot of high cost inputs are used (feed, fertilizer and sprays); can you answer the following questions?

- Are you ahead or behind your budget for these items?
- How has the farm performed to date (cows calved, milk supplied, cattle weight gains, crops sown) compared with last year/your budget?
- If you continue with the current management strategy, what will the Teagasc Profit Monitor look like at the end of the year?
- Have you been using all of the available tools to help you make day-to-day decisions on your farm? (Teagasc cost control planner/Tea-





Reap what you sow.

gasc newsletters/ discussion group advice, etc.)

- Have you the physical items “set up” on the farm to reap a decent harvest? For example, have you followed your Spring Rotation Planner? Is the grass wedge set up for the summer at this stage? Have you got the basics covered with the crop (fertilizer programme, spray programme in place, cow condition for breeding – breeding plan, etc)?

Food Harvest 2020 is an integrated plan developed to help secure the future of Irish farming. The aim of this plan is to “reap a large harvest” for Irish farmers. Reaching the targets set out will require a team effort. You are the manager of your farm; have you employed all of the resources available to you to achieve what you require/need/desire from your farm?

A business plan is a key requirement. In the main, you control what happens inside your farm gate. You have little control of what happens exter-

nally (e.g. interest rates, milk/beef/grain prices and regulations). By completing a sound business plan, you can build in a “sink fund management plan” to protect you against the items outside your control.

It is important that all investments are built on a sound business plan with contingencies built in. Where money is being borrowed to support investment, the banks will use predicted cashflow from future BPS applications as a guideline for repayment capacity on farm loan applications.

I have been involved with many farms that have expanded over the years and a common problem that they all faced in the initial years is pressure on cashflow.

A robust business plan will help you establish a sustainable pace of growth for your business and determine the correct time to take on capital investments. Volatile prices, costs, weather and potentially interest rates and ac-

cess to finance will be a feature of the future. In a static business, these pressures can be managed with relatively small changes. However, these take on an entirely different meaning when the farm is expanding and could put the future of your business at stake.

Forecasting any cashflow deficit that may occur through the use of a sensitivity analysis is important to ensure that you have the necessary facilities in place.

Many farmers do not have a business plan on paper. All successful businesses do. The Teagasc publication ‘Your Farm, Your Plan – Planning your future’ is the starting point in completing a business plan for your farm. It can be downloaded from the following link: [http://www.teagasc.ie/publications/view\\_publication.aspx?PublicationID=2789](http://www.teagasc.ie/publications/view_publication.aspx?PublicationID=2789)

Be sure to contact your local Teagasc adviser who can help you to create a business plan for your farm.



## Beef farmers to get insight into Teagasc's research and advisory programme

**Pearse Kelly,**  
Head of Drystock Knowledge Transfer  
**Edward G. O'Riordan,**  
Beef Enterprise Leader, Grange

On Wednesday 18 June, Teagasc is holding a major Beef Open Day at its Animal & Grassland Research and Innovation Centre at Grange in Dunsany, Co Meath. This event will provide an opportunity for beef farmers to see Teagasc's comprehensive research and advisory programme.

Key industry experts from Bord Bia, Irish Cattle Breeding Federation, Animal Health Ireland, Department of Agriculture, Food and the Marine, *Irish Farmers Journal* and University College Dublin will be present to discuss individual farmer queries. In addition, meat industry representatives, the main beef breed societies and AI breeding companies will be represented on the day.

### Drivers of profit

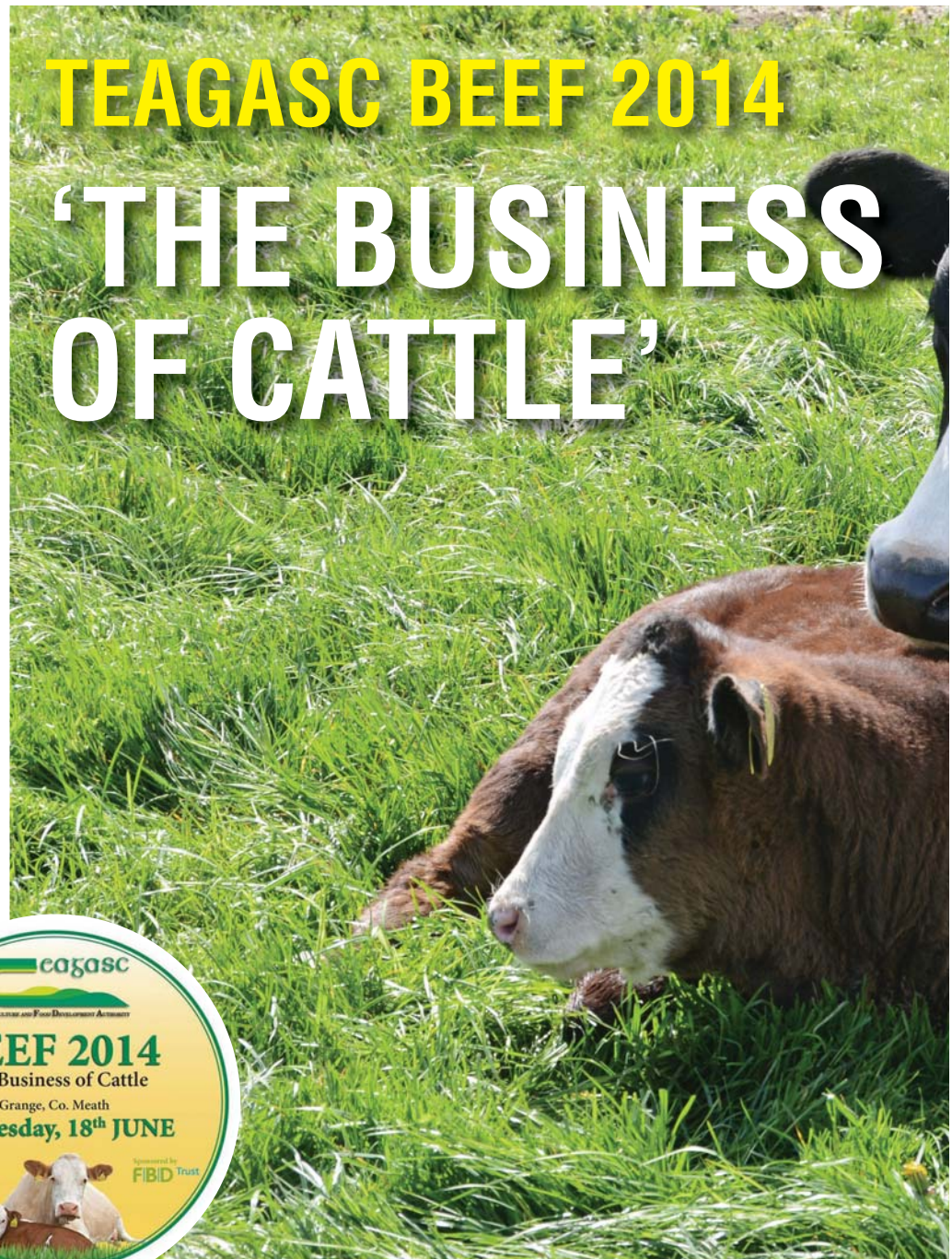
This major Teagasc event coincides with a time of huge uncertainty in the beef industry. The focus will be on the application of technologies which will help Irish beef farmers to increase the profitability of their farming businesses.

### ➤ Suckler beef

Ireland's suckler herd of approximately a million cows produces animals suitable for both finishing and live export. In recent years, the efficiency advantages of bulls over steers has encouraged many suckler farmers aiming to increase output, to change their system of beef production. However, changes in market specifications for both bulls and steers, especially on age at slaughter and on carcass weight limits, is leading many suckler farmers to question their system of suckler beef production.

All of the different suckler systems will be explored at the event on 18 June, with emphasis on beef output per hectare, maximising profit per head and per hectare, and meeting the market requirements.

The Teagasc Derrypatrick Suckler Herd has changed its focus in recent years with early-maturing bulls now used on half the herd to measure the impact on profitability. Visitors will see the first of these calves and hear



how they are performing.

### ➤ Exploiting genetics

Over the last two years, new suckler breeding indices have been introduced to aid farmers with bulls and replacement heifers selection. The terminal and replacement indices now give suckler farmers the option of focusing more closely on traits for which they want to select.

The new Teagasc Suckler Maternal Herd of over 100 cows, based in Teagasc Grange, is validating the replacement index and this new herd will be on display on the day. Farmers interested in the new Beef Genomics Programme will also hear about the ways that this new technology (a world first for beef farmers) will be

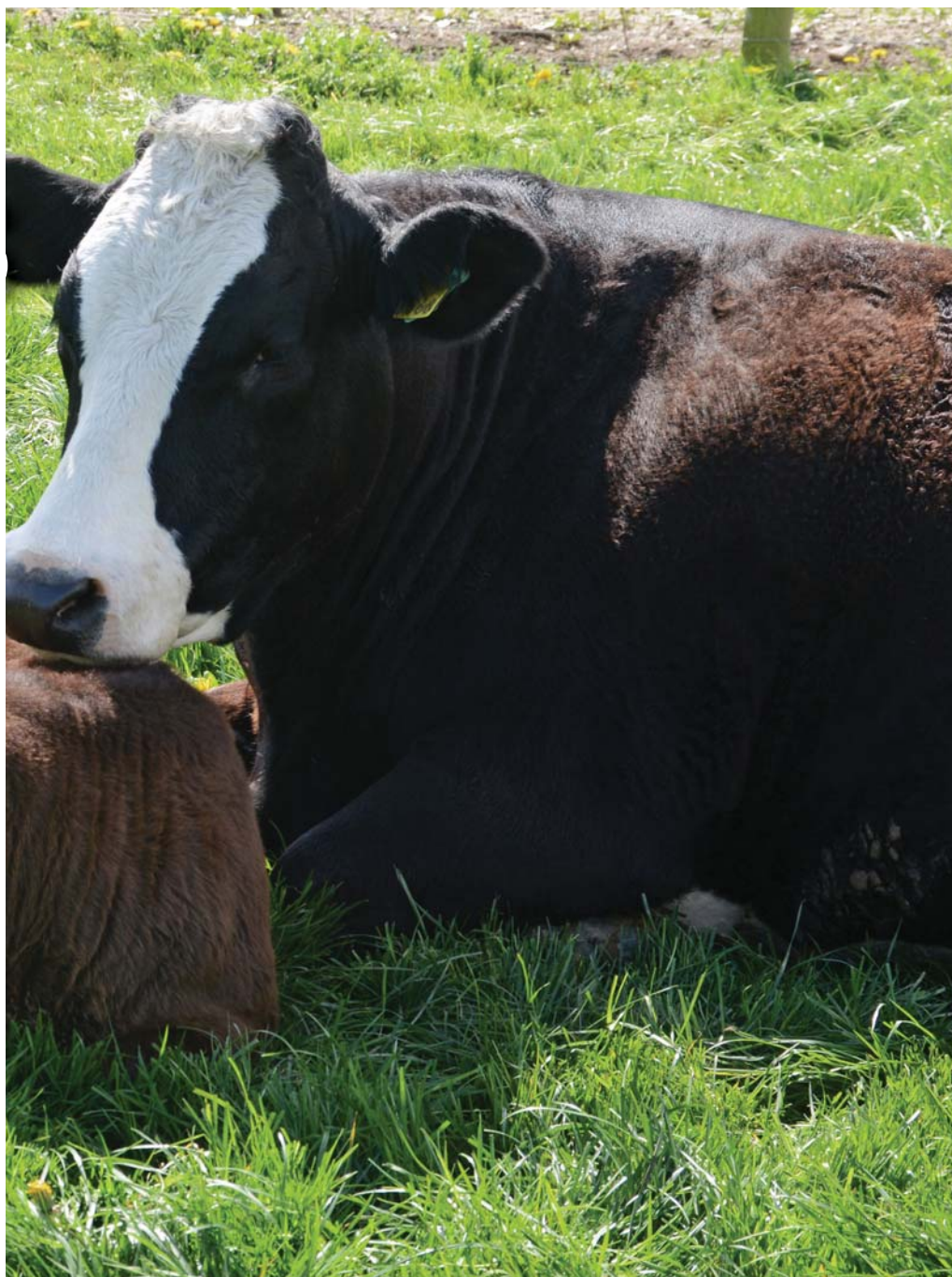
exploited by Irish suckler farmers over coming years.

### ➤ Achieving compact calving

One of the first targets that a suckler herd needs to achieve, if profitability is to be maximised, is a tight calving pattern of less than 12 weeks. Unfortunately, this is not being achieved on many farms due to a combination of management and breeding decisions.

Improving cow fertility and calving suckler heifers at two years of age are two of the main ways to improve or maintain a tight herd calving pattern. Currently, only 16% of all suckler heifers calve between 22 and 26 months of age. The targets that need to be met and how they can be achieved will be addressed on 18 June by Teagasc





“ The key drivers of profit will be covered on 18 June through a series of presentations and these main topics will then be elaborated on in greater detail in technology villages

quality of this grass and by growing a high quantity of grass per hectare (through maintaining soil fertility and reseeding old pastures), these farmers are capable of achieving high liveweight gains of beef per hectare. Visitors to BEEF 2014 will be taken through a major Grassland Demonstration where the key decisions on grassland management will be discussed with grassland experts.

#### ➤ Healthy herd

Herd health planning and the role of different vaccination and parasite control programmes are becoming increasingly important on Irish beef farms focusing on their output and costs.

Teagasc research and advisory messages along with Animal Health Ireland and the District Veterinary Offices will demonstrate just how important animal health is to the Irish beef industry and will show the latest technologies that can help beef farmers to improve their herd health while at the same time controlling costs.

#### ➤ What's to see at BEEF 2014

The key drivers of profit will be covered on 18 June through a series of presentations and these main topics will then be elaborated on in greater detail in technology villages. In these 'villages', farmers will be able to meet and discuss these topics on a one-to-one basis with Teagasc advisers and researchers along with all of the main industry stakeholders involved in the business of beef farming.

Producing quality beef, indoor feeding, farming in a sustainable environment, CAP reform and the Teagasc / *Irish Farmers Journal* BETTER Farm Beef Programme, farm safety, new emerging technologies, farm buildings among many other topics, will also be on display. There will also be a major Forum\* at the end of the day, where the topic 'My Future in Beef' will be discussed with a panel of leading beef farmers that will outline the plans they have for their own farming systems.

\*The Forum is kindly sponsored by FBD

researchers and advisers, as well as by ICBE, AI breeding companies and the various breed societies.

#### ➤ Calf to beef

With the projected increase in the national dairy herd, and the potential changes to the calf crop through the use of sexed semen, there is likely to be an increase in the number of beef calves (both dairy calf gender and beef sired calves) coming from this source.

While some of these calves will be exported live at a relatively young age, a significant number of them will remain on Irish farms. What systems of beef production should these calves be finished in? What markets will they be targeted at and what specifications

will these markets require? What level of profitability can be expected, per head and per hectare, from these types of beef systems?

Over the years, Teagasc has undertaken a considerable amount of research on dairy calf to beef systems and, in recent years, has researched and modelled a number of new systems. All of this work will be on display on the day with the opportunity also to discuss market prospects with both Bord Bia and the main meat processors.

#### ➤ High performance from pasture

The most profitable Irish beef farmers include a high proportion of grazed grass in the lifetime diet of their animals. By maximising the



# drystock

## Getting to grips with the STAP faecal test

**Frank Hynes,**  
Sheep Specialist,  
Teagasc Animal & Grassland  
Research and Innovation Centre,  
Mellows Campus, Athenry, Co Galway

In 2013, over 1,300 Teagasc clients participating in the Sheep Technology Adoption Programme (STAP) carried out faecal egg counts as one of their selected tasks. Early indications are that this option is being widely chosen again this year. These tests help farmers avoid or manage the problem of anthelmintic resistance. Whether participating in STAP or not, taking faecal egg counts is useful when preparing a sheep dosing programme.

### STAP faecal test

A faecal test helps to establish if there is parasite resistance to the commonly used anthelmintics (i.e. White drench; Benzimidazole (1-Bz), Yellow drench; Levamisole (2-LV) and clear drench/injection; Macro cyclic Lactone (3-ML) (incl. Ivermectin).

This test must be carried out between 1 June and 19 September, in accordance with the terms and conditions of STAP. It involves:

- Taking a faecal sample after 1 June and having a faecal egg count carried out by an approved laboratory.
- Dosing with an anthelmintic from one of the three groups described above immediately after taking the sample.
- Repeating the FEC either seven days post dosing if a Levamisole was used or 14 days post treatment if Benzimidazole or Macro cyclic Lactone products were used.

This test gauges the efficacy of the anthelmintic used. It does not necessarily indicate anthelmintic resistance or, otherwise, as other factors may influence the test result.



### Interpreting test 1

#### Parasites identified on STAP faecal test

For the purposes of Task 3 under STAP, most of the approved laboratories report on the level of eggs present in faecal samples for the following:

- Strongyle worms which include *Trichostrongylus*, *Cooperia* and *Teladorsagia* spp.
- *Nematodirus* spp.
- Coccidial oocysts

While *Cooperia* is not particularly pathogenic and, in general, is of little concern, their eggs are similar to the other strongyle eggs and it will contribute to the FEC.

Laboratories also report on the number of:

- *Strongiloides*, which is a threadworm and should not be confused with Strongyles.
- *Moniezia*, which is a tapeworm.
- *Dictyocaulus*, which are lungworms

These are generally not very

pathogenic. High egg counts of these should only be of concern if there is some unexplained problem and the results may help your veterinary surgeon identify the cause.

#### Strongyle species

After sample one has been taken but before the results have come back, lambs will be dosed. The main worms of concern for lambs from 1 June are the Strongyle worm species. The message to be taken concerning Strongyles from this first test is summarised in Table 1.

#### *Nematodirus* spp.

Assuming that by mid to late June, lambs will be greater than 10 weeks old, a high egg count for *nematodirus* is probably of little significance because:

- Lambs tend to become resistant to *nematodirus* from 10 to 12 weeks of age.
- Egg production tends to be high when number of larvae in the gut are low.

**Table 1:** The message to be taken from faecal egg count for strongyle species (dose administered immediately after taking FEC)

Faecal egg count (EPG)	Interpretation
Count > 500	The dose given was justified and lambs should benefit from a reduction in worm burden
Count < 500	Dose was not necessary and will be of little benefit.

(A similar result in future, if taken before dosing, will indicate that dosing is not necessary and a re-test should be considered in the weeks ahead as counts may increase as the season progresses)





**In summary**

Anthelmintic resistance poses a major threat to the health and profitability of the sheep industry. Task 3 of the Sheep Technology Adoption Programme is designed to help farmers deal with the problem and establish if resistance is a problem. Faecal egg count test results must be interpreted correctly so that the benefits can be maximised.

• There are several species of nematodirus with *Nematodirus battus* being the only pathogenic species for lambs. The worm eggs identified in the egg count may also include non pathogenic species.

However, if lambs show signs of black scour, straining, dehydration or generally being unwell, nematodirus could be causing the problem and a dose may be justified.

Furthermore, a dose may be considered to reduce the worm egg burden being passed onto the pasture for next year.

**Coccidia**

Where the level of coccidian oocysts is high, there may or may not be a problem.

• Lambs tend to be infected with small numbers of coccidian parasites and develop immunity to these parasites from about eight weeks of age. However, the immunity will not develop if the lambs do not have some exposure to coccidia. Husbandry and management may lead to high challenge and even immune animals may develop clinical symptoms.

• As with nematodirus, there are several species of coccidia that are non-pathogenic and these may give rise to the high oocyst count in the test.

• On the other hand, the coccidia present may, in fact, be pathogenic. If there is unexplained scouring or a lack of thrive, discuss the results with a veterinary surgeon.

**Interpreting test 2**

The purpose of taking the second test is to determine the efficacy of the anthelmintic used following taking the initial test. Therefore, the result of this test must be examined in conjunction with the first test. The proportional reduction in egg count is important. While dosing is generally not recommended at counts of less than 500 strongyle eggs per gramme, the proportional reduction in egg numbers can be calculated at much lower counts. This is calculated as follows:

$$\frac{((\text{egg count test 1}) - (\text{egg count test 2})) \times 100}{\text{egg count test 1}}$$

- If the result is greater than 95%, it is considered there is no problem with the anthelmintic
- If the result is less than 95%, it is considered there is a problem and anthelmintic resistance is likely if dosing guidelines were followed.

**Decisions based on FEC result**

Whether participating in STAP or not, faecal egg counts are useful and can provide valuable information. They

can be used to:

- Help determine whether animals need to be treated or not.
- Help time treatments better.
- Test the efficacy of the treatment.
- Reduce treatments where anthelmintics are used excessively.
- Obtain information on the level of contamination going onto pasture.

Table 2 provides a guide to interpreting faecal egg counts in lambs in terms of eggs per gramme for the main pathogenic roundworm species in Ireland. When Strongyle worm egg counts are in the medium to high category in lambs during the early summer, a dose is usually justified.

SCOPS (Sustainable Control of Parasites in Sheep) is an industry led group in the UK that represents the interests of the sheep industry. This group have produced a technical manual with advice which is just as relevant to farms in Ireland as in the UK. The full manual is well worth a read and can be accessed on the following website:

<http://www.scops.org.uk/content/SCOPS-Technical-manual-4th-Edition-June-2012.pdf>

**Table 2:** Guide to interpreting faecal egg counts in lambs (epg) - Taylor, 2011

Worm species	Faecal egg counts (FEC)		
	Low	Medium	High
Trichostrongylus spp	100 - 500	500 - 1500	> 1500
Teladorsagia circumcincta	50 - 250	250 - 1000	> 1000
Nematodirus battus	50 - 150	150 - 300	> 300



# Prospects bright for young farm managers

The Teagasc Diploma in Dairy Farm Management is proving popular with young people looking for a hands-on career

“I absolutely love it,” says Ruth Kerrigan of the calving season when days, evenings, nights, and weeks can evaporate in a blur of concentrated effort. The focus needed to calve 230 cows in six or so weeks means time disappears faster than grass under ravenous dairy cows.

Ruth is enrolled on the two-year Teagasc Diploma in Dairy Farm Management which she started in September 2012 and will complete this August.

Ruth, who hails from Newcastle, Co



Ruth Kerrigan and Mitchel Hayes.

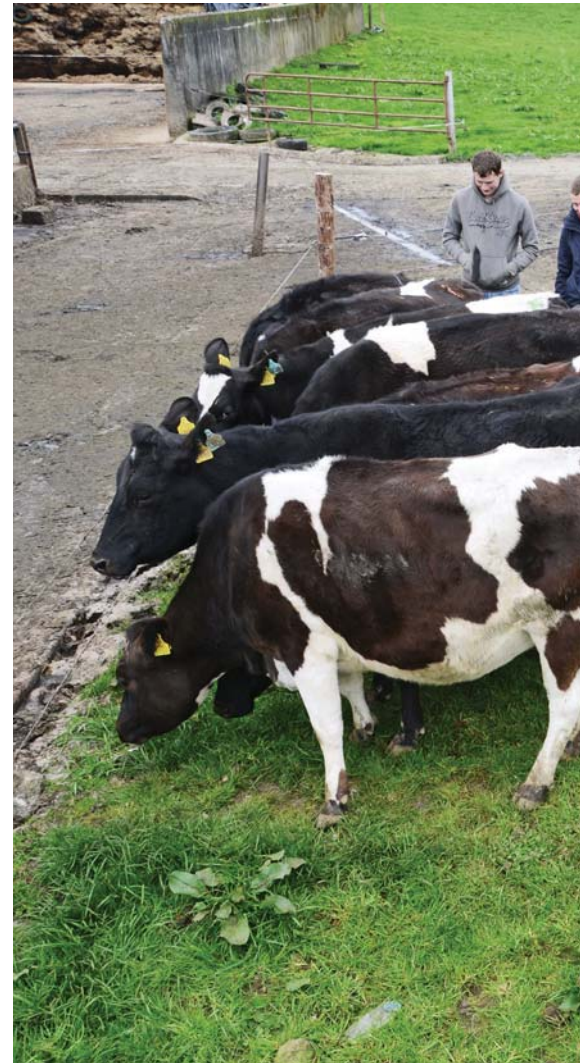
Dublin, and completed a B.Agr.Sc. in UCD in 2012 is assigned to work with Mitchel Hayes who farms at Dawstown close to Blarney, Co Cork. “We’re not exactly typical students,” says Ruth, who is one of the 19 students who make up the first ‘intake’ on the course. “We’re really more like interns in a business.”

Mitchel Hayes’s farm is certainly run as a business. There are over two kilometres of internal roadways for the cows who are mostly Jersey/Friesian crosses averaging just over 500kg. “We are strongly focused on optimising utilisation of grass for low cost production,” says Mitchel. “Ruth has a direct input into management decisions.”

“As a second-year, you are deeply involved in all aspects of the management of the farm,” says Ruth. “It’s different from when you are a student doing work placement. During your first year of the diploma, you have a say and this rises more in the second year. Your views are valued and looked for a bit more.”

Ruth has taken a keen interest in health issues and says keeping out Johnes’s disease is a top priority. “Heifer calves only get colostrum from their mothers and we make sure they get it as soon as possible after birth. Bull calves can get pooled colostrum. Heifers are reared on milk powder.”

When Ruth was interviewed for the course (there are approximately two applicants for each place), she said she was flexible on the location of her host farms. Most of her colleagues



are within about an hour of home.

“I benefit when there are classes at Moorepark or Clonakilty,” smiles Ruth. “There’s a total of about 30 days of lectures over the two years.” Sadly, Ruth will have graduated before the state-of-the-art education facilities at Moorepark, supported by FBD in honour of the late Paddy O’Keeffe, are completed later this year.

Future Dairy Diploma students will enjoy these facilities in addition to Teagasc college facilities, allowing ample opportunity to interact with Teagasc dairy researchers, specialists and lecturers and other professionals. In addition to the classroom lectures and tutorials, students meet once a month as a discussion group. “Students are constantly submitting data from their hosts farms,” says James Ryan at Kildalton who acts as a supervisor of the participants. “Key performance indicators such as grass covers, conception rates, milk yield, etc, are discussed for each farm (all data remains confidential) and students will share ideas if another student or host farm has a production or management issue.”

The students and James Ryan rotate around the host farms which are





Conor Kearney, Noel Prunty, James Connors, Barry Reilly, Patrick Fitzharris, James Ryan, Shane Gorey, Jamie O'Brien, Brian Murphy (host farmer), Fergal Fitzpatrick, Brian Gilsenan, Shane Power, Micheal O'Sullivan, Donal O'Callaghan and Donal Kennedy.

located right around the country. "We hosted the group last September," says Ruth. "Mitchel was present but he left me to do most of the talking. It's really useful to explain to others management decisions you have made and why you made them."

### Practical emphasis

"It's the practical emphasis which attracted me," says Shane Gorey from Drangan, Co Tipperary. Shane is currently in his first year on the course. Shane's host farmer is Eddie O'Neil at Golden in the same county. Shane did his Level 5 Certificate in Agriculture in Kildalton and a second year there specialising in dairying. "You have placements when you are in college but you have nothing like the responsibility you have on this course.

"Also, you are really reporting to a boss and learning how to interact with and possibly manage other people in a work setting. People skills are vital in management."

Students spend 12 months on their host farm. "You get to see the full cycle," says Shane. "On a college placement, you'll typically only have three or four months on one farm.

The members of the diploma

class usually come in roughly equal numbers from Kildalton, Ballyhaise and Clonakilty colleges but also from Gurteen, Pallaskenry and Mountbellew agricultural colleges. Others, like Ruth, can come from other institutions. "Because of the range of backgrounds and location of hosts farms, you experience an incredibly broad exposure to the challenges in dairying right around the country," says Shane Gorey.

"You might not face exactly the same challenges today because you are on a farm with a different soil type, for example, but you never know when it might be useful."

The young people on the course are paid. "You can certainly live on the money," says Ruth Kerrigan. "But it's the experience which is the most valuable thing. The host farmers will really help you to build your skills and your confidence in your management ability."

The future seems bright for these soon-to-graduate farm managers. At a recent meeting of second-years, James Ryan enquired of the group whether any had something 'lined-up'. Over half said they had. Not bad, four months ahead of graduation.

## Core element

The core element of the Teagasc Professional Diploma in Dairy Farm Management is a two-year mentored professional work experience with approved dairy farmers. Participants are required to spend 12 months on a Teagasc approved host farm and then move to a new host. Teagasc strongly encourages participants to complete part of their work experience overseas to maximise their exposure to different concepts and approaches. The programme also incorporates monthly discussion groups for the participants.

The contact element of the programme is delivered in blocks and revolves around three modules, dairy farm management, dairy technology and dairy farm expansion & development. The programme is delivered by Teagasc Moorepark researchers, Teagasc dairy knowledge transfer specialists and Teagasc college lecturers.

The minimum entry requirement to the Teagasc Professional Diploma in Dairy Farm Management is a Level 6 Advanced Certificate in Agriculture. Applicants are required to undergo a selection process which involves an interview. This Professional Diploma is validated by University College Dublin. Students are based at Teagasc Kildalton College.

This programme gives participants an excellent opportunity to develop and refine farm managerial skills which will be essential in an era of considerable dairy expansion and to enable the dairy sector meet Food Harvest 2020 targets.

• **Note: Closing date for receipt of applications for the Professional Diploma is Friday 11 July. Further details and application forms can be obtained on: [http://www.teagasc.ie/training/courses/prof\\_dip\\_dairy\\_manage.asp](http://www.teagasc.ie/training/courses/prof_dip_dairy_manage.asp)**

“ The minimum entry requirement to the Teagasc Professional Diploma in Dairy Farm Management is a Level 6 Advanced Certificate in Agriculture



# Milk price: it's as simple as ABC

**Tom O'Dwyer**, head of Teagasc Dairy Knowledge Transfer, Teagasc Animal and Grassland Research and Innovation Programme

I recently met two dairy farmers, both of whom were reviewing their ICBF Dairy Herd Performance reports. One farmer was very pleased with his average milk price of 41.2 cpl for 2013, while the second farmer averaged 37.2 cpl and was less satisfied. Both farmers are supplying milk to the same co-op. Both milk cows morning and evening, have invested in their respective farms over the years and are looking forward to the removal of milk quotas in 2015.

The first farmer is generating higher milk receipts from his herd and is much better set up to avail of opportunities, and cope with challenges, post 2015 (see Table 1). This article will look at how most milk processors calculate their milk price and how individual farmers can optimise their milk receipts.

Most Irish co-ops pay for milk on an A + B - C basis, where A is the price paid per kilo of protein, B is the price paid per kilo of fat and C is a processing cost deduction. Let's work through an example where two farmers have each supplied 50,000 litres of milk (a nice round figure) with different levels of the key constituents. Table 2 looks at the milk price received by the same two farmers for the milk supplied in April last year. Farmer A supplied 36 kg additional protein (worth an extra €295) and 268 kg additional fat (worth an extra €954) in the same volume of milk.

Protein is the most valuable constituent and the ratio of protein to fat value is 2.3:1 in Table 2. The ratio of protein to fat values differs between milk processors and will depend on your milk processor's product mix. It

is important that you know what your processor is paying per kg of fat and protein – this information should be printed on your milk statement.

## How to improve milk receipts

Table 2 shows that the farmer with better milk constituents received a better milk price. So if you can supply more kilogrammes of protein and fat in the same volume, you will increase your average milk price. If volume also increases, there will be an increased penalty (-C) to reflect the increased processing charge associated with the higher volume.

Teagasc researchers Laurence Shalloo and Una Geary have shown that dairy farmers have a significant ability to increase their milk receipts by increasing the concentration of milk solids (more kilogrammes in the same





**Table 1: 2013 Average Milk Price (incl. VAT) for two Dairy Farmers (from ICBF Dairy Herd Performance report)**

Co-op top 10% 40.8	
Co-op avg 38.9	
<b>41.2</b>	<b>37.2</b>
Rank out of 100 <b>94%</b>	Rank out of 100 <b>14%</b>
Star rating *****	Star rating *
<b>Farmer A</b>	<b>Farmer B</b>

**Table 2: Calculation of average milk price for two farmers both supplying 50,000 litres of milk in April 2014**



**50,000 litres**

	Farmer A	Farmer B
Protein %	3.34	3.27
Kg	1,720	1,684
A € (@ €8.19 per kg)	14,093	13,797
Fat %	4.38	3.86
Kg	2,256	1,988
B € (@ €3.56 per kg)	8,039	7,084
C (@ €0.04 per litre)	2,000	2,000
A+B-C, €	20,131	18,881
A+B-C, c/litre	40.3	37.8

**Table 3: How to increase milk receipts (Source: Moorepark 2013: Irish Dairying – Harvesting the Potential)**

Change	Impact, €/40 ha farm
Increasing milk protein % by 0.1%	€1,739
Increasing milk fat % by 0.1%	€3,259
Moving mean calving date from mid-March to mid-February	€12,883
Reducing SCC from 250,000 cells/ml to < 100,000 cells/ml	€9,046

volume of milk), producing milk with an optimum supply profile (helped by an earlier and more compact calving pattern) and improving milk quality (lower SCC levels).

Genetics, replacement rate and management will drive improvements in the first three items listed in Table 3; your milking routine will have a big impact on reducing cell count. Dairy farmers must ask themselves how committed they are to making improvements in these four areas.

Returning to our two farmers, Farmer A had a herd EBI of €183 and breeding values of + 11.9 kg fat (0.18%) and + 8.1 kg protein (0.11%); Farmer B had a herd EBI of €132 and breeding values of + 6.1 kg fat (0.04%) and + 5.4 kg protein (0.03%). It's not hard to see why Farmer B is supplying milk with poorer constituents – his cows simply

don't have the genetics to produce the high levels of solids needed to achieve an above average milk price. No amount of additional feeding or management can correct for this.

**The first line of defence**

Milk price volatility is much discussed but remember that the best defence against the risk of low milk price is to ensure that you are making the best use of the tools you have to maximise your milk price.

The benefits are clear. In a year of good milk prices you can put money into a cash reserve fund. In a year of relatively poor milk prices, the price you achieve will be higher than average, leaving you with more of a margin over costs than another farmer with just an average milk price and similar costs.

**The future?**

While the current milk payment system includes A+B-C, milk pricing systems could evolve to take into account market demands and product portfolios. International milk processors are currently proposing to include lactose in their payment structure. Moves to differentiate casein from whey or between 'total' and 'true' proteins may be more profitable for both the processor and the farmer. Finally, a milk payment system which incorporates the negative impact of SCC on raw milk composition, cheese processing and cheese composition would benefit the overall industry. Who knows, in the future more letters of the alphabet might be needed to describe our milk pricing system: B (fat) + F (casein) + G (whey) + H (lactose) – C (carrier). Best to learn your ABC's first!



# Storm Darwin – only the fittest forests survived

On 12 February, Storm Darwin attacked and devastated many forests, particularly in Munster and parts of south Leinster

**Liam Kelly,**  
Forestry Development Officer,  
Mullingar, Teagasc Crops Environment  
and Land Use Programme

**O**ur location on the edge of the Atlantic Ocean means we receive some of the wildest and dampest weather in all of Europe. This heavy rainfall aids the exceptional growth that our conifers achieve but, occasionally, approximately every 10 to 15 years, severe storms come in from the Atlantic.

This winter, we had extremely heavy rainfall and eight severe storms culminating in Storm Darwin: trees and forest that were in its path offered very little resistance. All older plantations were susceptible, especially if thinned in 2013 regardless of age or rotation.

## Older plantations

As forest crops mature, the risk of wind throw increases greatly and windthrow can increase the cost of harvest. Timber quality can be reduced if shatter and breakage occurs in the main stem of the trees. There are also huge health and safety risks associated with dealing with flattened and twisted trees. Two types of wind throw can occur:

• **Endemic windthrow:** This is the gradual windthrow that can occur at the edges or breaks in the canopy. It



can be localised to certain sites and can occur over years. In vulnerable areas, a no-thinning policy should be adopted.

• **Catastrophic windthrow:** This usually occurs over large areas of forests and has a major influence on the woodland and landscape, e.g. that caused by Storm Darwin.

Windthrow therefore has been known to occur in Irish forestry. However, the difference this time was the amount of trees and forests that have blown down within the private sector. Private planting only started in the late 80s and early 90s and, therefore, many sites have now reached the vulnerable size and age.

## What to do with damaged timber

As a result of the extreme wet weather and waterlogged sites, most trees blew down rather than snapping or breaking.

As was seen from the popular Teagasc, Coillte and the Forest Service DAFM events, the timber can be fully salvaged in most cases.

It is important to get proper advice on dealing with storm damaged timber, such as from your Teagasc

forestry development officer, and plan accordingly.

• **Health and safety:** Don't take any unnecessary risks when dealing with windthrow timber.

• **Harvesting operations:** Appropriate felling licences should be sought. Harvesting should be carried out as soon as possible to minimise degrade. Felling to stable edges is important and all environmental protection guidelines should be adhered to.

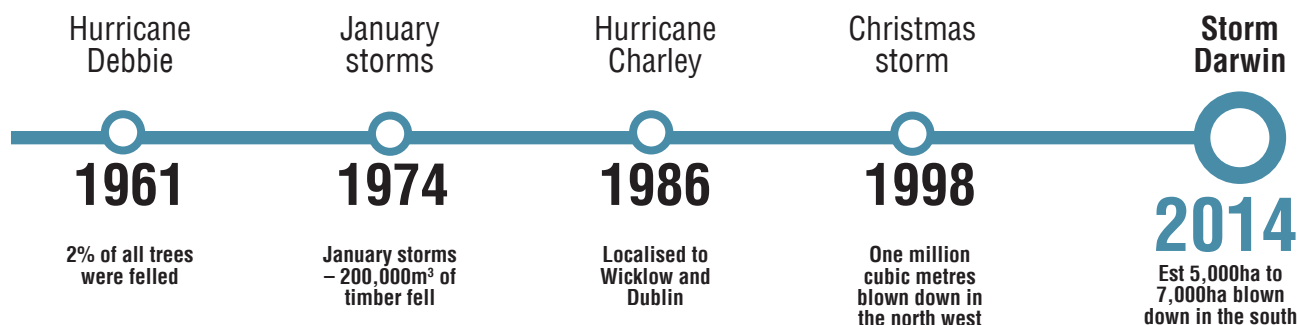
• **Marketing and sale:** Proper markets should be sought to maximise returns. Appropriate timber dispatch protocols should be followed.

• **Restocking:** Having a replanting plan, including timing, species, and maintenance comprising pine weevil protection is important. No grant aid is available.

• **Taxation:** If large areas are affected, the high earners threshold may be breached.

• **Insurance:** This may be available, if appropriate cover was in place, though conditions of the plan should be observed.

Let's hope that Storm Darwin, or any of its relations, are not seen again for a very long time!





Tillage farmers Tommy Prendergast and his son Gary operate a high-input, high-output system.



## TWO CROPS, MULTIPLE STRATEGIES

### Winter wheat and spring barley disease control options

**Tim O'Donovan,**  
Teagasc Crops Environment  
and Land Use Programme  
(Twitter @Teagascrops)

Last year, the weather was not conducive to Septoria and its spread in May and June. Trial results at Teagasc Oak Park, and elsewhere, showed that there was little or no response to fungicide sprays. This year, it could be different as a wet May could drive disease up the plant in which case we will be counting on disease control from fungicides.

Due to the fall-off in activity of triazoles (Opus, Proline, Caramba, Folicur, etc) we now rely heavily on SDHI chemistry (Boscalid, Bixafen, etc.). As the curative effect of many

SDHI chemicals is limited, there may be situations where septoria can get into crops quicker than we would like. Therefore, it is becoming unrealistic to expect totally disease-free crops in a wet year. So, how do we get the best possible control in 2014?

#### Timing

The top three leaves account for most of the yield in wheat and the objective is to keep these leaves as green as possible for as long as possible. Our levels of sunshine may be relatively low but we have cool temperatures, ensuring a long grain fill period and, hence, a great need for disease control.

Wheat leaves emerge every 120 degree days, or so. That is, a leaf is produced every 12 days if the average daily temperature is 10°C. Higher temperatures will speed up leaf emergence; colder conditions will slow it down.

» Continued on next page



The top three leaves account for most of the yield in wheat and the aim is to keep these leaves for as long as possible



» From page 35

Septoria is also influenced by temperature and takes about 400-degree days to go through its lifecycle. So, a plant can produce three leaves in the time it takes septoria to develop within a leaf giving wheat an advantage during its main growing period. In unsprayed trials, wheat may often appear clean until the flag leaf emerges and then suddenly disease can appear overnight on the lower leaves. This is also the reason why wheat sprays are timed for specific leaves.

Your T1 spray protects Leaf 3 and the bit of Leaf 2 that was emerging at the T1 timing. Your T2 protects the flag leaf and the bit of Leaf 2 that was not emerged at the T1 timing. Leaf 2 is not targeted with a specific spray as we know that the Septoria that lands on it; will not have developed sufficiently before the crop is sprayed at T2.

However, as triazoles are gradually losing their effectiveness over time, it is important to know what leaf is emerging and to spray it with the correct product and on time.

Your T3 protects the emerging flowers from fusarium and adds more protection to the flag leaf for a longer grain fill.

### What are the key points to consider at the different timings?

Firstly, the T2 or main spray. This is consistently the best paying spray in winter wheat trials as it protects the flag leaf (which contributes 45% of yield).

- Yield response: 20% (2012 trials 1.7t/ha – Figure 1).
- Timing: Apply onto flag leaf fully emerged (~ gs 39)
- Recommendations: 1.0 l/ha chlorothalonil + 80% to 100% (SDHI + triazole)

Secondly, the T3 or head spray. This is an important spray in southern counties as fusarium can be devastating given wet, humid weather at flowering (remember 2012).

- Yield response: 7%.
- Timing: Apply at start of flowering.
- Recommendations: Fusarium and septoria active triazole.
- The yield response can be low in low disease pressure years.

### What products should be used?

Table 1 outlines the main chemicals to be used at the T2 and T3 in winter wheat. Triazoles and SDHI mixes must be mixed with chlorothalonil to help improve control and delay resistance occurring.

Teagasc trials carried out show that in a well-timed programme, there is little between the products at T2 or T3.

**Table 1**

#### Fungicide options for winter wheat

<b>T2</b>
gs 39 (flag leaf emerged)
<i>Estimated date of application: Early to mid-May</i>
Chlorothalonil 1.0 L
+
Triazole + SDHI mix (80% to 100% rate)
Examples
Adexar/Aviator/ Treoris + triazole Seguris/Cauldron etc
Mildew? Include Mildewcide ½ rate
<b>T3</b>
gs 51-60 (flowering)
<i>Estimated date of application: Early-Mid June</i>
Triazole (80% rate) e.g. Caramba, Proline, Gleam, ProSaro
+/- Strobilurin reduced rate
+/- Chlorothalonil
Mildew? Include Mildewcide ½ rate

**Table 2**

#### Fungicide options for spring barley

<b>T1</b>
Timing gs 30-31
<b>Low disease pressure</b>
Triazole (Proline, Rubric, Punch C, etc) @ ½ rate
+/- Corbel @ ½ rate (if mildew present)
Or
Stereo 1.25 L/ Tocata 1.0 L
<b>T1</b>
Timing gs 25 - 30
<b>High disease pressure</b>
<b>Rhyncho:</b> Use high rates of prothioconazole +/- SDHI (~150 g ai/ha)
<b>Net blotch:</b> Use higher rates of triazoles (above) and include a ½ rate strobilurin/SDHI
Proline 0.5L, Strand 0.8L, Punch C 0.6L, Stereo 1.5L
+
(Modem, Amistar, Galileo) @ ½ rate or SDHI options (See also T2 for pre-formulated options)
<b>T2</b>
Timing Flag Leaf to awns visible (gs 37-49)
Chlorothalonil 1.0 L
+
SDHI/triazole mix
(Cerix, Bontima, Treoris*+triazole Adexar, Siltra, Cauldron,)
or
Chlorothalonil 1.0 L
+
½ - ¾ rate Triazole (Proline, Strand, Punch C etc.)
+
½ rate SDHI(Imtrex/Treoris) or Strobilurin (Amistar, Galileo, Modem)
(Pre-formulated mixtures of the above and other actives are widely available e.g. Amistar Opti, Credo, Fandango, Lumen, Jenton etc)

\*Treoris contains chlorotoloniil

### Spring barley

Unlike wheat where the top three leaves are important to grain fill, the main contributor to high yields in spring barley is high grain number. To maximise the yield of spring barley, the objective is to maximise the number of grains per unit area. We do this by ensuring barley is thick (has a high plant number), is well tillered and has all it needs to produce high grain numbers per ear.

Recent trials at Teagasc Oak Park have re-confirmed that once you reach about 300 plants established/square metre, there is no further benefit from increasing plant number.

Tillering is the key to maximising ear number. Tiller production and til-

ler loss are affected by the availability of the resources needed for growth; nutrients, water and sunlight.

If these are limiting, tiller production may stall or tiller loss may increase. This is where early disease control becomes critical – disease reduces yield in barley by causing tiller loss.

Later disease reduces the green leaf area of the crop and, hence, grain fill.

### Basic lessons

There are a few basic lessons we have learned from trial work in barley over the past 10 years which will help to maximise returns.

1. Monitor crops early and apply a

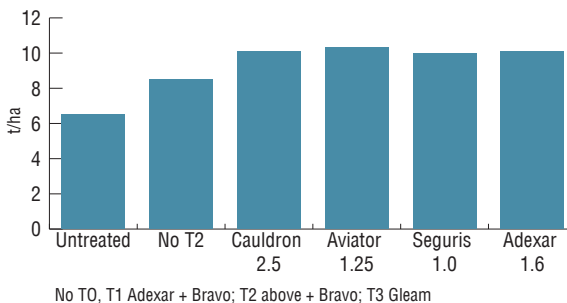




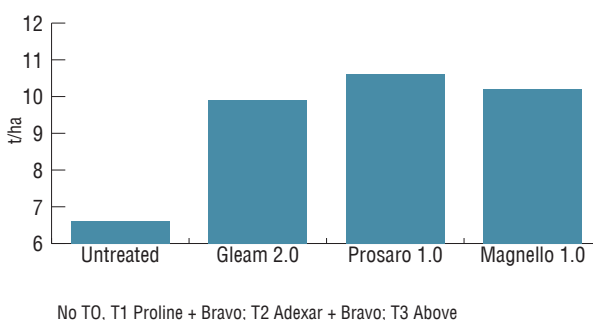


Tommy Prendergast and Teagasc tillage specialist Tim O'Donovan check boom and nozzle height above the crop before spraying.

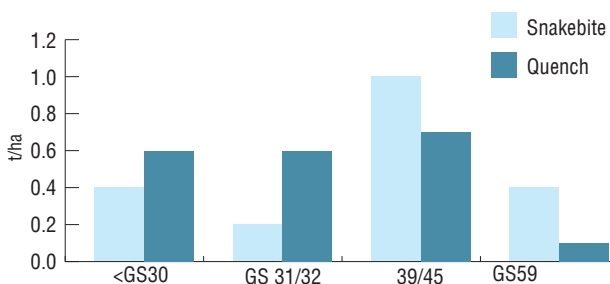
**Figure 1**  
2012 Teagasc T2 trials  
(average three sites: Meath, Wexford & Cork)



**Figure 2**  
2012 Teagasc T3 trials  
(average two sites: Meath & Wexford)



**Figure 3**  
Teagasc spring barley disease control timing trial  
2012: yield response at different timings



>> See details of Crops and Sprayers event at Kildalton on page 6.

fungicide if disease is present at this stage to stop it killing tillers and reducing yield.

2. Where crops are disease-free, delay the timing of the first fungicide until early stem extension.

3. Two well-timed fungicide applications on spring barley give the best return for money invested.

4. Target these two fungicide applications at late tillering to early stem extension, with the second application at flag leaf to awns peeping.

5. Don't delay the final fungicide until the head is fully emerged as there is an increased likelihood you will lose yield (trials have shown a yield loss of up to 0.5t/ha by delaying the fungicide until the head emerges).

**FARMER PROFILE**

**Tommy Prendergast**

is a tillage farmer and agri-contractor based near Cashel, Co Tipperary. Between his own farm and contracting, he is farming about 500ha of crops, including spring malting barley for Dairygold, winter barley, winter wheat, spring wheat, oats, maize, beans and oilseed rape.

Tommy is farming with his wife, Mary, and two sons, Gary and William. He has a busy operation, especially when trying to meet the needs of his livestock clients spreading manures and cutting silage during the main spraying season.

"Planning and preparation are key for us," says Tommy. "To get all the jobs done, we could have four or five tractors

working in a field to get a crop drilled, fertilised and rolled on time."

The Prendergast's attention to detail means that crops are well established and great care is taken over crop nutrition needs. A fertilizer plan is an essential part of Tommy's cropping programme, as well as regular soil sampling.

Crops are walked on a three-week cycle basis to be ahead of any problems and a plan is drawn up to order jobs in a logical fashion based on crop needs. Tommy has to pay particular attention to the set-up of his sprayer as it covers over 2,000ha per year. "We apply as much as €250 worth of sprays per hectare," says Gary Prendergast. "Time spent calibrating and setting up a sprayer is time very well spent."



# Aphids are goners with this green approach



Wasps lay eggs in aphids.



A ladybird eating an aphid alive.



Aphid being sucked dry by midge larvae.

## Paul Fitters reports from the Teagasc College in the National Botanic Gardens

Spring is in the air and with rising temperatures, bugs like aphids or greenflies are starting to reproduce like mad. This can be very annoying, especially when they turn up on your prize rose or a newly planted bed of violas. The easy option is to reach for chemicals.

Often this works well but sometimes it can make things even worse. Chemicals not only kill the pest in question, but also the many beneficial insects which occur naturally in your garden. If that happens, surviving pest insects can come back with a vengeance unhampered by the forces which would normally keep them in check.

In spring my roses almost always have aphid colonies on the new growth. I only have a few roses so I simply squeeze most of the little green culprits with my fingers. I never get them all, but that's not my

intention. Having got most of them, the aphid problem disappears. So why is that?

Aphids have a huge number of enemies: birds, beetles, predatory midges, hoverflies, ladybirds, lacewings, bugs, wasps as well as fungal diseases to name just a few. Birds are present all the time, but the majority of natural enemies that control aphids are insects which tend to come out a few weeks after the aphids do. This delay ensures there will be food around when they emerge – the aphids.

### Biological army

Getting back to my roses, after a few weeks of tolerating, or just ignoring the aphid build up, the army of biological control agents begin dealing with them in an environmentally friendly way, much better than any chemical spray can.

For the rest of the season the aphids are not gone, but stay at such low numbers that they pose no real problem for the roses.

Every May I do a practical demonstration of plant protection in the National Botanic Gardens where I study fresh growth in roses to find

biological control happening. Timing is everything as a cold spring like last year delays the emergence of both aphids and control agents; early warm spells bring it forward.

Usually my timing coincides with nature and students can see biological control in action, magnified 40 times under binocular microscopes. It is not to everybody's taste to see the poor critters being penetrated by wasps that lay their eggs in them, being eaten alive by a ladybird, or sucked dry by predatory midge larvae, but most find it fascinating.

This relaxed approach to aphid control does not necessarily always work. You need to have natural biodiversity in your garden which means a variety of different plants, hedges, maybe a pond etc to encourage the natural enemies of aphids.

The bigger the variation in plants and habitats, the better. Secondly, your plants need to be healthy and growing well. If, for instance, your rose is in a shady or draughty spot, it is unlikely to thrive and as a result is more prone to pests and diseases. So plant the right plant in the right place and let nature do the rest.





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