



Today's Farm

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

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ENVIRONMENT
Wildlife on farms:
how farmers see it

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Cover | Photogenic species such as the red squirrel get lots of attention but there are literally thousands of wildlife species on farms. See our story on p19 which reports on a survey of farm wildlife.

COMMENT

Challenging perceptions



Mark Moore
Editor,
Today's Farm

'Are ye mad?' is the response some drystock farmers have encountered when they mention to neighbours that they are getting into dairying.

Let's be fair, the process of switching can be arduous, stressful, and expensive. But this kind of comment reveals a perception of dairying as a difficult way of life. A reality not reflected in the experiences of the new dairy farmers we feature in our dairy section.

Farmers outside the dairy heartland of Munster and parts of Leinster are perceived to have it especially hard. Not only are natural soil and weather conditions slightly less favourable (though this disadvantage, again, is often less than imagined). These farmers are often pioneers in areas where dairying has become a rarity.

Producing drystock is a legitimate and worthy way of life but if, for similar effort and some manageable risk, a higher level of income is available through switching to dairying, why not go for it? Above all, don't be held back by inaccurate perceptions.

Dul in aghaidh na gnáthchéille.

'An glan as do mheabhair atá tú?' – is é seo an freagra a fuair roinnt feirmeoirí stoic thirim nuair a d'inis siad do chomharsana dá gcuid go raibh ar intinn acu dul isteach san fheirmeoireacht déiríochta. Agus déanta na firinne, próiseas deacair, strusmhar, costasach is ea an próiseas athraithe. Ar an taobh geal den scéal gheofar réidh leis na cuótaí go luath agus éireoidh an t-athrú beagán níos éasca dá bhrí sin.

Is mó is cruá é an t-athrú seo d'fheirmeoirí lasmuigh de chroithailte déiríochta na Mumhan agus d'áiteanna áirithe i gCúige Laighean, ní hamháin de bharr go mbíonn cineál agus riocht nádúrtha na hithreach agus an aimsir ábhairín níos lú fabhrach don fheirmeoireacht déiríochta (cé nach suntasach na míbhuntáistí seo i ndáiríre), ach de bharr gurb iadsan na ceannródaithe in áiteanna a ndeachaigh an déiríocht i léig fadó.

BOOK REVIEW

Secrets of the Irish landscape

Cork University Press, 2013

The companion book to RTÉ's television series with Derek Mooney, *Secrets of the Irish Landscape* consists of two dozen essays on different aspects of the countryside: from the effects of the last Ice Age and the island's first farmers to the effect of the potato on the Irish landscape (an eighth of the entire land surface was once devoted to the humble spud).

This book is generously illustrated with a multitude of colour photographs and the writers are adept at presenting their knowledge in reader-friendly ways.

The 'secrets' in the title reminds us to look beyond the surface of a landscape to tell the whole story. So, for example, DNA analysis shows that our native oak and ash trees came not from an eastwards migration but south from the Iberian peninsula, whereas cabbage was probably introduced through Roman Britain.

There are secrets that remain but many are revealed in this attractive and informative book.

• Available in good bookshops. Costs €21 from The Book Depository (www.bookdepository.co.uk), including postage to Ireland.

— **By Sean Sheehan**



According to the book, DNA analysis shows that our native oak trees came not from an eastwards migration but south from the Iberian peninsula.



The Teagasc video series aims to improve milk quality standards.

Videos for livestock farmers

A new tool to improve milk quality standards has been developed at Teagasc, Moorepark.

It consists of video clips showing critical stages of the milking process and provides guidelines and recommendations for the production of high quality milk.

The user-friendly tool provides valuable information on all aspects of quality milk production (e.g. TBC, SCC and residues).

The video series and additional

information on the chemical composition of cleaning products and procedures can be viewed at www.agresearch.teagasc.ie/moorepark/milkquality/index.asp

Research based on the work of Dr. Temple Grandin, one of the world's most eminent animal behaviour experts has been carried out by Teagasc. A series of videos can be seen on the TeagascMedia YouTube channel under the 'Safe handling of cattle on farms' playlist.

High end computing for best research

Modern research, such as the study of genomics, requires ever greater computing expertise to unravel the role of individual and groups of genes. To ensure access to state-of-the-art computing expertise, Teagasc has a number of collaborations with the Irish Centre for High End Computing (ICHEC).

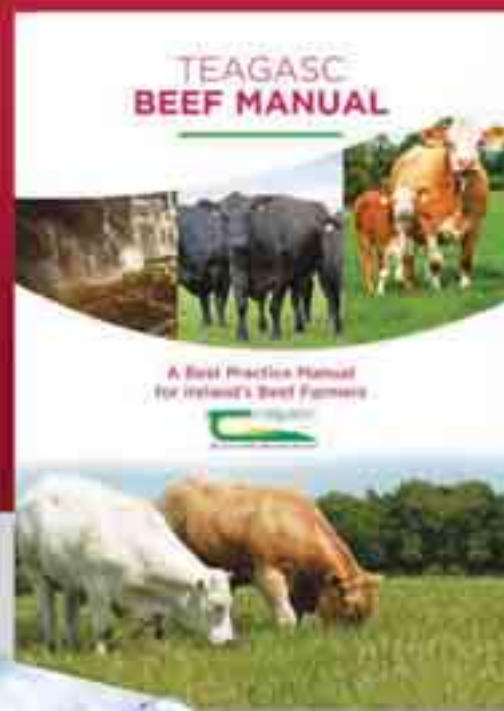
The ICHEC's mission is to provide high performance computing (HPC) resources, support, education and training for researchers in Ireland. A recent agreement will ensure even closer collaboration between Teagasc researchers and ICHEC.

Supporting agricultural development in Africa

Teagasc, in conjunction with VITA, recently completed an evaluation of the agricultural research, advisory and education services for the Eritrean Ministry for Agriculture. Eritrea is in sub-Saharan Africa and is dependent on agricultural development to improve rural areas and assist in the overall development of the Eritrean economy.

During the visit, the group met the Minister for Agriculture Arefaine Berhe, the head of the state research programme Dr. Iyassu Gebreandris and the director of the State Advisory Services Dr. Huruy Asghedom. On completion, a detailed report was presented to the Minister for Agriculture as to the future structure of a combined agricultural research, advisory and education programme for Eritrea.

TEAGASC BEEF MANUAL



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- Beef Farming
- Farm Business Management
- Beef Systems
- Breeding
- Soils & Environment
- Nutrition
- Animal Health
- Infrastructure

These sections are further divided into a total of 52 chapters with titles such as: Taxation, Making Money from Bought In Cattle, Winter Facilities, Feeding the beef Cow, Managing Your Grass, Replacement Heifer Management etc.

The information within each chapter is built on feedback from farmers and is laid out as Questions and Answers, How-to's, Key Performance Indicators, Key risks, etc. making the Manual extremely easy to read and use. The Manual will be of particular interest to anyone planning to expand over coming years.



A must for anyone with an interest in beef farming the 310-page Manual is produced using tear-proof, water-proof paper for real world conditions.

The Teagasc Beef Manual is available at Teagasc offices for €50. For a limited time Teagasc clients can purchase copies for €25.

upcoming events

Teagasc exhibit at National Ploughing Championships

Ratheniska, Co Laois

Teagasc invites all clients and non-clients to visit us at the National Ploughing Championships. The theme of the Teagasc presence is 'Sustainably Serving the Customer'. The marquee will include areas addressing dairying, drystock, crops/horticulture, education, forestry, farm management, environment and diversification.

Each of these areas will be staffed by advisers, researchers and educators. So, come along for a one-to-one chat on any aspect of your farm family business. In addition to these subject areas, a Teagasc Fodder Pavilion will focus on aspects of animal feeding and forage management.

While a favourable season has greatly reduced the fodder problem, some farmers could still encounter difficulties, particularly if we have a long winter. Others may be considering how best to manage fodder to reduce the risk of a superlevy problem next year.

Whatever the challenges on your farm, the Teagasc marquee offers you an unparalleled breadth of expertise in a single location. We look forward to seeing you there!



A large crowd in attendance at last year's National Ploughing Championships.

SHEEP BETTER FARM PROGRAMME OPEN DAY

Date: 5 September

Venue: The Hill Flock farm of Colm O'Donnell, Aclare, Co Sligo

Areas focused on will include:

- Performance on the farm to date
- Breeding
- Grassland management
- Parasite control

NATIONAL TILLAGE CROPS FORUM 2013 PROGRAMME

Date: Thursday 5 September 2013

Venue: Keadeen Hotel, Newbridge, Co Kildare

Session One: Technology & Margins

Chairman: Jim O'Mahony, Teagasc

- 2pm: Winter Cereals Varieties for 2014, Josephine Brennan, Department of Agriculture, Food & the Marine
- 2.25pm: Profit from crop and farm analysis, Ciaran Hickey, Teagasc.
- 2.50pm: Outlook for grain market, John Bergin RH Hall

Session Two: Sustainable Use Directive (SUD) on Pesticides

Chairman: Andy Doyle, Irish Farmers Journal

National round-up

10 September	National Heifer Rearing Competition award winners' farm walk, 11am to 1pm	Jim and Teresa White, Clonlahy, Cloneen, Clonmel, Co Tipperary
10 September	Organic demonstration farm walks — horticulture, direct sales, 6pm	Darren and Patrick Byrne, Strifeland, The Hill, Balbriggan, Co Dublin
10 September	Talking timber event, Timber Marketing Day: where forest owners meet timber buyers, 9:30am to 2pm	Devon Inn Hotel, Templeglantine, Co Limerick
11 September	Beef farm walk	Teagasc, Grange, Co Meath
12 September	Talking timber event, Timber Marketing Day: where forest owners meet timber buyers, 9:30am to 2pm	Lough Allen Hotel & Spa, Drumshanbo, Co Leitrim
17 September	Cut foliage event	Co Kerry
19 September	Organic demonstration farm walks — beef, 2pm	Patrick O'Connor, Mullinroe, Clondrohid, Macroom, Co Cork (DAFM, BTAP approved)
24 to 26 September	National Ploughing Championships	Ratheniska, Co Laois

- 3.15pm: Update on the SUD on Pesticides Implementation Plan for Ireland Sheila Macken, Department of Agriculture, Food & the Marine

- 3.45pm: Stakeholder involvement in network for sustainable use of pesticides Frank Wijnands Wageningen University and Research Centre Netherlands

- 4.15pm: Panel discussion: Implementing NAP for pesticides in Ireland

The Panel:

- Noel Delaney, IFA
- Scott Lovell, Dairygold
- Paddy Browne, Teagasc
- 5.45pm: Close of forum, Prof Gerry Boyle, Teagasc.

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dairying

PROFITABLE DAIRYING

– the Teagasc Ballyhaise experience



Donal Patton
Project Manager,
Teagasc Ballyhaise
Herd

Post-quota expansion of dairy output is widely viewed as a given for Munster and south Leinster. Views on the potential for dairying on land further north and west are sometimes less positive. For some, the perception of long winters, wet land and fragmented farms means that options are limited in the Border Midlands and West (BMW) region. Is this perception accurate? In most cases, no.

Grass growth and feed costs undoubtedly present a greater challenge on heavier land types but dairy Profit Monitor figures for the region make for interesting reading. Average profit per milking platform hectare in 2012 was €1,349, with the top 25% on €2,174 per ha and the lowest 25% on €655 per ha — that's a range of close to €60,000 between the highest and lowest profit farms for the same output. This shows that **a)** the range in farm performance is very similar to the national average and **b)** well managed farms are capable of excellent returns per hectare.

The Ballyhaise college dairy project was begun in 2005 to help understand these differences and produce new information on improving dairy farm profit in the region. At the outset, the main issues identified as hampering profitability were: lower growth and utilisation of grazed grass on wetter soils, farm fragmentation and poor herd fertility. An important aim was to develop systems which could be adopted easily by farmers and would be robust enough to withstand fluctuating milk prices.

So, what are the main findings of the Ballyhaise project?

Herd fertility — the foundation of higher farm profit

Poor herd fertility has a severely negative effect on profit. High culling rates reduce the potential to sell surplus heifers or expand and restrict the opportunity to do any voluntary culling. Spread out calving patterns lead to increased feed costs and reduced milk yields. Improving the fertility performance of the Ballyhaise herd from a low base in 2005 was essential, and the results over the last eight years have been very encouraging (*Table 1*).

Fertility performance has improved markedly from the beginning of the programme, from 35% empty rate in 2005 to 7% in 2012. This has happened through an aggressive breeding and culling policy. High EBI bulls with a high fertility sub-index have been used across the herd over the last eight years. Cows empty at the end of the year were sold and replaced with high EBI replacements.

Cow nutrition is also highly important for fertility. This does not simply mean extra meal in the parlour, but good grazing management, feeding to balance grass deficits and managing body condition from late lactation through the following spring — always a great point for debate among visiting discussion groups!

Grazing heavier land — what can be achieved?

Land type undoubtedly has a major effect on grass production and utilisation. Recent work at Teagasc Ballyhaise has reported excellent pasture growth and utilisation in normal growing seasons, in contrast to the perceived disadvantages relative to drier locations. Grass production has increased steadily from 12 tonnes DM/ha in 2008 to 15.2 tonnes in 2011. This was achieved by a strong push on reseeded (up to 15% of area reseeded annually), coupled with implementing a plan to improve soil fertility.



Principal's view

Integrated dairy education, research and advice at Teagasc Ballyhaise College

Students attending Ballyhaise Agricultural College, having first completed a Level 5 Certificate in Agriculture, can choose to complete a Level 6 Advanced Certificate in Dairy Herd Management. Once complete, students can progress onto a Professional Diploma in Dairy Farm Management giving them the skills required to manage the most progressive dairy farms. Our dairy students work on the college research farm giving them first hand insight into key weekly decisions. As well as our teachers, students have access to guest lectures from Teagasc advisers, a dairy specialist and dairy researcher, who are all based in the college.

— John Kelly,
College Principal



Better grazing management (i.e. grazing at the correct growth stage) has also helped deliver increased grass production at Ballyhaise.

Table 1: Comparison of fertility performance of Teagasc Ballyhaise herd

	%	2005	2012
Three-week submission rate		61	89
Conception rate first AI		41	47
Six-week in-calf rate		36	74
Final empty rate		35	7

Better grazing management (i.e. grazing at the correct growth stage) has also helped deliver increased grass production. More recently, poor weather during 2012 and during spring 2013 have provided a stark reminder of the high production costs associated with poor grass growth — a lesson not unique to this region.

What does this potentially mean for farm profit? Improved grass yields and more effective grazing management have increased milk solids production per hectare at Teagasc Ballyhaise from 900kg in 2005 to 1,250kg in 2012 for little or no increase in purchased feed. In short, better grass utilisation is driving higher milk solids output at Teagasc Ballyhaise.

Milk yield and farm output — lessons for expansion

Milk yield and output is an important point for discussion for visiting groups. There is sometimes a view expressed that Ballyhaise is a low output system compared with farms in the wider region and that expansion targets will not be met using this approach. However, data collected on-farm reveals that output is around 900kg of milk solids per hectare with a concentrate input of 890kg per cow.

Ballyhaise produces 38% more milk per hectare than the regional average, with lower concentrate input, indicating excellent scope for expansion by implementing this system. As expected, the highest profit farms in the region also have higher milk solids output per hectare for lower purchased feed costs.

In summary

Results from the Ballyhaise study have challenged perceptions of what profitable dairying in the BMW region could look like in a post-quota world. Notwithstanding the very difficult weather conditions over the last year, work at the site has consistently demonstrated that improved herd fertility, better milk solids and increased grass utilisation are the key points for profitable milk production. This message is backed up by profit results from other herds on similar land types. The challenge remains to gain wider uptake across dairy farms in the region.

dairying

Why it sometimes pays to ignore conventional wisdom

Some of the best new entrants to dairying are outside the dairy heartland

David Colbourne

Teagasc B & T dairy adviser &

Dr Joe Patton,

Dairy Specialist, Teagasc Agricultural Grassland Research and Innovation Programme, Grange

Conventional wisdom suggests that virtually all new entrants to dairying will be confined to the south and east of the country. Work by Roberta McDonald at Teagasc Moorepark with new entrants to dairying from 2009 to 2011 confirms that there is indeed strong interest in these areas.

“Our project shows that the majority of new entrants are concentrated in the four counties of Tipperary, Cork, Kilkenny and Waterford,”



Patrick and Yvonne Stratford with Craig, Daniel and Barry are up for a challenge, this time on Croagh Patrick.

explains Roberta. “The south may have a certain natural advantage but there will be great opportunities for new entrants in other regions too. Compared with drystock and suckler cow enterprises, the potential profits in dairying are excellent.”

The question should always be ‘what is the best option for my farm?’ rather than worrying about comparisons with other parts of the country. Examples of successful move to dairying from other livestock enterprises are not hard to find.

Patrick Stratford, Virginia, Co Cavan

Patrick Stratford recently addressed a group of international farmers at the Virginia Agricultural Show Gathering event. Patrick spoke as a farmer who had entered dairying for the first time in 2009, and shared his thoughts on changes to lifestyle, coping with the pressures of farm development, and plans for the future.

Patrick was an excellent suckler farmer on a good grassland farm in Eighter, Virginia, before he started to think about dairying. “Before the Single Farm Payment, I had 180 suckler cows, over 40ha rented and a Farm Apprenticeship



Board student full time. After the SFP came in, I joined REPS, stopped renting land, reduced the cows to 120 and bought a quad bike instead of the student.

“Suckling had given us a good income, but this was largely in the form of subsidies. With three young lads coming on I wanted to build something viable for the future”

Conventional wisdom said that a suckler farmer milking cows would struggle, but thoughts of moving to a dairy enterprise developed over a number of years. “I had been casually thinking about dairying and, in 2007, decided to go for it.

“The decision was not easy, however. Deciding factors were: decoupling of subsidies; the uncertain future of the Single Farm Payment after 2013; abolition of milk quotas and the fact that the farm would suit dairying. I look forward to challenges and that was also a key factor.”

Patrick’s farm was ideal for conversion. It is a mainly dry farm of 84ha in two blocks divided by a public road. All land is available for grazing, so it is well suited to low cost spring milk. With a reasonable Single Farm Payment to cushion the issue of cash-flow, a low-cost development plan was drawn up, including construction of a 26-unit milking parlour, wintering pad and lagoon, tunnel, use of a full-time labour unit and contract rearing



Denis and Brian Meade. Brian's dairying will be slightly hampered for some weeks by a Gaelic football related injury!

firmly in place. We moved to exclusively beef and sucklers at that time.”

However, when Brian returned to farm full-time in 2009, another change was needed. “We looked at the figures for the beef enterprise and it told us what we already knew,” says Brian. “The margins just aren't there, no matter what way you cut them. There was a bit of interest in new dairy units in the locality, with a couple of lads having started. We had good grazing swards and yards in place, and suckler cows to sell, so we knew that converting would not need huge capital outlay.”

A 10-unit parlour and dairy were built on the site of the old unit during 2010 at a cost of approximately €50,000. In-calf suckler cows were offloaded to fund the purchase of 60 high EBI heifers, and milk production started in the spring of 2011, supplying Lakeland Dairies.

“Compared with a greenfield site, our start-up was very simple,” notes Brian. “Winter accommodation, paddocks and winter feed were all in place. It was just a matter of sorting out the milking facility and new entrant quota issues and off we went. My father had plenty of experience to

call on in terms of cow management so that was a big help.”

A reseeded programme was started to improve overall pasture quality on the grazing platform. Grass management has been a challenge in the early days, however; not because of low growth rates but because of a low stocking rate.

Brian explains: “There are 80ha on the farm in total, 50 of which now can be accessed for grazing — the farm is capable of carrying 160 cows so we have a good few surplus bales!”

When quotas are finally phased out, the plan is to increase herd size closer to the 160-cow mark. This will likely mean a new milking facility and further development of grazing infrastructure (roadways and water), but Brian and Dennis are very confident that this investment will be justified.

“Looking at the returns from even 50 milking cows in a simple spring calving system would give you confidence to develop further,” says Dennis.

“With the removal of quotas, there is now great potential on farms like this, but we have to always be careful to keep an eye on costs, big and small. And not pay too much attention to conventional wisdom!”

of young stock.

Patrick retained some sucklers in the early years but they have now been offloaded in favour of more dairy cows. By 2012, the herd had grown to 170 cows, of mostly NZ and crossbred genetics, with an average EBI of €165. “One thing we certainly got right was the type of cow,” says Patrick.

“Last year, we had milk protein of 3.60% for the year and a calving interval of 370 days which gives us plenty of options.”

And what decisions were not-so-good? “We definitely should have got rid of all the sucklers earlier, and reseeded more of the farm up front. Also, our plan was for a wintering pad which, thankfully, never got built. I'm converting beef sheds to cubicles now and this looks a better bet. But these are minor details in the long term.”

Brian Meade, Rathkenny, Co Meath

Conventional wisdom says that once a farm goes out of milk, it never goes back. Not so for the farm of Brian and his father Denis Meade, in Rathkenny near Slane, Co Meath. The decision to exit milk production on this farm was taken in 2003. “I was milking 70 cows in a winter milk system until then, with beef cattle in the mix too,” recalls Denis. “It was a different landscape to now in that quotas were



Suckling had given us a good income, but this was largely in the form of subsidies. With three young lads coming on I wanted to build something viable for the future

— **Patrick Stratford**

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Kevin Heavin, Birr, Co. Offaly.

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dairying

Lifting milk protein

— lessons from the Lakeland Joint Programme

Martina Moran,
Teagasc Lakeland Dairies
Joint Advisory Programme Team &
Dr. Joe Patton,
Dairy Specialist, Teagasc Agricultural
Grassland Research and Innovation
Programme, Grange

Recent survey work shows scope for up to 40% expansion among established milk suppliers in the Lakeland Dairies catchment area. Potential for new milk from start-ups in the region is also considerable. In every case, technical efficiency and business planning are needed to make expansion worthwhile.

This principle underpins the recently established Teagasc/Lakeland Dairies joint advisory programme. From the outset, the programme team identified three main areas for technical improvement among Lakeland suppliers — milk protein content, grass utilisation and herd fertility. To date, the focus has been on improving milk protein.

Why focus on milk protein?

Protein is the key element driving milk price for Lakeland suppliers. Under the A+B-C payment structure, the value of 1kg protein was 2.6 times greater than that of 1kg milk fat in 2012. The range in milk solids content within the supplier base is large (Table 1). In financial terms, moving from the average to the top 10% for milk solids is worth €88 per cow, or €6,100 in extra milk revenue for a typical 70-cow herd.

Improving milk protein — what does research tells us?

The revenue benefit of improving milk solids content is clear. Fortunately, projects in Teagasc Moorepark and Ballyhaise have also shown that methods for increasing milk protein are not expensive, giving a positive effect on overall profit. The three main factors identified by research are:

- **Breeding:** Genetic merit (EBI) for protein explains over 60% of the difference in milk protein between herds, and over 80% of the difference between cows within a herd.
- **Feeding:** Plane of nutrition accounts for up to 30% of the difference in milk protein between herds. The main factors are the amount and quality of grazed grass in the diet.
- **Management:** Making up the



Clifford Montgomery, Paul McEnaney and son Conor, Bernard McGinnity, David Montgomery and Ciaran Flanagan, discussing autumn grassland management and the benefits of reseeding.

Table 1: Lakeland herd performance 2012

	Bottom 10%	Lakeland average	Lakeland top 10%
Protein %	3.15	3.29	3.43
Fat %	3.75	3.98	4.2
Milk price (cent/litre)	31.2	32.9	34.7

remaining 10% of difference in milk protein between herds is a combination of calving pattern, dry cow and heifer management.

What is affecting milk protein at farm level?

Farmers who attended a protein workshop were offered a follow-up consult with a joint programme advisor to look at the specific factors

affecting milk protein for their herd. Each farmer visited then received a concise plan for improving milk solids over the next five years. Examining the issue in this way has helped to build a good understanding of the situation 'on the ground'.

.....
» Continues on page 14



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Bayer CropScience

dairying

» From page 12

Programme advisers found the following factors causing lower milk protein on-farm.

- **Bull selection:** In line with the research, breeding was seen to have a huge effect on milk protein levels on-farm. The highest protein herds had used generations of high EBI AI bulls; the lowest protein herds were dominated by high milk volume genetics with little focus on EBI or milk solids. Without doubt, a major problem is the use of low EBI stock bulls — it was clear from checking stock bull figures that most were extremely high in volume and negative for protein and fertility.

- **Calving pattern:** A spread-out calving pattern, with a high percentage of cows calving from late April through July, was common for low protein herds. The full potential for high protein milk from grazed spring grass, and high protein milk in late lactation, was being missed as a result. The problem reflects low fertility genetics. Higher protein herds had tighter control on calving pattern.

- **Replacement heifer management:** It may not directly affect herd milk protein content, but there was a tendency for low protein herds to calve heifers at 30 to 36 months, instead of the optimum 24 months seen on the higher protein herds. In many cases, this was due to a perception that heifers were too small for bulling at the 350kg target weight. The result is over-grown first lactation heifers with poorer lifetime performance.

- **Grass management:** Managing grass quality throughout the main season was found to be a major issue. The common difficulty with low protein herds is that not enough pad-



Andrew McNamee of the Teagasc Lakeland Dairies Joint Advisory Programme, Paul McEnaney and his son Conor, discuss the milk protein report that was generated when Paul availed of a milk protein improvement visit to his farm as part of the joint programme.

docks are removed as silage in good growth conditions.

The consequence is cows grazing stemmy, poor energy, covers during high growth periods. When growth rates are poor, meal/silage is not included in time to hold rotation length. In contrast, higher milk protein farms monitor the quality and quantity of grass covers ahead of cows.

- **Reseeding and soil fertility:** Soil fertility (P, K and lime) status was unknown on many farms; some high as well as low milk protein producers. A major grassland issue on the lowest milk protein farms is a lack of reseeding — in some situations, 70% to 100% of the farm required reseeding due to low ryegrass levels in swards.

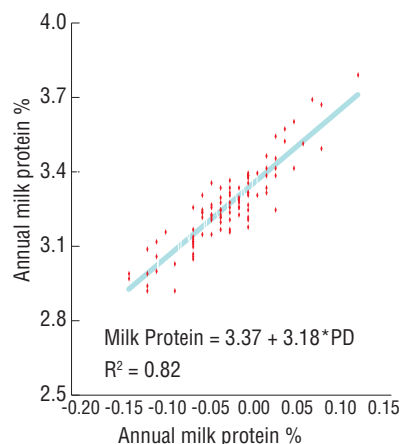
- **Silage quality (DMD)** is important where farms are producing some of their milk on silage-based diets. Poor silage, combined with a spread calving pattern, is a disaster. We have noted some herds spending three months below 3.00% protein in winter due to low DMD silage.

The highest protein herds produce a smaller proportion of their milk

from silage diets but carry a reserve of high quality (usually baled) material for this purpose. Silage quality is strongly influenced by reseeding and soil fertility — a significant problem is cutting out-farms and rented land that has not been reseeded.

Figure 1

Comparing cow genetic merit and actual milk protein



In short

Clear messages on milk protein have emerged from the work completed under the Teagasc/Lakeland Joint Programme. Shifting the breeding focus to EBI and milk solids/fertility must be a priority for low protein herds. This should be done through AI but should also be remembered when purchasing stock bulls.

In terms of feeding, key areas for attention are soil fertility, reseeding and managing mid-season grass. Progress may be slow, but focus on these areas makes lifting milk protein predictable, cost-effective and very worthwhile.

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**Geurden et al *Vet. Parasitol.* (2012) *Vet Parasitology* 189:227-232.

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How to make sense of your



Tom Ryan
Buildings and Machinery Specialist, Teagasc Rural Economy and Development Programme

There's great peace of mind from knowing your milking machine has been serviced and tested. Normally, testing is done once a year after servicing; however, if there is a problem with mastitis or cell count, test the milking machine before servicing followed by a second test after servicing. This will highlight any faults that may be causing problems and show that they have been fixed.

Your milking machine technician should write a test report showing the results recorded and listing any faults and recommendations.

He should discuss the results with you and leave you a copy of the report. This does not always happen because, usually, there are no further issues to sort out after servicing. However, you should always receive a copy of the test report. It is important to keep this in your files. It can be checked if anything goes wrong in the coming year and it can also be compared with previous years test reports to see if they correspond.

Milking machine testing should be done by an IMQCS (Irish Milk Quality Co-operative Society) registered milking machine technician.

IMQCS oversees the training and registration of milking machine technicians and others involved in servicing, installing, testing and/or solving



milk quality problems with milking machines. The full list of those on the register is on www.milkquality.ie

Vacuum tests

The milking technician uses an accurate test gauge to check the working vacuum of the milking machine. He will also confirm that the vacuum gauge on the machine is reading correctly. The vacuum level should typically be set between 47 and 48.5 kPa. Always check the vacuum gauge

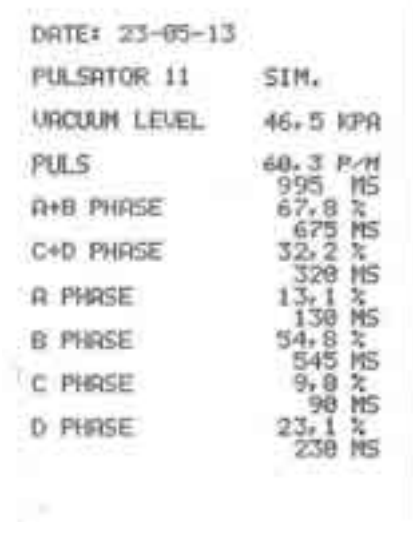
at milking time to ensure that the correct vacuum level is maintained. The gauge should read zero when the machine is off.

A red line on the gauge can be set at the desired vacuum level and as long as the needle on the gauge lines up with the red line during milking, you can see at a glance that all is well. In the past year, I have come across a machines with vacuum levels ranging from 51kPa to 54kPa. Serious mastitis and cell count problems will result from these high levels.

FIGURE 1



FIGURE 2



milking machine test report



Key messages

Key details to check in the test report:

- Working vacuum for the machine
- Vacuum gauge accuracy
- Vacuum reserve adequacy and similarity to previous years
- Regulator leakage
- Pump capacity
- Pulsation readings
- Liner change interval

Other items to be checked or serviced:

- Check that claw air bleeds are clean; this should be done daily.
- Check and service seal kits for claws.
- Chipped or cracked claw bowels should be replaced.
- Rubberware should be inspected for cracks and wear — blackening from old worn rubber inside milk tube, perished rubber, flattening, holes, restrictions and pinches. Short pulse tubes between the shells and the claw are prone to damage causing leaks that reduce vacuum reserve and allow dirt to be sucked in. This dirt may

adversely affect the pulsation.

- Drain valves on airlines should be free to drain when the machine is off. The pulsation airline should always have a drain valve at its lowest point. It should automatically seal during milking and should open to allow any liquid in the line to drain out when the machine is turned off. The airline should slope towards the drain valve.
- Have an even and continuous slope in the milkline. Milk lines must have an even slope of at least one in a 100 (1%) towards the receiver, preferably one in 67 (1½%).
- Avoid excessive loops of milk tubes into the pit.
- Check vacuum pump oil regularly and oil drop rate.
- Have automatic cluster removers serviced and calibrated by your milking machine technician so that cows are fully milked out but not over-milked and vacuum shut off and cluster removal are timed correctly.

Figure 1 shows a section of a test report with the main vacuum and airflow results.

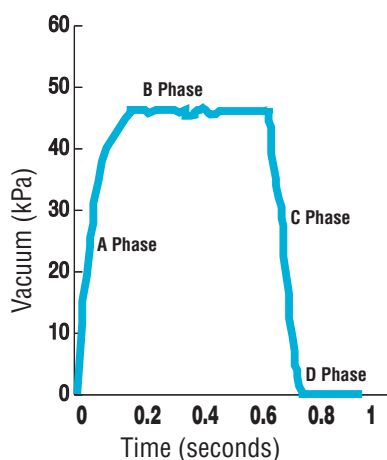
The working vacuum is 47kPa, which is fine. The plant gauge (vacuum gauge on the machine) is reading the same as the test gauge so the plant gauge reading is correct (i.e. zero error).

The pump capacity is 1,480 litres/min, which is in line with the estimated pump capacity required (1,426 lit/min) for a modern 10-unit pipeline machine.



Your milking machine technician should write a test report showing the results recorded and listing any faults and recommendations

FIGURE 3



» Continues on next page

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FIGURE 4

Pulsation Test Results		
Rate (cycles/min)	Mean	Min
10" pressure vacuum A/B	Mean	Min
10" vacuum C/D	Mean	Min
10" vacuum C/D	Mean	Min
10" vacuum C/D	Mean	Min
10" vacuum C/D	Mean	Min
10" vacuum C/D	Mean	Min
10" vacuum C/D	Mean	Min
10" vacuum C/D	Mean	Min
Pulsation (percentage of total) (percent)		
A/B (percent) C/D (percent)		
Cleaning (1/10)		

Your technician should attach the printout of the pulsation test results to the test report or summarise them in this section of the test report as shown above.

FIGURE 6

Liners

Make and Identification No. _____

Calculate date of next flow change _____

RIGHT: An airflow meter is used to check vacuum reserve. This is an essential test to ensure the milking machine is working properly.



» From page 17

The effective reserve is 1,090 litres/min, which is well above the effective and cleaning reserve recommended for a modern 10-unit machine. It should be more or less the same from year to year. Effective reserve is the ability of the vacuum pump to maintain vacuum when a cluster falls off or if excessive air is admitted while putting on a cluster.

The difference between the manual and effective reserve (9-10) shows up any leakage through the regulator. Here, it is 20 lit/min; well within limits. The regulator opens and closes to maintain vacuum at the set working vacuum level. Regulator leakage is the leakage that occurs when the regulator is closed. If a cluster falls off, the regulator closes in order to maintain vacuum, but if it is faulty or very dirty, it will leak in too much air and reduce vacuum reserve.

Pulsation tests and results

Figure 2 shows the results of a pulsation test in percentage and milliseconds for one unit. It also shows the peak vacuum level when the liner is open. This should be the same or almost the same as the working vacuum for the machine. If different, it could indicate obstructions or leaks in the pulsation tubes on the way to the cluster.

The rate is the number of times the liner opens and closes per minute. Here, it is normal at 60.3 cycles a minute or one cycle per second.

The pulsation cycle consists of four phases, A, B, C and D. A is when the liner is opening and, in this case, it takes 13.1% of the cycle. At B, the liner is fully open and milk is flowing, 54.8% of the time in this case. C takes up 9% of the cycle time as the liner closes and at D the liner is fully closed around and below the teat. D here takes 23.1% of the cycle time which is a very good reading. The ratio is a value often referred to and is a combination of the A and B phases together.

Figure 3 shows the same results in the form of a graph. The graph shows the vacuum level of each phase throughout the cycle. Time is measured along the bottom and vacuum up the side. Typical values for pulsation are: AB 65% to 68%, CD 35% to 32%, A 13% to 17%, B 48% to 55%, C 8% to 13%. Your technician should print out the results of the pulsation tests and either attach them to the test report or summarise them in the space provided on the test report sheet — see Figure 4.

What I have shown above are the

“ There will be a lot of pulsation readings available when a complete machine is tested. Check every reading for every unit to ensure that all are within limits

results for just one unit. There will be a lot of pulsation readings available when a complete machine is tested. It is important to check every reading for every unit to ensure that all are within limits.

Changing liners

Figure 5 shows what should be recorded about the liners. Liners should be changed every 2,000 cow milkings. So, if you are milking 70 cows with 10 units twice a day, the liners should be changed after roughly 150 days or twice a year (i.e. 2,000 divided by seven milkings per unit for two milkings = 2,000 divided by 14 = 143 days).

Use liners suitable for the shells, e.g. the mouthpiece should not be loose on the shell. Old liners can cause longer milking times and are inclined to close off the teat at the based of the udder which will depress milk yield. Under-milking due to worn liners can contribute to increases in cell count. Liner tension lessens as they get older.

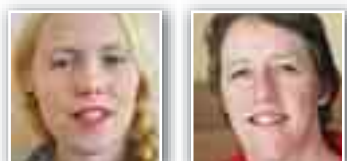
When you are changing, cut open a few liners to see what condition they are in. If they are long overdue a change, you may find roughness and distortion where the teat lies. The shape will be oval and the imprint of the teat can be seen. You may see hair cracks and greasiness from milk fat residues. A new liner placed beside an old one will be shorter. If you see milkstone on the inside of the liner, it indicates a big problem with your cleaning methods and the roughness can't be doing the condition of the teats any good either.



The fox (sionnach nó madra rua) is so successful because it is an adept opportunist, flexible in what it eats, including rats.
Photographer – Mike Brown

Wildlife on farms

how farmers see it



Ruth Carolan and Catherine Keena, Countryside Management Specialists, Teagasc Crops, Environment and Land Use Programme

The type of wildlife farmers see can depend on their enterprise according to a fascinating recent survey

The fox was the most frequent response when farmers were asked 'What is the most common wildlife on your farm?', in a survey which included 306 farmers at Teagasc open days during the summer of 2013: sheep in Athenry, crops in Oak Park and dairy in Moorepark. Two questions were asked, the second was: 'Where would you find wildlife on your farm?'

Dairy farmers were more aware of rabbits, badgers and foxes. Tillage farmers were naturally more aware of pigeons, crows, pheasants and grey squirrels. Grassland farmers, both

Top 10 most common wildlife species on farms – according to farmers

1	Fox
2	Rabbit
3	Pheasant
4	Hare
5	Crow
6	Badger
7	Swallow
8	Bats
9	Pigeons
10	Finches

sheep and dairy, were aware of stoats and pine marten on their farms.

More sheep farmers were aware of the cuckoo on their farm with 12% mentioning it. Dairy farmers, particularly, mentioned the sparrowhawk (17%) and tillage farmers the buzzard (21%).

Accurate identification may not always be possible. Numerous queries arose on differing identification features of mink, otter, pine marten and stoat. Wildlife seldom mentioned included fish, invertebrates (earth-

Where wildlife is found on farms – according to farmers

	Number of farmers
Hedgerows/ditches	200
Grassland	140
Watercourse	128
Farmyard	107
Forestry	91
Trees	72
Scrub	49
Bog	33
Crops	28
Upland	10
Stonewalls	4
Coastal	3

worms, bees, butterflies) flowering plants and fungi.

While watercourses were recognised as a habitat, few farmers mentioned the wildlife associated with our rivers and streams. They are more conscious of wildlife species that are visible (pheasant), recognisable (owls) large (fox) or pest species (pigeons and crows).

» Continues on next page

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Some species generate a positive reaction — such as the pheasant, even though not native to Ireland. Introduced originally for game, the pheasant is now a widespread, resident breeding species, with large numbers introduced into the countryside each year by gun clubs.

We do not know what habitats are present on the farms of participants, so it is not possible to accurately assess how aware farmers are of their value to wildlife. When asked 'Where you would find wildlife on your farm?' the most commonly mentioned habitat was hedgerows or ditches (200 farmers). However, as most of the 306 farms are likely to have hedgerows, it appears not all farmers are immediately conscious of their value for wildlife. Fewer sheep farmers mentioned hedgerows.

Understandably, grassland was mentioned as a habitat more often on grassland farms and crops more often on tillage farms. Watercourses were mentioned by 128, or 42%, of farmers. Tillage farmers were less likely to mention watercourses (27%). Obviously, some farms do not have watercourses on their farm. It may be that farmers are not conscious of the wildlife value of all rivers and streams.

Farmyards are recognised as a habitat for wildlife — slightly more so by tillage farmers. Again, perhaps all 306 farmers could have mentioned farmyards! Sheep farmers mentioned trees less often as a place for wildlife on their farms and dairy farmers mentioned scrub less frequently.

Stone walls were only mentioned by four farmers. While only present in certain areas, it is likely their value for wildlife is underestimated.



Perhaps Ireland's most brilliantly coloured bird, the elusive kingfisher (cruidín) is a treasure to find.

Photographer: Eddie Dunne

Otter - nó madra uisce

The Irish population is estimated at 12,000 otters. Ireland and Scotland are regarded as the last otter strongholds in Europe. Otters live along clean rivers and lakes where the adjacent habitat has plenty of cover, including scrub and roots of mature bank-side trees. They eat fish and other aquatic prey such as crayfish, crabs and frogs.

In coastal areas, otters still need freshwater. The point where freshwater enters a sheltered coastline is a good place to look for otter signs. They mark their territory with droppings known as spraints on prominent places, such as rocks and ledges under bridges. Look for footprints 6cm to 7cm in diameter with five forward pointing toes and webbing between the toes, in mud or sand under bridges or other sheltered areas near water. Adult males can reach one metre in length.

Otters are protected under law.



Agri-environment schemes

Farmers who grow crops for wildlife under agri-environment schemes mentioned more species of wildlife. It is likely that more wildlife is present in such crops; that it is more visible; and that these farmers are more aware of wildlife because of growing the crop.

Andrew Bergin, a tillage farmer from Gratansbrook, Athy, Co Kildare, mentioned shrews, bats, owls, skylark, buzzard and hen harrier. He has grown the LINNET crop for wildlife over the past number of years. Many farmers acknowledged the role of REPS in increasing their awareness.

Birds associated with the coast use adjoining farmland. Bob Jeffery, Courtmacsherry, Co Cork, who attended the tillage open day mentioned curlew, oyster catcher, egrets, peregrine falcons and ringed plover use farmland along the coast around Courtmacsherry. The ringed plover sometimes feigns injury dragging her wing along to draw intruders away from her nest.

Timothy Feen, a dairy farmer from Ardfield, Clonakilty, Co Cork, is proud that the chough, a rare bird known as the red-legged crow is nesting in his slatted shed. Choughs normally nest in the cliffs in Dunnycove, but recently have nested in farmers' slatted sheds. For the past two years, they have nested and bred on a steel cross member in the roof of Timothy's slatted shed, taking over a nest previously used by pigeons and magpies. When checking cows at night, he noticed the male chough also present.

Hunting, shooting and fishing

Farmers involved in hunting, fishing and other country pursuits tend to be very aware of wildlife. Gary McCarthy, an intensive dairy farmer from Bruff, Co Limerick, was one of the few who mentioned salmon, trout, mink and otters.

It may be because his farm is surrounded by the river Camogue. It may also be because he has an interest in hunting.

While interested in controlling the invasive mink, Gary spoke of the otter as 'a graceful animal slipping into the water without a splash' when spotted in the early morning or late night. A member of Tydavnet Gun Club, dairy farmer Paddy Sherlock from Ballinode in Co Monaghan is involved in a grouse project in Slieve Beagh. He noted that pine martens have increased in number. Paddy spoke of the flash of rich blue as a kingfisher dives from a branch hanging over the river and knows the buzzard by its cry 'like a kitten' while flying very high in the sky.

Avian splendour

Raptors and birds of prey make an impact. Farmers spoke of seeing the kestrel hovering motionless. 'To see a buzzard is awe-inspiring', according to Kieran Mannion, a beef farmer from Kiltoom, Co Roscommon, describing the slow methodical movements of this very big bird, when swooping and circling. Another farmer remembered being told as a child to mind the chickens when a hawk was seen.



Invertebrates such as this Poplar Hawk moth are a vital part of the food chain. Photographer: Philip Strickland

Teagasc countryside management courses

In association with the Irish Red Grouse Association and the National Association of Regional Game Councils, Teagasc is planning a series of events on the management of hill/upland/mountain grazing throughout the country. Other topics include watercourses, traditional buildings, traditional orchards and archaeology. All farmers are welcome. Farmers in REPS 4 will receive €85 for attending an optional second course during REPS 4. Contact your local Teagasc office for details of local courses.

Many farmers described how they checked out the identity of a species they had observed with local experts. Padraig Kirwan, a dairy and tillage farmer from Sugarstown, Co Kilkenny who attended the Moorepark Open Day, told of his delight a few years ago when he spotted a kingfisher perched on a branch over a stream on his farm, which is a tributary of the Nore and of his surprise at its tiny size.

Ryan Doherty, from Milford, Co Donegal, said he is always aware of whether swallows are early or late. Farmers who are fortunate to have a barn owl are extremely proud and this proved to be a major talking point. One-fifth of farmers mentioned an owl, which is high, as owls are not present everywhere.

The call of the cuckoo is evocative.

Tommy Gallagher, a sheep farmer from Dookinella, Achill, Co Mayo, associates the call of the cuckoo with lambing time — just as the old rhyme goes — the cuckoo comes in April... Francis Fallon from Mount Talbot in Roscommon regularly sees the cuckoo as well as hearing it, both sitting up in oak trees and flying.

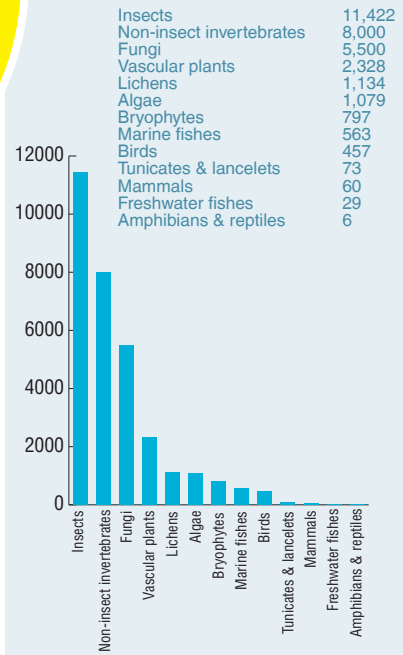
Francis often notices a small bird accompanying it in flight. This is a meadow pipit, the most likely host bird in Ireland in whose nest the cuckoo lays her eggs. She may be defending her nest or feeding the fledgling cuckoo.

Overall, our impressions from the survey are that farmers are very aware of and positive about wildlife — and particularly keen to know more about what's on their own farm.

Figure 1

Ireland's biodiversity in 2010 proportion of species known from Ireland divided into major groups

Courtesy of the National Biodiversity Data Centre



Wildlife/biodiversity discussion

Words can have many meanings. Some understand wildlife as the animals in Dublin Zoo or Fota Wildlife Park. Even when we talk about our native Irish wildlife, some may not automatically think of insects or plants as wildlife.

'Lower' life forms, such as invertebrates, are the building blocks at the bottom of the food chain and are essential for ecosystems to function.

Biodiversity which means the variety of life includes flora, fauna and the habitats in which they live. The wide range of species included in Ireland's biodiversity can be seen in *Figure 1*.

Biodiversity is one of the environmental issues to be addressed under the greening of the CAP. This major change involves the adoption of three basic greening criteria — crop diversification, maintenance of permanent grassland and establishment of ecological focus area.

With 30% of farmers' payments under the Single Payment Scheme attributed to greening measures, this signals a huge shift towards the environment and the importance of environmental issues.

It is vital, therefore, that farmers become more aware of what biodiversity is on their farm to highlight the important role of the farmer in contributing to biodiversity in their local area.

Finding out more about wildlife in your local area

These organisations have local branches which organise local events and outings throughout the countryside to observe wildlife:

BirdWatch Ireland	01 2819878	www.birdwatchireland.ie
Irish Wildlife Trust	01 8602839	www.iwt.ie
Bat Conservation Ireland	086 4049468	www.batconservationireland.org
Botanical Society of Britain & Ireland	087 2578763	http://www.bsbi.org.uk/ireland.html
Naturalists Field Clubs including:		
Offaly		www.offaly.ie/heritage
Wexford		www.wexfordnaturalists.com/
Dublin		http://www.dnfc.net/

Record what you see

The National Biodiversity Data Centre is a national organisation for the collection, collation, management, analysis and dissemination of data on Ireland's biological diversity. You can submit a record of wildlife you see or check our records for your area on the website: <http://records.biodiversityireland.ie/>

SuperValu sustainable farm programme



Aine Mulvihill,
Kepak Group

In autumn last year, SuperValu in association with Kepak Group and Teagasc, announced the SuperValu Sustainable Farming Programme. This innovative new initiative is the first retailer-farmer programme to be rolled out in Ireland.

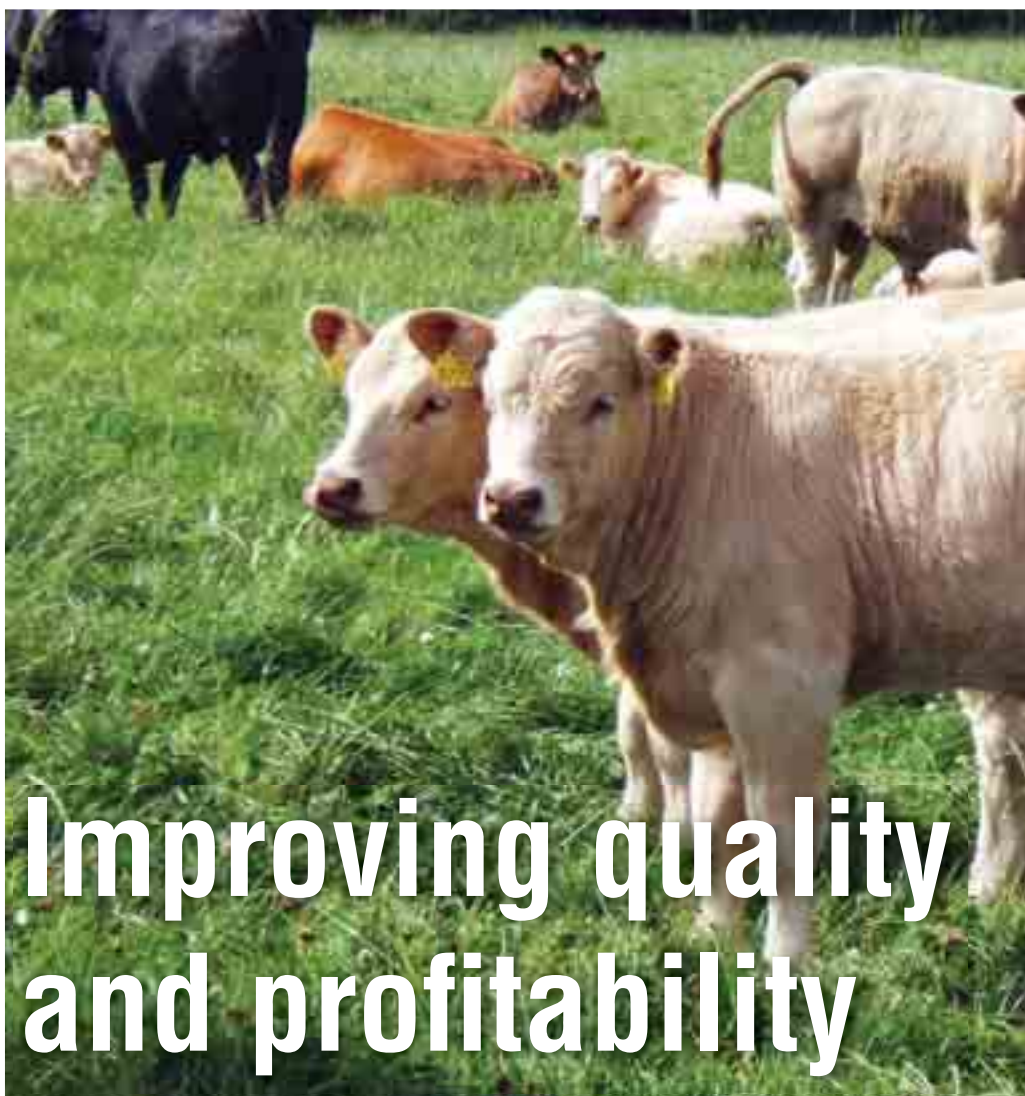
Focusing initially on 10 farms, the programme aims to increase efficiencies, improve profitability and also enhance product quality. Of the 10 farms which have been chosen for the initial phase, eight will focus primarily on beef production while two will focus on sheep production. A network of Teagasc advisors have been assigned to the various farms, which are located nationwide.

The programme will run for an initial period of two years and will focus on key areas such as grassland management, market specifications, farm efficiency, carbon footprint analysis and herd health. Farms are currently completing 2012 Profit Monitors, which will help them formulate a two-year plan for their enterprise.

Along with Teagasc advisers, a specific nutritionist and vet will be on hand to give advice to farmers on animal nutrition and animal health. Advice will also be disseminated through a number of open days and farm walks, which will take place nationwide over the course of the programme.

Karen Dukelow, cattle specialist, will be managing the advisory side of this project on behalf of Teagasc and will be working closely with management teams within SuperValu, the Kepak Group and Teagasc.

“The programme will focus on key areas such as grassland management, market specifications, farm efficiency, carbon footprint analysis and herd health.



Improving quality and profitability



Karen Dukelow & Aidan Murray
Beef specialists, Teagasc Animal
Grassland & Innovation Programme

The SuperValu Sustainable Farm Programme started in July of this year and will run for two years to July 2015. There are 10 farms selected, with each farm working with a local adviser. The farms are across the country: Cork, (advisers — Ruth Fennell and Pat Barry) Carlow (adviser — Hugh Mahon) Offaly (adviser — Pat O’Gorman), Westmeath (adviser — David Webster), Meath (adviser — Ned Heffernan), Longford (adviser — James Keane), Galway (adviser — Gabriel Trayers) and Roscommon (advisers — Brian Daly and James Kelly).

Each farm will focus on two key areas for improvement as part of its farm plan. The same could be done for

any farm in the country, so how will the farm plan be completed under the SuperValu Sustainable Farm Programme?

Drawing up a farm plan — where to start?

The basis of any farm plan is establishing where the farm is in terms of profitability.

A Profit Monitor is the first step in the SuperValu Sustainable Farm Programme. It will establish key performance parameters:

- What farming system/systems are in place?
- What is the liveweight produced per livestock unit and per hectare?
- What are the variable costs as a percentage of output produced?
- What is the gross margin/hectare?

Farm plan — next steps

With the calving report from Herd-Plus, weaknesses and strengths can be identified from the Profit Monitor. Advisers and farmers will sit down together and decide what changes to focus on. For many farmers, finding ways to improve profitability will be the main focus. For others, it may be



about ways of reducing the labour requirement on the farm.

Farm plan — key areas

There are a number of key areas that will be focused on in the programme:

- Grassland management
- Breeding/animal performance
- Animal health
- Carbon footprint awareness
- Market specification

Grassland management

Good grassland management involves both growing and utilising grass. To grow grass efficiently any soil deficiencies for lime, P and K must be corrected.

Soil tests will be used on farms in the programme to assess fertility and a farm nutrient management plan will be drawn up.

Throughout the programme, best grassland management advice will be used as appropriate to the spring, summer and autumn.

Simple measures will be used where suitable to increase the number of days at grass and to improve grass quality; increasing the number of paddocks on the farm, for example

Breeding/animal performance

Throughout the programme, breeding and animal performance will be monitored and improvements made, where appropriate. HerdPlus reports and weighings will be used for this purpose. Key targets:

- 365-day calving interval
- 12-week calving spread
- 0.95 calf/cow/year
- Less than 2.5% mortality at birth
- Less than 5% mortality at 28 days
- 60% of cows calved in first month
- 80% of cows calved in two months

Weanling weights will also indicate whether cows have adequate milk. Weighings at the start of the finishing period will allow finishing performance to be assessed.

Animal health

A farm plan that does not have a strategic plan for animal health can fail if there are underlying disease issues. As part of the programme, a Kepak vet will work closely with participants and their own vets to draw up a herd health plan for each farm. This is an area which is often neglected at farm level. A proactive approach is required when it comes to animal

Summary

Teagasc are delighted to be working with SuperValu and Kepak Group on this programme. The SuperValu Sustainable Farm Programme is an exciting new development. It is a farm-to-fork approach with suppliers, processor and retailer involved.

For beef farming to be sustainable in the future, this type of approach is required, so that the supplier and retailer are working together to minimise risk and suppliers have the support they need to be efficient and profitable producers.



Knowing what the market wants and delivering on that requirement should deliver higher margins.

health rather than reacting to disease outbreaks.

Carbon footprint awareness

The Bord Bia Carbon Navigator will be completed for all participants in the programme. This online facility (which can be completed for any farm once they are in the BQAS) outlines areas that can be improved to reduce the carbon footprint on farms.

Many measures that improve the overall efficiency on the farm will improve the carbon footprint, e.g. increasing the number of days at grass, improving the number of calves/cow per year, etc.

Market specification

Throughout the programme, participants will be made aware of market specification requirements. There is no point in producing a product that the market does not require.

Knowing what the market wants and delivering on that requirement should deliver higher margins.

Programme participants will be advised on how to best produce cattle/sheep to meet the SuperValu market specification.

sheep

Rams must pass their NCT before buying or breeding



Edward Egan,
Teagasc Drystock
Adviser,
Co Meath

There are no guarantees but these simple steps will help ensure rams are ready for the breeding season ahead

Examine each ram 10 weeks before breeding starts to allow time to:

1. Improve body condition.
2. Correct health problems.
3. Buy the best replacements.
4. Acclimatise replacements.

Body condition

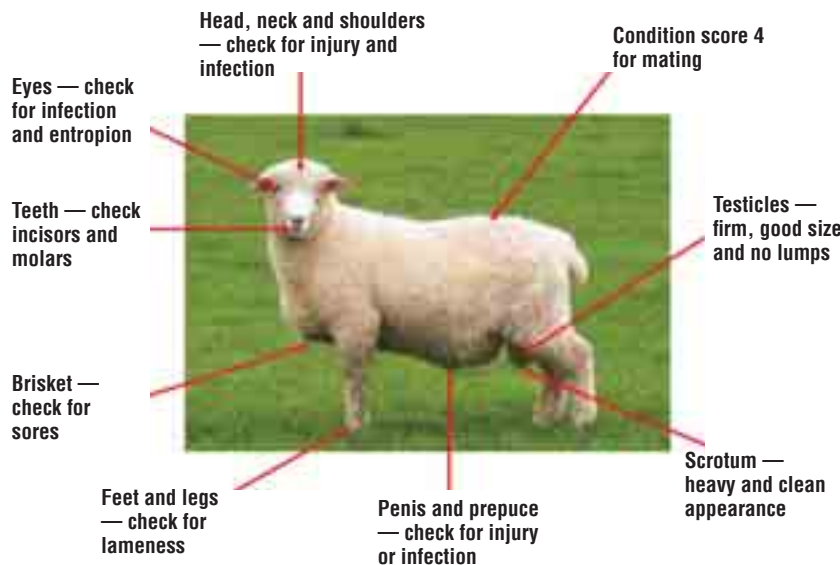
In any group of rams, you will have a range of body condition scores. Pay particular attention to working out why individual rams are thin when compared with their flock mates. Is it teeth, age, feet or fluke? At the start of the breeding season, the target body condition score for the ram is 4. Thin rams need eight weeks on 8cm of good grass or meal to put on one unit of body condition. Avoid over-fat rams as they tend to be lazy.

Teeth and mouth

Rub your thumb over the incisors. The tops of the incisors should close firmly on the dental pad. Avoid over-shot incisors. They will drift forward and eventually fall out, leading to early culling. Good molars are essential. A ram will lose condition where the molars are not correct.



Simple checks to prepare the ram for mating



From the outside, feel the molars above the jaw. They should be free from lumps and bumps. Molar problems tend to start with a molar tooth falling out and leaving a space. The opposite tooth grows long and sharp due to a lack of wear. This makes cudding painful. Symptoms of molar problems include green drool at the side of the mouth or fodder wedged between the cheek and molars. Also, check around the ram's mouth for signs of orf.

Eyes

Eyes must be bright and clear of any damage. Avoid rams that suffer from turned-in eye lids. This inherited defect is called entropion. Symptoms include turned-in eye lid, watery eyes, blinking and cornea scarring. Avoid purchasing rams from flocks where pink-eye is suspected. Pink-eye is easily acquired and hard to eliminate from a flock. If you have pink-eye in your own rams, treat all rams in the group with a long acting antibiotic. Pink-eye symptoms include tears, blinking and eye damage.

Rams should be checked 10 weeks before breeding begins to allow time to improve body condition and to correct health problems.



“ In any group of rams, you will have a range of body condition scores. Pay particular attention to working out why individual rams are thin when compared with their flock mates. Is it teeth, age, feet or fluke? At the start of the breeding season, the target body condition score for the ram is 4.

Brisket sores

A sore brisket can be triggered by lying, due to lameness. Obviously if lameness is the cause then it must be treated. Treat brisket sores early. Early stages of brisket sores often start with excessive lying, followed by reddening of the brisket. Treatment may include spraying the brisket with an antibiotic aerosol and giving a long acting antibiotic injection. Affected rams must have somewhere clean and dry to lie. Sores that appear during the breeding season may be due to a badly fitted harness.

Testicles and penis

Check the penis for shearing, briar or thorn injuries and infection. Check the penis area for staining, blood or infections. There should be two evenly-sized testicles free from bumps. They should have the same tone as the biceps in your arm. Testicles should easily move up and down in the scrotum. At the base of the testicle is the epididymis which should be free from lumps. The skin of the scrotum should be clean and healthy.

Legs and feet

Observe that each ram walks correctly. Check each leg and foot for lameness. Check between and around the claws for infection, swelling and excessive heat. Allow yourself three weeks of intensive care to cure lameness in your rams. If after this period of intensive treatment and care you cannot cure the problem then cull the affected ram. This period of intensive treatment may involve a long-acting antibiotic injection, foot-trimming and foot-bathing in week one, followed by two or three more footbathings five days apart. Check older rams for arthritis.

Isolate replacement rams

Isolate purchased rams for three weeks. They can bring diseases into your flock. Use this time to give preventative treatments. This also gives you the chance to monitor newly purchased rams closely for CLA, scab, lice, orf, pink-eye, footrot, CODD and any other defects.

- As rams arrive, dip them for scab and lice. Rams should not be dipped

within six to eight weeks of the breeding season. Another option is to use a pour-on for lice and inject for scab.

- As rams arrive, footbath them. Follow this with two or three more footbathings at five-day intervals. This will minimise the chances of importing lameness into your flock.
- Minimise the chances of importing stomach worms resistant to anthelmintic by dosing with a group three (macrocyclic lactone) and a group four (zolvix) wormer sequentially. Another option is to treat with a group three and group five (starect) wormer sequentially. Do not let rams out to graze for two days. Then turn them out onto grass recently grazed by lambs.
- If there is a risk of liver fluke or rumen fluke, make sure you give the correct dose.
- Ensure newly purchased rams have been correctly vaccinated for clostridial diseases and pneumonia. If you're not sure, start the vaccination programme again.

Acclimatise replacement rams

Checking your own flock of rams well before mating starts allows you to workout how many replacement you will need. Buy replacement rams six to eight weeks before the breeding season kicks-off. Ask the breeder what the ram was fed in the weeks before he was sold. Over a three-week period, gradually reduce meal levels. Rams should be fed some meal if they are still young and growing or where they are on low quality grass or where the weather is poor.



Siobhan Kavanagh
Teagasc Nutritionist,
Agricultural Grassland
Research and
Innovation
Programme

Before buying feed to meet a gap, you should consider the following questions

1 Do you need forage or a concentrates?
If you have less than half of the silage required on the farm, you will need to buy some forage. If you have at least half of the forage needed, then forage and/or concentrate can be used to make up the shortfall, depending on what's best value and your feed space allowance.

2 What's the difference between cost and value? These two terms are commonly misunderstood. The total cost of any feed is the quoted purchase price, plus any costs incurred from the time of purchase to feedout. However, the value of a feed is what it is worth at a particular point in time, compared with other feed sources that could be used to replace it, again allowing for all the costs incurred until feedout.

In 2012, Teagasc recommended that grass silage (65 DMD) was worth up to €30/bale at 65 DMD but, this year, we suggest a value of €22/bale for the same silage. Why? The alternative feed source in this case is barley and it is up to 30% cheaper this year, therefore the value of the silage also reduces.

3 How should you value feeds? In general, the value of feed is determined by referring to the cost of energy and protein feeds on the market. Teagasc uses barley and soya as the reference feeds, others use soya hulls and distiller's grains. The end result is very similar.

Using barley and soya, the cost per unit of energy and protein is calculated and, from that, the value of feeds is generated. It's important that feeds are valued based on local prices.

Teagasc recommends contacting your local adviser for advice or, alternatively, use the interactive calculator 'Relative Value of Feeds' that is on the Teagasc client site at www.client.teagasc.ie

4 How important is quality?
a) Firstly, let's define what quality means. With grass silage, good preservation is always important but the importance of dry matter digestibility will depend on the category of stock it is being fed to, e.g.



dry suckler cows vs autumn calving dairy cows.

There was a lot of hay made this summer. Many would say it is of very good quality. But what does that mean? Is hay that is well preserved with a nice smell and produced off a very old pasture (55% DMD) as good as hay that is well preserved with a nice smell produced off a relatively new sward and 65% DMD? Certainly, the latter is the better



forage. This is where forage analysis and/or visual assessment of the ratio of leaf to stem is important.

b) Get forages/wet feeds analysed for nutritional value. For conserved forages, key parameters include preservation, dry matter, DMD and crude protein.

c) If it's not possible to get laboratory analysis, get the history of the crop — sward quality (old pasture or reseed?), when was it last grazed, cutting conditions, etc.

5 What is the dry matter?
The dry matter of feedstuffs can vary



Table 1: Value of feeds relative to barley at €200/t and soya at €430/t on an energy and protein basis

	Value €/t
Soya hulls	201
Citrus pulp	185
Beet pulp	195
Maize gluten feed	224
Distillers grains	250
Rapeseed meal	259
Grass silage 72 DMD pit	28
Grass silage 67 DMD pit	25
Grass silage 72 DMD bale	25
Grass silage 67 DMD bale	22
Hay 55 DMD	24
Hay 65 DMD	29
Barley straw	12
Fodder beet harvested	35
Sugar beet harvested	43
Maize silage 25% starch harvested	43

ing straw and meals to fill the gap? The meals plus straw is a less risky option.

8 What is the cost of money? Cashflow is tight on many farms this year given the difficult weather conditions; expenditure on feed must take the cost of money into account. If you buy a feed today and it's not going to be fed for six months, there is a cost on that money.

9 Do I buy on a per acre or per tonne basis? If you are buying a standing crop of any forage, it is important to buy it on the basis of yield, not acreage. You wouldn't buy ration from the local merchant without weighing it before leaving the yard. It should be no different when buying forages. Buying on a per acre basis is fraught with error. It is difficult to estimate field yield without measurement. Likewise for silage bales, there is significant variation in weight and dry matter content.

10 Am I taking all costs into account? Costs incurred after buying any feed include storage costs; transport costs; storage losses; capital costs (i.e. borrowed money tied up in feed that may not be fed for several months); storage treatment costs (e.g. acid treatment); processing costs (e.g. rolling); balancing for protein and minerals and storage losses and labour/machinery costs for feedout.

enormously and this can have a major effect on the value of feeds; for example, if you are buying a wet feed at a quoted price and dry matter of €100/tonne and 50% DM, respectively. This feed is costing €200/tonne of dry matter.

However, if that feed is only 45% dry matter, the cost is €222/tonne DM or 11% more than initially thought. You are still only paying €100 per tonne but a bigger proportion of every tonne is water (550kg water per tonne vs 500kg water per tonne).

Therefore, always compare feeds on a dry matter basis. If you are getting a number of deliveries over the winter, it is good practice to measure dry matter regularly.

6 How much wastage will there be in storage? Don't ignore the wastage associated with stored feed. This can vary from 2% losses for stored grains to 25% losses for a standing crop of grass silage from standing until feedout.

7 What risks are associated with buying a particular feed? Is the feed that you are buying of consistent quality? Barley straw in 2013, as in most years, is likely to be of consistent quality.

However, baled silage can be of very variable quality and is commonly referred to as 'lucky bag' silage.

Likewise, if growing a crop of forage rape, are you guaranteed a good yield and quality, compared with buy-

fodder

Reseeding grassland

Plough or minimum cultivation?

Recently, Teagasc B&T advisers Paul Fox and Mark Coyne set about answering the question of 'which reseeding method is best' by organising a BTAP approved reseeding event in Kilbeggan, Co Westmeath

A site for the reseed comparison was secured on 1 June, eight weeks before the event date of Thursday, 1 August. The pre-existing sward could be best described as traditional hay meadow, with a range of old grasses, plantain and buttercup. The field had not been reseeded in decades. A soil sample indicated the field was at index 2 for P and K, with a pH of 7.5.

The site was sprayed with two litres per acre of Glyphosate. Ten days later, half the site was ploughed with the remainder left untilled. All plots were sown on 20 June using seven different treatments, as outlined in *Table 1*. The plots were sown with 14kg per acre of Sweet tooth grass seed mix, from Germinal Seeds. Three bags



of 10:10:20 was applied to all plots at sowing. Despite the high site pH, two bags of Granlime were spread across the plots. This is of particular importance in the minimum cultivation treatments as the remains of an old sward can release organic acids as it breaks down, potentially damaging the newly emerging seedlings.

Benefits of reseeding

The benefits of reseeding old pastures are well researched and documented. Reseeded swards can grow 40% more grass compared with old swards and are 25% more responsive to applied nitrogen. As part of the BTAP programme, we are trying to encourage farmers to increase kg of beef output per hectare as a means of increasing farm profitability.

Newly reseeded pastures give more grass in spring and autumn when demand is high, particularly on suckler farms. Nationally, there is huge potential to increase output of beef, lamb and milk from cheap quality grass, which can be grown more efficiently from reseeded pastures.

Reseeding costs

Reseeding grassland is a substantial cost on any farm but, if properly managed, can pay for itself in two to three years. The material costs for the plots worked out at €193 per acre, as outlined in *Table 2*. Machinery costs were more variable, (see *Table 3*).

The cheapest machinery option was using the Aitchison Grass Drill method, at €70 per acre, which included spraying, sowing, fertilizer/lime spreading and rolling post sowing. Ploughing obviously adds to the cost and extra tilling may be required to level the seedbed.

A full plough based reseed, power harrowed and sown with the Einbock grass harrow cost €127 on machinery costs alone. Add in materials and you are over €320 per acre.

LEFT: Teagasc B&T advisers Paul Fox and Mark Coyne



Reseeding event — 1 August

The results of the seven different reseeding methods were viewed by over 1,400 farmers, including Declan Bracken from Tullamore. Declan plans to reseed an eight-acre silage field this year.

"I was unhappy with my first cut silage yield in June this year, and I feel that a full reseed would definitely reap benefits," he said.

Declan's field is already very level, but because it is of a mixed and variable soil type he would prefer not to plough. Declan was most impressed with the Aitchison Grass Drill. "It looks a very simple machine, it is the cheapest of all options and the resulting sward looks very well."

Dan Fingleton from Portarlington runs one of the Co Offaly Teagasc BETTER beef farms. Dan was waiting for the Kilbeggan event before deciding which reseeding system he was going to use. "You could see all the options and pros and cons here, and then make up your own mind on what system best suits your own farm," he said.

Dan has carried out a lot of drainage work on his farm in 2013, as he was badly affected by the wet summers of the past few years. Docks are a problem in the fields which Dan drained, so he hopes reseeding will



A large crowd attended the BTAP approved reseeding event in Kilbeggan, Co Westmeath recently.

BENEFITS

Ploughing for reseeding

- Opportunity to level fields
- Fine firm seedbed for good establishment
- Less weeds or old grasses returning
- Helps improve drainage
- Ideal after land reclamation.

Minimum cultivation for reseeding

- Ideal for stoney ground
- Most suitable where fields are level
- Fastest return to grazing
- Fertile soil remains at the surface
- Normally cheaper than a plough-based system.

help level the ground, getting a good sward established and controlling the dock problem.

Following the event, Dan decided that a conventional plough-based reseeding method is best for him. His local contractor has a One-Pass drill, so this will be used to sow the grass. Dan also noted that there were fewer weeds visible in the plough-based plots at the event, so this is also an advantage.

Getting the most from reseeds

Reseeded swards can be highly productive for 10 to 15 years, provided that they are well managed, particularly in the first year after establishment. Weed control post emergence is a must.

A recent survey found that post-emergence spray was used on just 50% of reseeded swards.

Regardless of product used, the key target is seedling docks. A mature dock can produce 60,000 seeds per year, so reseeding a relatively clean pasture can create a huge dock problem even if a small percentage of seeds germinate. Spraying six to eight weeks post sward establishment is ideal.

The best dock control products will kill clover, so take this into consideration when purchasing a grass seed mix. If docks were a problem in the

old sward, perhaps leave clover out of the mix altogether; control docks with glyphosate pre-sowing and use an effective post emergence spray.

Many farmers have great success oversowing clover afterwards. Tight grazing promotes tillering, so graze reseeds with light cattle or sheep as soon as the new grass seedlings have rooted.

Avoid silage cutting in the first year. Maintain soil P and K, and spread

Table 1: Grassland reseeding methods

PLOUGHED PLOTS	
Amazon One Pass	
Einbock Grass Harrow	
Grass Seed Barrow	
Power Harrow & Fiona Box	
MINIMUM CULTIVATION PLOTS	
Power Harrow & Fiona Box	
Aitchison Seeder	
Guttler System	

Table 2

Material costs per acre	€
Round-up at 2.5 litres/acre	14
Fertilizer — three bags 10:10:20	70
Granlime — two bags	17
Grass seed	70
Post emergence spray	22
Total	193

sufficient nitrogen as ryegrasses need nutrients to remain dominant in the sward

Finally, avoid poaching. Many of the benefits of reseeding can be reversed if the new sward is poached, as deep ruts or patches allow weeds and old grasses to re-establish.

The authors wish to acknowledge the event sponsors Whelehan Group, J. Grennan & Sons and Germinal Seeds.

Table 3: Machinery cost comparison

	Ploughed Plots				Unploughed Plots		
	One-Pass	Einbock	Grass Seed Barrow	Power Harrow /Fiona	Power Harrow/ Fiona	Aitchison	Guttler
Ploughing	30	30	30	30	0	0	0
Rolling (ploughed ground)	7	7	7	7	0	0	0
Seedbed preparation	0	35	35	0	0	0	0
Sowing	35	20	4	30	70	35	50
Other machinery costs							
Spraying x 2, rolling, fert and lime spreading	35	35	35	35	35	35	35
Total	107	127	111	102	105	70	85



Buyer BEWARE



Padraig O'Kiely
Teagasc Agricultural
Grassland, Research
& Innovation
Programme, Grange

When buying, or selling, maize silage remember that there can be large differences in feeding value.

Maize plant components

In a well developed crop, the stover (green part — stem, leaves, tassel, etc) and cob each contribute about half of the harvested dry matter (DM). A poorly developed crop will have a much smaller proportion of cob.

The feed value of the stover can be modest, and it usually has a digestibility (DMD) similar to stemmy grass silage. In contrast, the high grain content in a well developed cob provides energy that is readily available to livestock. The more cob in the crop, the higher the overall maize silage feeding value.

Optimising feeding value

- Cobs should have well developed grains when harvested, with the outer two thirds of each grain having turned solid. The digestibility of stover declines during September and October as it progressively loses its green colour. It can range from 70% DMD when lush green to 55% DMD when brown/dead. The crop should be harvested as soon as the cobs have developed adequately and before the

quality of the stover has fallen too much.

- Maize silage of high feeding value will have at least half of the whole-crop DM contributed by the cob.
- Maize silage is straightforward to preserve and will usually produce no effluent. However, it is susceptible to heating and mould growth at feedout.

Nutritional traits

Dry matter

Maize silage DM values can range from below 20% to over 40%, but the optimum value is 30%. Values closer to 20% usually reflect poor cob development, while values of 40% can occur if the crop was harvested at an excessively advanced growth stage.

This is the single most important compositional trait to know when maize silage is being traded, since a single tonne of silage at 30% DM contains 50% more feed than one at 20% DM (i.e. 300 vs. 200 kg DM).

“ Maize silage is straightforward to preserve and will usually produce no effluent. However, it is susceptible to heating and mould growth at feedout

Energy

Starch content, digestibility or metabolisable energy (ME) content are used as indicators of the amount of energy that will be provided by maize silage. The starch content reflects the presence of well developed cobs, and maize silage with 25% to 30% starch in its DM usually reflects a crop with a high energy value that should be superior to most grass silages. In contrast, starch values of less than 10% indicate that very poor cob development occurred and the overall energy value will be comparable to stemmy grass silage.

Clearly, it is important to have some objective index of the energy value of maize silage when it is being included in livestock diets or traded.

Protein

Good quality maize silage is a high energy forage, but it has a relatively low protein content with values of 7% to 9% crude protein in the DM being common. Animals consuming maize silage normally require a markedly higher rate of protein supplementation than if they were consuming grass silage.

Conservation

Maize silage will typically have a pH of about 3.9 to 4.0 and ammonia-N accounting for less than 10% of total N. It is very important that silo and feeding management prevent aerobic spoilage during feedout, so that livestock consume feed that has not deteriorated unnecessarily at this final stage.

Ferraris of the plant world

Peppers grow faster and yield more than almost any other crop in Ireland

When it comes to plant growth, peppers definitely belong in Formula 1. Whether harvested as green, yellow, orange or bright red the crop can yield over 250 tonnes per hectare. That's in a greenhouse, of course, where these super-healthy vegetables can be grown in Ireland. One of the most popular varieties produced at Keelings, just north of Dublin, is called 'Ferrari'.

"This area has traditionally grown tomatoes but peppers and aubergines are increasingly in demand from consumers," says Keelings' Farms Managing Director Andrew Wilson. "Our crops are grown in glasshouses often 7m high and spanning hectares. Crops are not grown in soil, but on hanging gutters, with plants anchored in a substrate called rockwool."

Like sports cars, peppers require careful pampering. Water and fertilizer are brought to each plant through plastic pipes and any liquid not absorbed is collected, analysed, adjusted for fertilizer content and reused. It is a closed system so no water or nutrients are lost. Bio-degradable twine attaches the plant to an overhead crop wire 4m above the hanging gutter.



Jarleth Kingston of Keelings and Michael Gaffney search for insects on an aubergine crop.



One of the most popular varieties of pepper produced at Keelings, north of Dublin, is called 'Ferrari'.

"Peppers are established as young plants, usually in December and grown all the way through to the following November," says Teagasc horticulture specialist Dr. Michael Gaffney, who works with Keelings.

"The first fruits appear in April. As the pepper plants develop, they are pruned, retaining only the two strongest branches and the main growing stem. Plants are grown close together, about three per linear metre with the rows about 75cm apart. That's roughly 24,000 plants per hectare producing nearly 300,000kg of peppers in a year."

As peppers are adapted to growing in warmer climes along the equator temperatures are maintained between 15°C and 27°C, using heating pipes which run along the ground throughout the glasshouse.

Growers are increasingly using CHP (combined heat and power) plants which generate heat, electricity and another key input — carbon dioxide (CO₂).

"A good crop growing quickly can rapidly deplete the amount of CO₂ in the glasshouse," says Andrew Wilson. "This is important. Reducing the CO₂

could cut yield by between 20% and 25%. A higher CO₂ concentration has the opposite effect, increasing yields significantly and we raise CO₂ levels in the glasshouses to maximise yield."

Biological control

"By growing under glass you can use biological control to control pests and diseases reducing the need for sprays," says Michael Gaffney.

Aphids are controlled by introducing parasitic wasps which lay their eggs inside the aphid, turning them into 'walking incubators'. Whitefly are also controlled by very small wasps called Encarsia, which turn the whitely scale black when they lay their eggs in them. This is very useful as when you turn the leaf over you can see if the wasps are working," Michael adds.

"If well looked after, a pepper plant will reach about 4m high in a single year," says Andrew Wilson. "When the crop is finished in November, it is cut down and removed and all the gutting and floors washed to prepare for the next crop, or you could say 'the next race!'"

tillage

The rise and rise



Michael Hennessy,
Tillage Specialist,
Teagasc Crops,
Environment,
and Land Use
Programme

Winter barley acreage has risen from lows of 15,000 hectares in 2006 to over 40,000 hectares in 2013 and is predicted to increase again this autumn.

David Flynn and his wife, Maria, farm over 200 hectares near Drogheda, Co Louth, and aim to plant roughly one third of the farmed area with winter barley. "We have been growing winter barley for the past 12 years and it's an important part of our crop mix," says David.

"Each year, yields are improving due to better varieties. In most years, we expect 3.5t/ac to 3.8t/ac but, this year, Cassia, a two-row variety, returned 4.2t/ac at 18% moisture"

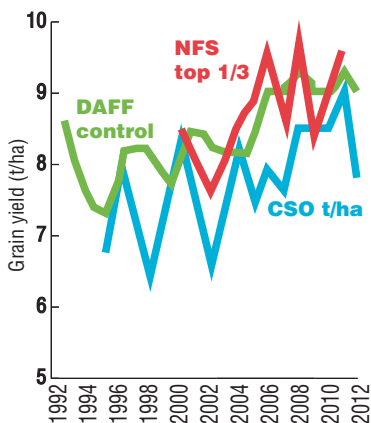
The national average yields and returns from variety trials carried out by the Department of Agriculture back up David's experience.

"The emergence of six-row barleys, but in particular hybrid six-row barleys, has been driving yields," says local Teagasc adviser Connor Dobson, who works closely with the Flynns. "On average, the Department of Agriculture variety trials record six-row barleys at 4% to 7% ahead of the average yields recorded. The six-row hybrid variety on the recommended list (Volume) has been 15% above the average yield over the past number of years."



Figure 1

Average yield data from the CSO, NFS and DAFF 1992-2012



Take-all

With its moderate tolerance to take-all, winter barley can be a good alternative to winter wheat in high risk situations. "In my experience, winter barley is more profitable than second wheats due to reduced growing costs and the increased value of straw," David says.

Where take-all infection is likely, delay sowing winter barley (but not past mid-October) into a good seedbed. A 15% increase in early spring nitrogen can help delay symptoms. The addition of a seed dressing, such as Latitude, has not given an economic response in trials at Oak Park.

Choosing barley type and variety

Select a variety to maximise the potential of your site. Take into account standing ability, disease resistance,

etc. Site specific considerations can also include: high disease area (choose a variety with highest scores for wet weather diseases), site elevation (choose a variety with the best standing power), for soils with high fertility (choose a variety with the best standing power), etc.

Two-row varieties have proved most popular to date due to their high hectolitre weight compared with six-row varieties.

This autumn, over 80% of the seed available will be two-row varieties with Cassia making up nearly 75% of all winter barley seed.

Six-row varieties continue to out yield two row varieties. However, the difference between yields of the two-row and six-row varieties has narrowed over the past 10 years. On the other hand, six-row varieties are gaining ground in terms of hectolitre

of winter barley



David Flynn and Teagasc adviser Conor Dobson examine a crop of winter barley.

Site and sowing date

David and Connor agree that winter barley is best suited to medium to heavy, deep, fertile, moisture retentive, but free-draining soils in Louth. At Oak Park, Carlow, heavy soils have out-yielded lighter soils by a tonne per hectare.

The seeding rate and time of planting will have a much larger influence on final grain numbers than other decisions through the growing season. Early sowing helps ensure an adequate crop platform is established on which to build ear numbers.

Oak Park trials have shown that

sowing after September can reduce yields. In heavier soils, delaying sowing until mid-October and November gave yield reductions of 8% and 30%, respectively.

On lighter soils, yield reductions were 4% and 16%, respectively. The lower yield resulted from reduced ear numbers per m².

For high yield potential sites, target a viable plant population of 250 to 270 plants per m² in the spring. Factor in plant establishment and over-winter losses when calculating the seed rate. *Table 1* gives guideline seed rates.

Table 1: Suggested seeding rates for winter barley 2013

Sowing date (week)	SEEDS/M ²				
	September Third week	September Fourth week	October First week	October Second week	
Target plants m ²	260	270	280	290	
Sowing seeds m ²	274	300	329	387	
% establishment	95%	90%	85%	75%	
	TGW*	Kg/ha			
Amarena	47.9	131	144	158	185
Saffron	56.6	155	170	186	219
Leibniz	51.3	140	154	169	198
KWS Cassia	57.1	156	171	188	221
Volume *	45	95	100	116	132
Famosa	53.9	148	162	178	208

weight and are now capable of exceeding 64kg/hl but will not achieve this specification every year.

In a year like 2013, where radiation levels were very high, six-row varieties will excel but will struggle to produce plump grains in a dull year like 2012.

Mixtures

Mixing two-row and six-row varieties is common on the continent but rare in Ireland. The aim of growing a mixture is to increase the yield of the two-row and raise the hectolitre weight of the six-row variety.

Trial work carried out recently over three years in Oak Park, by Dr. Richie Hackett, did not show a consistent trend in favour of mixing two and six-row varieties compared with growing them on their own.

When the two-row and six-rows are

sown as a mixture, yields are higher than for a two-row alone but below the yield expected from a six-row. Likewise, hectolitre weights for a mixture of two and six-row barleys are around the average of the two or six-row if grown separately.

Hybrids

Hybrid barley has been on the Irish market for a number of years but, so far, has failed to attract mass attention. Hybrid yields have kept a step ahead of two-row varieties but struggle to match the best two row barleys for hectolitre weight in DAFM trials.

Yields this year may change farmer sentiment as very high yields have been reported across the country.

Hybrid seed is more expensive to produce but can be sown at lower seeding rates due to its hybrid vigour.

Work carried out by Tom McCabe in UCD concluded that hybrid barleys have high yield potential and will perform well at seeding rates as low as 200 seeds/m².

Seedtech, the seed house producing this variety, has reacted to demand from growers by extending their production of hybrid seed.

"In 2013, 2,500 hectares of Volume were planted and we expect to double the area this year and possibly double it again in the next couple of years," according to Aidan Moore of Seedtech.

David Flynn has looked at six-row barleys but is also now considering hybrids. "We are looking into hybrid barleys for two reasons; firstly due to the higher yield and, secondly, the hybrid's versatility around sowing date and soils. However, we have to learn more about it," said David.



Sustainability key for Brazil

African grass, Indian cattle, Australian trees... Brazilian agriculture is borrowing species and ideas from abroad to achieve greater sustainability.



Dr. Tom Kelly,
Director,
Knowledge Transfer,
Teagasc

It's a little bigger than Australia, a little smaller than China, as big as the USA without Alaska or Europe without Russia. Whatever way you look at it, Brazil is a very large country. With a population of 180 million people and vast areas with potential for food or energy production, thanks to its tropical and sub-tropical

location, Brazil is keen to realise that potential. But not by destroying its natural inheritance.

The image of the rainforest being cut down to produce more food is no longer accurate as the native and Amazon forests all over Brazil are protected. Half of the total land area of Brazil is forest — 405 million hect-



BELOW: Nellore cattle on tropical grass.



CLOCKWISE, FROM ABOVE:

- The Brazilians have invested in the improvement of pasture-based systems with crop rotation on mixed cattle and crop farms.
- Maize undersown.
- Hybrid Zebu cross cattle are tick and heat tolerant (main picture).

ares. The expansion in agriculture of recent years is coming from the improvement of existing arable and savannah lands, which were depleted over 40 years and some virgin areas, over 60m hectares is capable of production.

Today, agriculture production occupies 420 million ha, 210m ha of pasture with 200m cattle in total. It generates 28% of GDP, 37% of employment and 42% of exports. About 60m ha is cropped producing soya beans, cassava and cereal crops, and 6m ha of sugar cane and planted forestry.

Almost 90% of crops are sown with minimum cultivation, production stands at 145m tonnes. Brazil was the world's largest exporter of beef, coffee, sugar, orange juice and poultry in 2010

Dairy production

Dairy production has grown steadily

to meet demand — currently 32 million tonnes — three times what it was in 1984. Brazil is 97% self sufficient in dairy products. Milk is produced in areas adjacent to major centres of population and has moved with the aid of technology into tropical grasslands.

There are two major systems: indoor feedlots with Holstein cows fed maize silage, and concentrates and pasture based systems with Zebu crosses. The

“ Today, Brazilian agriculture production occupies 420 million ha, 210m ha of pasture with 200m cattle in total

indoor system is based on high inputs and has high milk output/cow. The pasture-based system is based on the Gyrelando, which is a tropical breed (Bos Indicus) crossed with Holstein to produce a tick resistant hybrid cow with good fertility and reasonable production potential.

The genetic improvement of this hybrid for heat tolerance and grass based production is a major focus of research as they are slow growing and later maturing than Holsteins. Some smaller dairy feedlots also use sugar cane and urea based diets.

Half of all milk production comes from just 10% of dairy farms. The top 6,000 dairy farms have more than 200 cows and they account for 6% of dairy cows and produce 21% national production with an average production of 5,000kg/cow.

» Continues on next page

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The top herds achieve production averages of 7,000kg to 8,000kg. There are 50,000 dairy farmers with more than 70 cows. These account for 53% of production. Brazil has thousands of small co-operative dairy processors and their production is marketed as cheese (33%), liquid (40% of which one third is UHT), other (27%).

Direction

So, in what direction is the dairy production going? They are promoting the concept of pasture based systems with herds of at least 100 cows on family farm units. These systems with the Zebu hybrid cow and one to two tonnes of concentrate on improved tropical grass pastures. These require less buildings and are more economic and environmentally sustainable.

The Brazilian beef industry produces 40 million cattle/year. Beef production has grown from three million tonnes in 1980 to 9 million tonnes in 2012, 18% of this is exported. Brazil produces 13m tonnes of chicken meat, of which 30% is exported.

Beef is predominantly (90%) Zebu cattle grazing savannah and tropical grasses, with very little beef being finished in feedlots. Brazil is the largest global beef exporter.

The Brazilians have invested in the improvement of pasture-based systems with crop rotation on mixed cattle and crop farms. This involves cultivation of degenerated pasture to grow soya beans and maize grain; it is possible to get two crops in a year.

It is also possible to undersow maize for grain with grass and get four to five months grazing. The tropical grass (*Brachiaria*) produces up to 10 tonnes of DM/ha and is grazed in rotation paddock systems or set-stocked.

The performance of animals (Nelore cattle) raised on restored *Brachiaria brizantha* pastures by integrated crop livestock on one farm is impres-

“ Brazilian agriculture is strongly supported by government policy and by commercial development. The research organisation Embrapa is 10 times the size of Teagasc and has 47 centres, each specialised, although working as co-ordinated teams



ABOVE: Half of all milk production comes from just 10% of all Brazilian dairy farms.

LEFT: Crop forestry.

sive. Cattle are stocked at two to three LU/ha (1,000kg to 1,300kg lw/ha) all year round and produced 900kg live-weight/ha with mineral supplementation and 1kg to 1.5kg concentrate in the very dry weather.

The most recent development which we saw at a number of research centres was the agro-forestry model, which is called 'Crop-Livestock Forestry' integration. In this system, eucalyptus trees were planted in single or double rows 14m to 15m apart.

The system involves three years of cropping with pasture reseeding in the third year. Where we saw this near Brasília, they grew five crops between the rows of trees, soya bean, maize soya bean, wheat, maize/grass in three calendar years. In the three years, the trees grew to between 6m and 8m tall with a trunk diameter of 150mm to 200mm and could provide shade for cattle.

Cattle performed better in this system than in the open pasture. The trees can be harvested after 10 to 11 years. The idea then would be to replant trees and crop for three more years.

The performance of pastures with

the forest component is good but while farmers and researchers don't have many years of experience yet, they claim that, for the first number of years, the grass production and animal performance is unaffected.

They believe that the revenue from forest sales can more than compensate for reduced pasture production and animal performance.

DAIRYING

Brazil is 97% self sufficient in dairy products. Milk is produced in areas adjacent to major centres of population and has moved with the aid of technology into tropical grasslands.

Benefit

The system's main benefit is that it provides good production, improves biodiversity and contributes to soil carbon storage. It also provides improved soil biological activity and economic stability to farms.

Brazilian agriculture is strongly supported by government policy and by commercial development. The research organisation Embrapa is 10 times the size of Teagasc and has 47 centres, each specialised, although working as co-ordinated teams. The Brazilian state advisory service has not been as successful and with a new political commitment to family farming, they are attempting to re-establish a knowledge transfer system with closer links to Embrapa.



Consider joint thinning with neighbouring forest owners to benefit from shared experiences, economies of scale and marketing strength

Selling tips

- Become familiar with the selling options available.
- Market timber in advance.
- Local markets minimise road haulage costs.
- Have the thinning operation professionally supervised.
- Check potential tax implications.
- Sign a robust timber sales contract that addresses key issues: method of timber sale, schedule of payments, public liability insurance, recording of timber loads leaving site and liability for damage to roads and drains.

Forest thinning

Opportunities and challenges



Tom Houlihan
Teagasc Forestry
Development
Officer, Tralee

Annual timber production from the private forestry sector is growing rapidly and is set to increase seven-fold by 2028. This presents a major opportunity and challenge for forest owners. The key message is to prepare in good time and get it right when it comes to thinning options.

Thinning to improve your forest

The first thinning should improve your crop by removing small, inferior and suppressed trees and concentrating growth on quality stems. This will provide a platform for second and subsequent thinning operations, where appropriate, as well as generating a consistent supply of quality timber to the market.

In some circumstances a 'no thinning' policy is a valid and recommended option in conifers, such as spruce, for example, if thinning is likely to significantly increase the windblow risk or if the cost of road access is prohibitive.

What's in your forest?

Timely planning of future thinning operations requires owners to become familiar with their plantations — how are the trees growing? Is thinning appropriate? When and how much timber should be removed? Inspection paths cut within the forest at 10 to 14 years of age provide the required access for crop assessment and future timber marketing.

Owners should have their plantations assessed by a professional forester and/or learn the basics of forest inventory and thinning for themselves by attending a timber measurement course and other thinning events organised by Teagasc.

One of the many outputs of Teagasc Forest research is a thinning 'ready reckoner' — a simple thinning management tool which forest owners can use as a guide to their plantations' readiness for thinning (download from www.teagasc.ie/forestry).

As thinning time approaches

As forest thinning becomes imminent, address the following issues:

• **Co-ordinate with neighbours:** Consider joint thinning with neighbouring forest owners to benefit from shared experiences, economies of scale and marketing strength. Teagasc provides ongoing advisory, technical and organisational support to owner

groups around the country.

• **Road access:** In order to improve access for timber haulage, it may be necessary to construct a loading bay, forest road or upgrade an existing road. Grant aid may be available towards the construction costs.

• **Felling licence:** Before any trees are cut, a General Felling Licence from the Forest Service is required. Apply well in advance.

Timber marketing events

Teagasc, in conjunction with the Forest Service, is holding two regional timber marketing days or 'Talking Timber' events:

• **10 September:** Devon Inn Hotel, Templeglantine, Co Limerick.

• **12 September:** Lough Allen Hotel, Drumshanbo, Co Leitrim.

These events will offer an opportunity for forest owners to network with owners, harvesting contractors, timber buyers and forest managers and also to familiarise themselves with key issues around log quality and requirements for successful thinning.

For updates on these and other events and a range of thinning and timber marketing information, log onto www.teagasc.ie/forestry or contact your local Teagasc forestry development officer. Don't forget to meet us in the Teagasc marquee during the upcoming National Ploughing Championships.

SCULPTURE in context



Dr. Paul Fitters
Teagasc College at the
National Botanic Gardens

Sculpture in Context is an exhibition that returns to the National Botanic Gardens this month (5 September until 18 October). Showcasing the work of Irish and international artists, it is the largest and most prestigious outdoor sculpture exhibition in Ireland. Artists are asked to create work in response to specific surroundings, resulting in over 140 sculptures that will be displayed in the gardens, ponds, Great Palm House and Curvilinear Range of glasshouses.

Smaller pieces are exhibited in the gallery above the Visitors' Centre. Visitors can explore the 50-acre botanical haven and discover sculptures in the most unexpected places throughout the garden.

One of the sculptures that impressed me most involved mirrors placed flat on the floor of the then newly restored Great Palm House. The house was kept empty for several months after the work was completed and the mirrors on the floor simply reflect the ceiling of this magnificent structure.

The sculpture of the man with his head in the ground gets lots of attention and proves that humour can be part of sculpture too.

If you are thinking of placing a sculpture in your own garden, there are lots of things to consider. In a



Thought-provoking sculptures such as these figures are part of a temporary exhibition at the National Botanic Gardens.

garden, a sculpture relates to everything around it from the light, the vegetation, the weather and the long and short distance views. When sited sympathetically, a sculpture can enhance the garden and give emphasis to its design and/or complement a planting scheme.

Things to consider

- **What kind of sculpture do you want?** Should it be formal, funny, grand, modest, romantic, earthy, human, abstract, etc. What is the feeling you want the sculpture to elicit when seen in your garden? If you know you want something but you are not exactly sure what, come to the National Botanic Gardens, or any other sculp-

ture garden in Ireland for that matter, for inspiration.

- **Once you have obtained an object, the next question will be: Where best to place the sculpture?** Within a garden, there are many options. You could have one at the end of a path as a focal point to draw the eye. A more casual impression is obtained when it is placed on a lawn.

- **The height of the sculpture** is another important consideration. Big sculptures or smaller ones placed on a plinth to give height make for a more imposing statement. Leaving it on the ground can create an element of discovery. Most sculptures, however, are left at eye level which creates a feeling of closeness and equality.

So, come and visit the National Botanic Gardens and get some ideas for a sculpture in the context of your own garden. Remember, it is free!



Mirrors placed to reflect the astonishing structure of a glasshouse are another exhibit.

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 Fergal Brady
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