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Today's Farm

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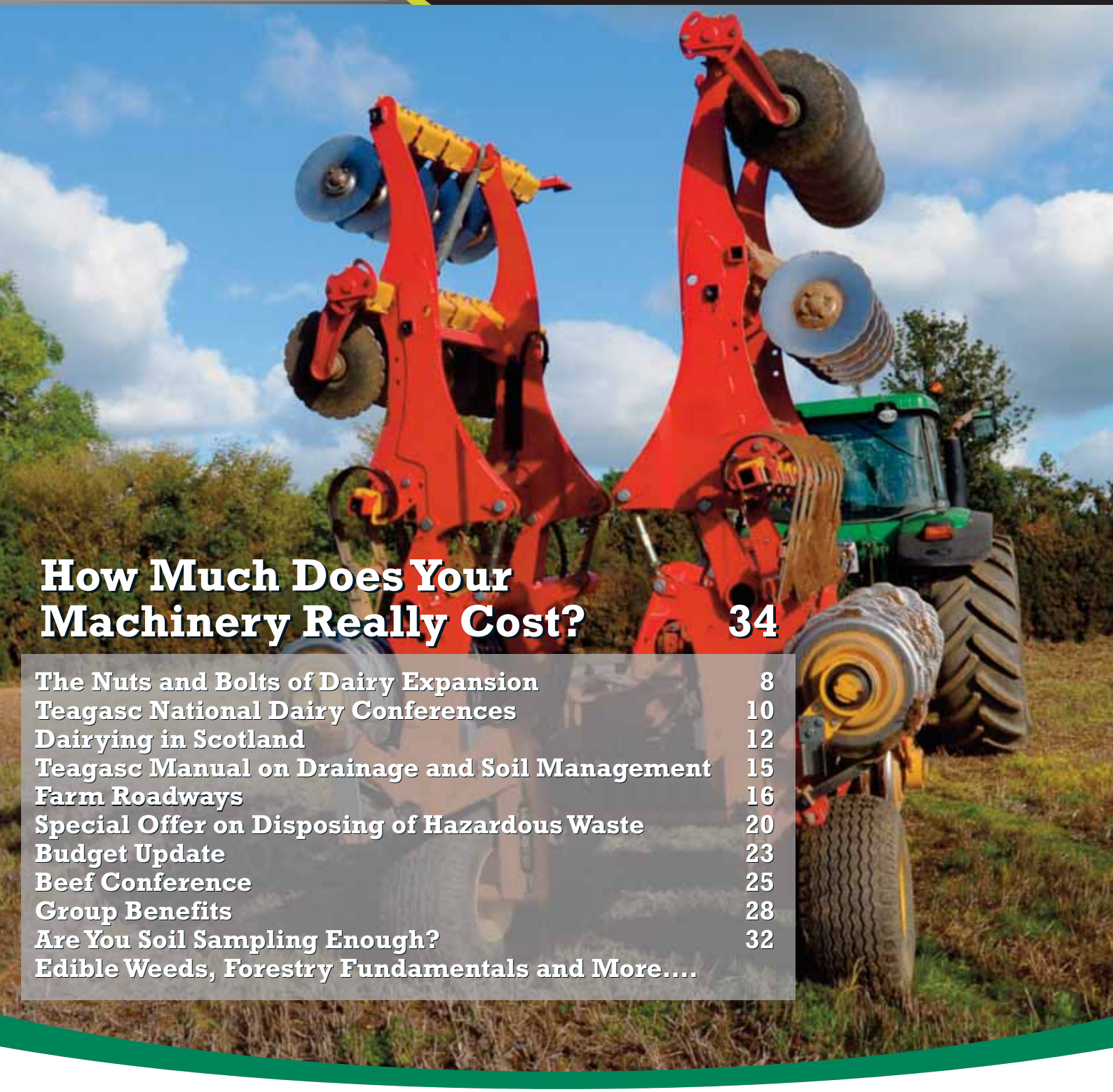

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Today's farm is a bi-monthly publication produced in a joint venture between Teagasc and the Agricultural Trust, publishers of the *Irish Farmers Journal* and *The Irish Field*.

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Cover | It's been a good autumn for field work, but do you really know what your machinery is costing you? See article on P34

COMMENT

Mark Moore
Editor,
Today's Farm

Teagasc Manual on Drainage and Soil Management

With 2014 almost upon us, the twin landmarks of 2015 and 2020 are another year closer. As if you need reminding, milk quotas disappear in 2015 and Food Harvest 2020 outlines ambitious targets for production.

Reacting to these twin challenges will involve intensification for many producers. Drainage can enhance the production potential on your existing holding. Managing heavy soils is a challenge in any year. Both are addressed in the new Teagasc Manual on Drainage and Soil Management which will be launched at the Teagasc Dairy Conferences at Limerick and Cavan.

Following on the success of the Dairy and Beef Manuals (over 6,000 sold) we believe the new manual will be an indispensible tool for drystock, dairying, or tillage farmers whether they are on heavy land or considering a drainage project. Like the earlier manuals, it is printed on tear-proof, water-proof paper for real world conditions.

Lámhleabhar 'Teagasc' ar Dhraenáil agus ar Bhainistíocht Ithreach

Agus 2014 ag teannadh linn, tá dhá bhliain shuntasacha 2015 agus 2020 ag druidim linn bliain i ndiaidh bliana chomh maith. Ní dóigh liom gur gá cur i gcuimhne duit go mbeidh deireadh le cuótaí bainne in 2015 agus go leagtar amach i bhFómhar Bia 2020 spriocanna uaillmhianacha táirgthe. Beidh ar chuid mhaith táirgeoirí dianú a dhéanamh le dul i ngleic leis an dá dhúshlán seo.

D'fhéadfadh draenáil bheith ina cúis le feabhas a chur ar acmhainneacht táirgthe an ghabháltais atá agat faoi láthair. Tá dúshlán i gceist le hithreacha troma a bhainistiú i mbliain ar bith. Dírítear ar an dá rud seo i Lámhleabhar nua de chuid 'Teagasc' ar Dhraenáil agus ar Bhainistíocht Ithreach, rud a sheolfar ag Comhdhálacha Déiríochta 'Teagasc' i Luimneach agus sa Chabhán.

Ós rud é go raibh rath chomh mór sin ar na Lámhleabhair Déiríochta agus Mairteola (breis is 6,000 díolta), creidimid go mbeadh an Lámhleabhar nua ina uirlis riachtanach d'fheirmeoirí stoic thirim, déiríochta nó curaíochta, bídís ar thalamh throm nó ag machnamh ar thionscadal draenála.

BOOK REVIEW

The Wood Fire Handbook

Vincent Thurketttle
Mitchell Beazley, 2012

You might think it comes down to a box of matches and a firelighter but this book, full of useful information about the stages that contribute to a perfect fire, broadens the frame.

There are sections on cutting wood that cover coppicing and felling, others on the seasoning and storing of logs, and there is an important chapter on trees which divides them into those that makes excellent (oak, beech, hornbeam, hawthorn), good (alder, ash, birch) and poor (willow) firewood. Conifers are given a section of their own.

A separate chapter is devoted to the making and tending of a fire, either open or in a stove.

The Wood Fire Handbook is a handsomely produced, sturdy hardback with photographs that convey the pleasures of a wood fire, written by an experienced woodsman who finishes his book with a quotation he likes:

'I sit beside the fire and think of people long ago, and people who will see a world that I shall never know'..

• Available in good bookshops. Costs €11.36 from The Book depository (www.bookdepository.co.uk), including postage to Ireland.

— By Sean Sheehan

New booklet on farmers health

Teagasc, in association with the Health Services Executive, the Health and Safety Authority and Centre for Men's Health, Carlow Institute of Technology, has prepared a booklet on maintaining health, specially for Irish farmers. Its title 'Staying Fit for Farming' reflects the negative impact that poor health can have on a farmer's wellbeing and business. The booklet was prepared following the findings of a HSE study which indicated that farmers have a four times higher all cause' mortality rate than other occupational groups.

Appointments made

The Minister for Agriculture, Food and the Marine, Simon Coveney TD, has reappointed Dr Noel Cawley as chairman of the Teagasc Authority for a second five-year term. Dr Cawley is a former chief executive of the Irish Dairy Board.

The Minister has also reappointed Padraig Gibbons and appointed two new members, Alan Jagoe and Professor Gerald Fitzgerald, to the Teagasc Authority for five year terms.

Alan Jagoe from Atlantic View, Ballindeasig, Nohoval, Co Cork, is a dairy farmer and former president of Macra na Feirme. He farms in partnership with his father and brother.

Dr Cawley acknowledged the contribution of Frank O'Mahony, the previous Macra na Feirme nominee on the authority, and thanked him for his valuable input to Teagasc as an Authority member.

Professor Gerald Fitzgerald is head of the school of microbiology at University College Cork. His research has been a major contributor to the development of the multidisciplinary food and health programme in UCC.

Padraig Gibbons is a dairy farmer in County Mayo and chairman of Aurivo Co-operative Society. Mr Gibbons was nominated by ICOS.

Speaking at a meeting of the Teagasc Authority Dr Noel Cawley said that he was honoured to be reappointed by the Minister.

He said he looked forward to working with his colleagues on the Authority and with Teagasc management to deliver the important work programmes in research, advisory and education in Teagasc over the next five years.

RIGHT: Dr Noel Cawley, Alan Jagoe and Professor Gerald Fitzgerald.

Eat up your sprouts!

Brussels sprouts have an image problem. Memories of soggy foul tasting balls of greenery, pushed to the edge of the Christmas dinner plate, sum up this vegetable for many people.

What's the origin of our national dislike of the humble sprout? Back in the 1980's we grew varieties that were strong tasting – Lauris and Rampart were two of the worst offenders. And unfortunately both were bred for the Christmas market. These varieties turned a whole generation away from eating sprouts.

Realising they had a problem on their hands, plant breeders set about devel-

to Teagasc Board

oping sprouts that were more palatable to eat. The result was sweeter varieties that came on stream during the 90's and strong tasting sprouts were banished for ever. But the memories lingered on.

The chemical responsible for the bitter, slightly sulphurous, taste of sprouts is one of the glucosinolates called sinigrin. The plant produces it to protect itself from natural predators like rabbits and slugs. The bitter compound is toxic to pests but not to humans; quite the opposite in fact. Teagasc researchers have been investigating which agronomic factors influence the level of these compounds in vegetables.

The Institute of Food Research at Norwich investigated what it is about brassicas that make them such a healthy food. Glucosinolate is one of the key components. This chemical is one of many phytonutrients common to the cabbage family. Phytonutrients are compounds that occur in plants that have no direct nutritive value for humans, but possess health promoting qualities. Whilst the latest medical evidence indicates that the anti-carcinogenic properties of fruit and veg are poor at best – the exception is brassicas. For example, when sinigrin is ingested it breaks down to isothiocyanate which causes damaged cancerous cells to commit suicide.

So are we throwing the baby out with the bathwater by developing varieties that are tastier to eat but less nutritious? Much better to have people eating sprouts with lower levels of sinigrin than none at all.

– Stephen Alexander

Sustainability demo farm at Kildalton College

At the recent launch of the Kildalton 2030: Leading Sustainable Growth initiative, director of Teagasc, Professor Gerry Boyle said: "Irish agriculture has a unique opportunity to secure a future for farming, a future that is sustainable in the widest sense of the word: economically, environmentally and socially.

"The future for the next generation of farmers looks promising, exciting, but also challenging. Can we meet the twin challenges of contributing to food security on the one hand and maintenance of the world's natural resources at the same time?

"One thing is for certain: farmers will be working in a world that is profoundly different from the world we know today."

Principal of Teagasc Kildalton Agricultural College, Frank Murphy said: "Now is an opportune time to prepare the next generation of farmers who will produce the bulk of our food by 2030. Over the next seven years, we will transform the dairy farm at Kildalton College into a showcase of sustainable dairy production. This initiative will assist in training students in all aspects of agricultural sustainability."

The new initiative: "Kildalton 2030: leading sustainable growth" will change the college farms – starting with the dairy farm – into a farm that is resilient to the challenges that lie ahead. The initiative will be rolled out on a phased basis:

- Year 1: benchmarking of the sustainability performance of the Kildalton farm 'as is'.
- Years 2-3: implementation of proven technologies and best practices that is "ready for roll-out".
- Years 4-5: a restructuring of the infrastructure in Teagasc Kildalton College. This includes not only the farm buildings and the college (e.g., water and energy use), but also the ecological infrastructure: can we make the existing woodlands and hedgerows work for us and produce wood for building and energy purposes?
- Years 6-7: step-by-step implementation of emerging technologies that are currently being researched in Ireland and abroad.

events

TEAGASC NATIONAL DAIRY CONFERENCE 2013 STRATEGIES FOR SUSTAINABLE SUCCESS

- **Date:** Tuesday 12 November 2013, Wednesday 13 November 2013
- **Venue:** 12 November: Limerick Racecourse, Greenmount Park, Patrickswell, Co. Limerick
- **Venue:** 13 November: Slieve Russell Hotel, Ballyconnell, Co. Cavan
- **Time:** 09:15 – 16:30

The 2013 Teagasc National Dairy Conference will take place on Tuesday 12 November in Limerick and Wednesday 13 November in Cavan. The theme for the conference is 'Strategies for sustainable success'. The conference will outline the key strategic decisions required by farmers in the areas of grassland, breeding and business planning in order to successfully grow their dairy business and to harvest the potential.

COUNTRYSIDE MANAGEMENT FIVE HOUR COURSES

- All farmers welcome.
- These courses qualify as a second optional course for farmers in REPS 4 (worth €85).
- Must ring to book

Watercourse management in association with Inland Fisheries Ireland
Tues 5 Nov Wexford 053 9171350
Tues 12 Nov Sligo 071 9183369 and Tipperary 0504 21777
Thurs 14 Nov Cork 028 21888 and Kilkenny 056 7721153
Fri 15 Monaghan Nov 049 4338300
Mon 18 Mayo Nov 094 9371360
Galway – date to be confirmed 093 28123

Hill Management Courses in association with the Irish Red Grouse Association and NARGC
Wed 6 Nov Kerry 066 7125077
Wed 4 Dec Roscommon 0949620160
Date to be confirmed Wicklow 0402 38171
Date to be confirmed Mayo 098 28333
Date to be confirmed Donegal 074 9121555

Traditional Orchard – Pruning Course in association with Irish Seed Savers Association
Wed 27 Nov Roscommon 0949620160
Thurs 28 Nov Mayo 098 28333

Traditional Buildings Course in association with the Heritage Council and BirdWatch Ireland
Thursday 28 Nov Offaly 044 9340721

Archaeology – Winter solstice at Knockroe
Sat 21 Dec Kilkenny 051898137

Watercourse management courses in association with Inland Fisheries Ireland take place in November.

NATIONAL BIOENERGY CONFERENCE 2013

- **Date:** Friday 08 November
- **Venue:** Louis Fitzgerald Hotel Naas Road
- **Time:** 09:00 - 16:30

A wide range of speakers will deliver papers including Minister Pat Rabbitte, TD, who will deliver the keynote address.
- Session 1: Policy
- Session 2: Energy Crops and Biomethane
- Session 3: Forestry
- Session 4: Biomass utilisation

The National Bioenergy Conference provides excellent networking and business development opportunities and facilitates discussion and debate both within the conference sessions and in the networking breaks throughout the day. For further information, ring 059-9183422 or email: therese.dempsey@teagasc.ie

ANIMAL HEALTH IRELAND/ICBF/ TEAGASC SUCKLER FARMER INFORMATION NIGHTS

Topics to be covered include:
- New beef indexes & latest breeding developments - ICBF
- Management of the suckler heifer to calf at 24 months – Teagasc
- Colostrum Management - AHI
- IBR – AHI
- Parasite Control - AHI

Venues

Each Information Night commences at 7pm
29th October – Castleisland Mart, Castleisland
4th November – Cillin Hill, Kilkenny
7th November – Elphin Mart, Roscommon
11th November – Ennis Mart, Ennis
12th November – Ballybay Mart, Monaghan
No booking necessary

PALLASKENRY AGRICULTURAL COLLEGE

Pallaskenry
05 December, 10:00 - 14:00
College Open Day

MILK QUALITY CONFERENCE ACHIEVING PREMIUM QUALITY MILK

- **Date:** Wednesday 4th December 2013
- **Venue:** Horse and Jockey Hotel, Co. Tipperary

Scope of the Conference

Maintenance and improvement in milk quality will be increasingly challenging in the expanding milk production environment post-quota.

The continued high quality of Irish milk can give Irish dairy products the competitive edge on world markets. Therefore, it is critical that the standard of milk production is of the highest quality.

The production of such milk and new tools to assist in achievement of premium standards will be discussed at the forthcoming milk quality conference.

Registration

The deadline for registration is Wednesday 20 November. Places are limited (200 seats) so it is advisable to register early. To register please complete this online form.

Further Information

For further information, please contact Niamh Allen at: milkqualityconference@teagasc.ie or call 025-42457.

NATIONAL AGRI-ENVIRONMENT CONFERENCE 2013

- **Date:** Thursday 07 November 2013
- **Venue:** Tullamore Court Hotel
- **Time:** 08:30 – 16:30

This year's National Agri-environment Conference will focus on the future of agri-environmental schemes in Ireland and will examine new approaches to delivering agri-environment measures on farms. Delegates will be addressed by a strong panel of experts in agri-environment, environmental economics, agricultural catchments and environmental sustainability.

The conference will provide an important update for advisers, consultants, policy makers and farmers who work directly or indirectly with implementing or devising agri-environmental measures. This is also an important networking event.

- Places are limited so early booking is advisable
- Full programme will be published shortly
- Admission to the conference is free
- Lunch vouchers will be available to purchase on the day

Further information

Please contact Mark Gibson | Environment Specialist, Teagasc, Mellows Campus, Athenry, Co. Galway, Ireland
Tel: +353-(0)91-845222
Email: mark.gibson@teagasc.ie

TEAGASC & RDS PUBLIC LECTURE SERIES 2012-2014

Sustainable Intensification and the Role of Science and Technology in Meeting the Food Security Challenge

Thursday 28th November 2013 at 6.30pm

Sustainable agricultural intensification is defined as producing more output from the same area of land while reducing the negative environmental impacts and at the same time increasing contributions to natural capital and the flow of environmental services.

This will require more use to be made of existing knowledge and technologies to raise yields, increase input efficiency and improve sustainability, which, in turn, requires the reinvigoration of agricultural extension services around the world in order to build human and social capital.

New knowledge is also required for the food system to become more sustainable, to mitigate and adapt to climate change, and to address the needs of the world's poorest.

No single technology or intervention will provide all of the answers, but real gains will be made by combining biotechnological, agronomic and agro-ecological approaches.

NATIONAL ORGANIC CONFERENCE

- **Date:** Thursday 5 - Friday 6 November 2013
- **Venue:** Bridge House Hotel, Tullamore, Co Offaly
- **Time:** 08:45 - 20:00 | 08:00 - 16:30

Theme 'Addressing the needs of the market.'

dairying

Dairy expansion workshop

George Ramsbottom
Dairy Specialist Animal and Grassland Research and Innovation Programme
Teagasc Oak Park

About 175 farmers attended this Teagasc day-long event which was manned by Greenfield farm staff, Michael Long and Thomas Lyng, research staff from Moorepark and Teagasc dairy advisers.

The point of the workshop was to get farmers thinking about, and working on, the nuts and bolts of possible expansion.

Farmers were divided up into groups of 12 to 18 people and they stayed with their group all day. The main topics for the day were:

- **1) Return on investment;**
- **2) Managing cash flow;**
- **3) Dealing with risk.**

Return on investment

There was plenty of discussion as farmers figured how much a given farm would need to invest for a certain level of expansion.

We identified plenty of places to invest: soil fertility and reseeding; water, fencing, and roadways for grazing infrastructure; milking facilities; wintering facilities and manure storage; and cows and heifers.

Next: how much of your own money do you put in; how much to borrow? Would your bank lend you this kind of money? Do you need to invest that much?

The group I was with had a good discussion on how much overrun to budget for. Experience at the Greenfield farm shows that at least 10% is a good figure. A farmer in one group said that any overrun shows poor budgeting and estimating (no excuses allowed there!).

Then the groups worked on a partial budget to calculate potential profit from the additional cows, and compared that to the additional assets and equity put into the expansion in order to calculate a return on assets and return on investment.

Table 1 shows how the return on investment was calculated for the example farm.

Cash flow

The groups estimated milk income, and several of the important costs. They used one year of actual figures and estimated for the next five years. They had to estimate principal and interest payments, add up the columns and look at the bottom line.

Thomas Lyng and Michael Long.

Which years were negative? By how much? What could be done to either fix that or live with it?

One of the most interesting questions I heard asked during the session was 'why is the farmer's tax bill increasing while his cash flow is falling?' Great question – the answer, of course, is that the tax bill is based on net profit while the cash flow is based on the cash in-cash out principle.

Net profit and cash flow aren't the same thing – you can go broke while making a profit was the answer from another farmer at his group. Non-cash stuff like depreciation and inventory change can give you a high net profit while at the same time you have poor cash flow.

Risk

Farmers brainstormed the risks involved with this expansion and picked four. They considered the likelihood of each one happening, the impact of it, the cost if it happened, what the owner could do to minimise that risk or deal with the occurrence.

How much would it cost to manage that risk, and what would be the early warning signs of a problem? What struck me as extremely positive from this session was that for every risk, there were actions that could be taken to minimise the risk to some extent.

The groups scored each risk they had picked by multiplying the chances of it happening (on a score of 1 [unlikely] to 5 [very likely]) by the impact of the risk if it did happen (ranked on a score of 1 [low impact] to 5 [very severe impact]).

So when these two are multiplied together, the overall score could range from 1 to 25. Most risks listed got a score of somewhere between 8 and 20. Here's a flavour of some of the more important risks farmers identified:

- All of the groups listed a drop in milk price as one of the four main risks to their business. While most groups gave it a score of 20-25 (out of a maximum score of 25), a couple of groups gave milk price (or more importantly low milk price / volatility)

at Greenfield dairy farm

Table 2: Cashflow assessment

Cash out (to 15 October 2013)	Current outstanding	From today to 15 Oct 2013	Total
Total repayments from above	€	€	€
Feed and fertilizer		€	€
Contractor	€	€	€
Vet	€	€	€
Other	€	€	€
Policies (pension, etc)	€	€	€
Health insurance	€	€	€
Living expenses	€	€	€
Total payments			**€**
Cash in (to 15 October 2013)			
Farm sales (milk and cattle sales less expenses not included above)	€	€	€
Direct Payments (SFP, AEOS, SCWS)	€	€	€
Off-farm income	€	€	€
Child benefit, pension, Farm Assist, carers' allowance	€	€	€
Total net income available			€
Balance surplus /deficit (deficit should not exceed available merchant credit and OD limit)			**€**

a score of only around 12. They said that running a low-cost milk production system capable of withstanding likely milk price fluctuation was an important part of their expansion plans. Fixing part of the milk price became more important as expansion costs or debt levels increased.

• Most groups listed animal disease as another risk. Disease got a high score of around 16 in most groups – a likelihood of around 4 because diseases are so prevalent at present and an impact of around 4 as well. Operating a closed herd, vaccinating, and, where purchasing, sourcing from only one or two sources of known herd health status keeps risk down. Ongoing monitoring of the herd's disease status through milk testing was also important in the longer term.

• The third risk identified by most groups was the operator's own health and welfare. Ill health got a score of around 15 – a likelihood of around 3 but an impact of 5 should something serious happen. A shock statistic someone mentioned at one of the groups is that one in three people suffer a serious illness between their 40th and their 60th birthdays. Accident or illness could happen at any time. To minimise the cost and effect of the farmer becoming ill, having critical illness cover or insurance was essential. Regular health screening was important to reduce the likelihood of any nasty surprises from happening.

• A fourth risk that the farmers picked up on was poor weather. Bad weather got a score of around 15 out of 25 in most groups – the likelihood was around 3 but the impact, particularly on heavier farms, was around 5. The havoc caused by this year's late spring was still on peoples' minds. Having a good reserve of silage featured high on the list – the adage 'old hay is old gold' was mentioned.

Farmers left with the worksheets they had filled out during the day and blank worksheets to work with for their own farm. You can access these worksheets at www.greenfielddairy.ie/node/97

We're hoping to roll out more of this kind of meeting in the coming months. Keep an eye out for one in your area.

Strategies for sustainable success

Deirdre Hennessy, Teagasc Moorepark, will report on recent research work examining the impact of white clover inclusion in grazing swards.

Tom O'Dwyer outlines some of the highlights of the upcoming Teagasc National Dairy Conferences.*

It is said that, in today's world, 'you earn what you learn'. Over time, skills can fade or be replaced by new technologies. None of us can claim to ever know enough. We must all take every opportunity to 'top-up' our knowledge reservoir if we are to flourish and prosper.

Attending the Teagasc National Dairy Conference 2013 will allow you to inform yourself on a number of important current issues.

Key questions

Why does one farmer do well at farming while another farmer, producing the same product, struggles to make a reasonable living? The answer lies in the cost of production and the volume of milk produced at that cost: (Outputs x price / unit - Inputs x price / unit) x Volume.

Outputs are milk and stock sales and the prices we receive per unit (litres or stock). Inputs are the costs of producing these litres and stock and the prices paid per unit.

While the focus has been on cost per litre in the quota environment (as volume was limited), in the post-quota environment both the margin per litre and the volume will be equally important. Both combined give you your profit.

Profitable, and sustainable, farming is about efficiency. It is about creating a margin on the milk produced and optimising the volume of milk produced for the capital employed (land, labour and capital).

A number of papers at this year's conference will emphasise the technologies which will enable you to create that margin and optimise the use of your capital.

Cashing in on clover

Deirdre Hennessy, Teagasc Moorepark, will report on recent research work examining the impact of white clover inclusion in grazing swards.

There is renewed interest in the inclusion of white clover in grazing swards due to the ability of clover to increase nitrogen availability for herbage production, resulting in improved sustainability of grazing systems.

Recent plot trials conducted at the Dairygold Research Farm indicate that clover inclusion increased total herbage production, regardless of fertilizer N application rate.

Over a range of fertilizer N application rates from 0kg to 240kg/ha, cumulative herbage production was 1.5 tonnes DM per hectare higher on the grass clover swards.

However, as fertilizer N application rate increased, sward clover content decreased and the over-yielding of the grass clover swards compared to the grass-only swards declined.

In a subsequent research trial to examine the impact of offering a grass-only sward compared with a grass clover sward to dairy cows, cows grazing the grass clover sward produced 12kg (3%) more milk solids over the grazing season.

Both swards received similar amounts of fertilizer N (260kg/ha) and were managed similarly. A further grazing experiment is being conducted in 2013.

Sexed semen

The results from the on-farm sexed semen research trial are just now becoming available and Stephan Butler, Teagasc Moorepark, will outline the main findings.

Teagasc, ICBF and partner AI companies (Dovea Genetics, Munster Cattle Breeding and Progressive

Teagasc, ICBF and partner AI companies (Dovea Genetics, Munster Cattle Breeding and Progressive Genetics) undertook a major field research trial this spring to evaluate the potential benefits of sexed semen under commercial Irish conditions.

Genetics) undertook a major field research trial this spring to evaluate the potential benefits of sexed semen under commercial Irish conditions.

The project was carried out in conjunction with Sexing Technologies, who hold the global licence for sexing livestock semen.

Over 15,000 inseminations on 394 dairy farms were carried out on cows and heifers using either conventional fresh, sexed fresh (two different dose rates) or sexed frozen semen from a panel of nine AI bulls.

Results indicate that the sexed frozen technology has potential for use in the Irish dairy industry and, if adopted, could result in a potential industry benefit of €50m annually.

Business of dairy farming

The 'Business of dairy farming' session will feature presentations by Teagasc and international experts on share farming, risk in dairy farming, labour usage and the difference between cashflow and profit.

This final paper will be presented by Kevin Connolly who says that "many dairy farmers struggle to grasp where the profit their business generates disappears to".

While the accountant and the taxman believe the business to be profitable, often the dairy farmer doesn't have any extra cash available.

Profit goes towards paying drawings, tax, loan repayments and re-investing in the business and once the profit has been allocated (which happens over the same period as the profit is generated) there may be very little 'free cash' left.

In an expanding business, it is the cash flow figure which is most important as a shortage of adequate cash will put the business at risk. So it is very important that dairy farmers understand the impact of their decisions and actions on both profit and cashflow.

Industry perspectives

The industry perspective on current and future milk production is always worth hearing. Jim Woulfe, CEO Dairygold, and Michael Hanley, CEO Lakeland Dairies, will provide their views to the Limerick and Cavan conferences, respectively. With the removal of EU milk quotas imminent, their views on the marketplace should be interesting.

Table 1: Effect of grass only (Gr) and grass clover (Cl) swards on milk yield and milk composition per cow for the period 6/2/12 to 31/10/12

	Gr	Cl
Milk yield, kg/cow	4,788	5,048
Milk fat, %	4.90	4.70
Milk protein, %	3.63	3.62
Milk solids, kg/cow	388	400

The first conference takes place on 12 November at Limerick Racecourse, Greenmount, Patrickswell, Co Limerick. It is followed by a second conference on 13 November at the Slieve Russell Hotel, Ballyconnell, Co Cavan.

Both conferences will follow the same programme so you can attend the conference most suitable for you and not miss anything.

These conferences will present dairy farmers with strategies to enable them to sustainably grow their dairy businesses. We recommend that families (wives, partners and successors) and discussion group members attend together to enable issues raised to be discussed subsequently.

You can book your place for either conference by contacting Roisin at 025-42664 or emailing dairy.conference@teagasc.ie

Further details, and booking forms, are available at www.teagasc.ie/events and early booking is recommended as numbers will be limited.

*Tom O'Dwyer is Head of Dairy Knowledge Transfer

Dairy contrasts in Scotland

Tinahely Dairy Discussion group recently visited dairy farms in Scotland with hugely contrasting feed philosophies. ***Paul Keogh,*** *Dairy Adviser, Teagasc, Tinahely, reports:*

I recently organised a study trip for the Tinahely Dairy Discussion Group, County Wicklow, to visit four dairy farms in south western Scotland. I'm going to outline the highlights of two very contrasting dairy systems that we visited.

The first stop was on the Scottish Dairy Research Unit at Crichton Royal Farm in Dumfries. Giving us the tour was the farm manager, Hugh McClymont.

The farm comprises of 310ha and 510 dairy cows. The system on the farm is high input, high output, with an average of 9,000 litres per cow. All cows are milked three times a day.

There are two major research trials at the college:

•1. A herd of 100 dairy cows relying totally on feed produced on the farm where minerals and vitamins are the only component of the diet purchased. The purpose of this trial is to establish if a dairy farm can be insulated from the volatility of world grain and protein prices. One of the challenges with this system is the need to grow high-quality protein for the winter ration. To help achieve this, red clover, beans and lupins are grown.

•2. A second herd of 100 dairy cows is being fed solely on industry by-products. The rationale for undertaking this trial is that, with most dairy farm expansion, the limiting factor is land. In the future, land will increasingly be needed to produce energy crops and for forestry. With this dairy system, there is no land required as all feed is bought in with purchased straw the only roughage fed.

As the trials are ongoing, there are no results at the moment. These are two extreme systems and Hugh felt that a compromise of the two systems would probably work best at farm level.

Importance of slurry

Right from the off, Hugh emphasised the huge importance of slurry on the farm. Hugh has brought the chemical nitrogen usage on the farm down from 130 tonnes to less than 50 tonnes in the past 10 years. This has been brought about by making the most of the slurry produced on the farm.

A mobile slurry separator is used to separate the liquid from the solids and it will typically bring slurry at 16%DM down to 4%DM.

The liquid portion is then spread on the land and the solid portion is used to bed cubicles. On some farms, this is known as green bedding.

The farm has major slurry infrastructure with pipes extending to 4.5 kilometres underground at the furthest point from the farmyard.

It represents a very efficient way of applying slurry to a large farm. The pipes pass under public roads and the slurry is then spread using an umbilical injector system by connecting to the underground pipe. The slurry is pumped using a 100hp tractor.

Maize grown on the farm is sown after first cut silage, which was 28 May this year. The very interesting aspect to this is that the crop receives no chemical fertilizer. All nutrients are supplied from 6,000 gallons of slurry.

Typically, the yields of maize harvested at the college were 18 tonnes per acre at 30% Dry Matter and 28% starch.

Table 1: Two systems at work on the farm

Home grown feed - Diet	By-products - Diet
Grass silage	Straw
Maize silage	Vitagold
Lucerne	Sugar beet pulp
Red clover silage	Biscuit meal
Field beans	Feed-grade breakfast cereal meal
Crimped wheat	Soya bean meal
Vitamins and minerals	Wheat distiller's dark grains
	Molasses
	Megalac
	Vitamins and minerals
	Because it's a high dry matter TMR,10kg of water is added to bring diet to 50%DM

Calves at grass on Rory Christie's farm

Calf rearing

When we arrived at the calf rearing unit, we were shown a new calf shed under construction. Hugh had researched this type of housing in Germany and it consists of a conventional five-bay shed with no side sheeting.

Fibreglass calf igloos are placed on the outside of every span. Each igloo will accommodate eight to 10 calves. The calves have free access to the igloo and also a straw bedded area of the shed where they are fed from a central passageway.

The need for ventilation was the key driver in the constructing of such an open shed with the igloos providing a dry, draught-free bed for the calves.

Colostrum feeding of calves was also something to which a lot of attention was being paid. Calves are fed four litres for their first feed using the calves' own mother's milk where possible.

All colostrum was tested using a colostrometer with only good quality colostrum being frozen. Hugh had also purchased a machine for thawing

colostrum quickly; it basically rotates the frozen bag of colostrum through warm water.

Spring calving system

On the second day of the trip, it was up early and off to Port William, a village on the west coast of Scotland 90 minutes from Dumfries.

Here we visited the farm of Rory Christie, who runs an 1,100-cow spring calving system on a 1,000ha farm producing six million litres per year.

This farm is operated to a completely different feeding philosophy. For Rory, grass is king and the system revolves around utilising it as much as possible.

The farm was previously run as five different units, but is now all run as one. Rory is planning to increase numbers to 1,500 cows over the next couple of years.

Scale

The facilities on the farm were of particular interest to the group considering the sheer size of the operation; many group members have one eye on expansion themselves post 2015.

The milking parlour is a 40-unit rotary. The winter accommodation, however, was the most eye-catching aspect.

Currently, Rory has 500 outdoor cubicles. He also has an area cleared to match this with another 500, such

> The facilities on the farm were of particular interest to the group considering the sheer size of the operation; many group members have one eye on expansion themselves post 2015

John Roche, Roger Boyd and Jonathon Williams check out the 'By-Product Diet' on trial at Crichton Royal Farm.

was the success of the first phase (*see top picture above*). Remember also that this farm is on the west coast of Scotland with no shelter from the sea.

The cows are grazed in three different groups, two of 450 cows and one group of 200. All cows are milked through the 40-unit rotary milking parlour.

To ensure that the rotary milking parlour does not stop between groups, an under/overpass system is in operation, i.e. the group of cows being milked are going back to the paddock via the underpass as the next group of cows are being brought in to be milked via the overpass (flyover).

This system was simply made by putting two lorry containers side by side to make the underpass and concrete was laid over the top of the containers and ramped either side to give the overpass.

Fibreglass calf igloo at Crichton Royal Farm.

Breeding priorities

With only one milking parlour for such a large herd, cows have to walk long distances. The furthest paddock is 4.5 kilometres from the milking parlour. This has strongly influenced Rory's breeding policy and he strives to breed animals with very good feet and legs.

Overall, breeding is dominated by New Zealand genetics with Jersey being used on Friesian, Kiwi cross on the crossbreds and New Zealand Friesian on the purebred Jerseys.

Calving is restricted to a 10-week period, with 600 cows calving in the first 12 days. Cows calve on very dry paddocks and have access to grass.

Similar to the first farm, there was a big emphasis being placed on giving calves the best start in life. Here, calves received two litres of colostrum for their first feed as the calves were a lot smaller on this farm.

The calf shed was newly-constructed two tunnels side-by-side with strong roof canvas, built to accommodate 600 calves. The milk was pumped directly to the calf house and the calves in groups of 30 were let out into a central passageway to drink from a teat feeder, then returned to their pen.

Due to the high numbers and labour constraints, calves are fed once a day from birth to weaning. Calves are weaned at 100kg with later calves weaned at 120kg.

Conclusion

At the end of the day what did we learn from our Scottish trip? Firstly the scale of the farms meant that they had big labour requirements but when divided out, it was roughly one labour unit per 100 cows. Also, regardless of the farming system all farmers we visited were testing the colostrum for quality before feeding it to new born calves, using a colostrometer. Also, the low-cost/alternative cow and calf accommodation provided food for thought for the group.

NEW FOR 2013

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Key questions on farm roadways

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

The design and construction of farm roadways has a major impact on cow flow, walking speed and herd health. Farmers should periodically review their farm roadway structure. If the current roadway system is inadequate, it should be upgraded and extended.

What general points should you consider when planning farm roadways?

Roadways will make grazing management easier, improve farm profitability, work organisation and labour efficiency and generally make life easier. A good farm roadway system is essential for maximizing grass utilisation and reducing dependence on concentrates. No one is in any doubt of the importance of a good farm roadway system after the kind of weather conditions we endured last year. A little planning will ensure you have the best system possible.

- Avoid bottlenecks – widen the roadway at corners and at T-junctions. Allow no access to water troughs from the roadway. Wide gaps and two gaps per paddock (beside divisions) are advised. There should be no water troughs or mud baths at gaps.
- On steep roadways, use ramps or channels to divert water at intervals or flowing water will create tracks and wash away the surface layer. This had a severe effect on many roadways last year when water scoured material from the surface and subsurface.
- Prevent water from flowing in under the hardcore material – it lubricates the hardcore material and weakens the soil underneath.
- Put a kerb (about 15cm wide and 20cm high) at the entrance to the collecting yard or other concrete section of the roadway. It forces cows to lift their legs and stops grit from being flicked forward by cows. The roadway should widen here to compensate for cows having to slow down.
- A concrete stretch of roadway near the farmyard is generally regarded as a good idea, so long as there are no stones on its surface which could cause lameness and disrupt cow flow. Scrape or sweep.
- Often the first 100 metres or so gets very mucky, worn, and holds water and muck. This dirties cows coming in and going out, leading to increased SCC levels, udder washing, raised TBC and sediment levels. It also predisposes cows to foot disorders.
- As a general guide, the area of farm roadway would be 1.3% of the grazing area it services and 150 metres to the back of the paddock. The percentage would be greater for heavier soils.

What are the key metrics when constructing a farm roadway?

Only lay new farm roadways in good weather when ground conditions are dry. Drain wet areas first.

- Crossfall: 1:20 to 1:30 to one side or to both sides depending on the slope of the land (a fall to one side is easier to do).
- Depth: at least 25cm to 30cm (10 to 12 inches) of hardcore material and 5cm (two inches) of dust. If hardcore shatters (softish shale) it can make a good wearing surface.
- Width depends mainly on cow numbers, typically four to six metres; cow tracks 1.8 to 2.4 metres.
- Surface layer: dusty material with biggest size pebble 5mm to 6mm; use shale, red sandstone or greywacke dust. Preferably not limestone dust. Go to see the type of dust for yourself; dust means different things to different people, e.g. mill waste can contain a lot of big sharp angular pebbles.

What are the most important defects which emerge in roadways?

Defects will include potholes, a roadway that is too level, ruts from wheel tracks, a raised hump of soil under the fence at either side, and cow paths made between the fence and the roadway or on the roadway.

Problems are caused by:

- Pebbles and loose stones on the surface.
- Bumpy hard surfaces with secure stones.
- Lodged/trapped water on the surface.

Regularly assess farm roadways for emerging defects.

• Very dirty section near the farmyard.
• A roadway level with, or lower than the field.

The reasons for these defects are many, but quite often are due to flawed construction methods, unsuitable materials and lack of maintenance. The appearance of a roadway after a number of years may bear little resemblance to what it looked like when it was initially constructed.

Regularly assess farm roadways for emerging defects.

What should farm roads typically cost?

• Construction costs can vary, from €17 to €30 per metre, depending on the cost of materials, the width, depth of material and the method of construction. Cow tracks are a cost-effective way (€7 to €10/m) to improve access to grass, particularly on heavy land.
• Consider using a geotextile: It reinforces the roadway, controls/helps to prevent ruts and stops soil mixing with the hardcore material. A mixed layer of soil and hardcore reduces the roadway's ability to support loads. Geotextiles are useful where soil conditions are poor and/or machine traffic is likely to be heavy. Geotextile costs about 50c to 80c per square metre.

How important is maintenance?

Maintaining a good walking surface on the roadway is very important (it should be clean, even, soft and smooth).
• Raise levels, restore falls, remove humps of soil to allow drainage, repair poor surfaces.
• Make sure to maintain the stretch near the farmyard, which is the most used part of the roadway.
• Fill potholes – water in potholes seeps down and lubricates hardcore material and softens soil underneath. Water lodged on roadways causes surface disruption in frosty weather.
• Ensure ramps/channels are working well. Consider sweeping roadway surface.
• Avoid holding cows on the roadway before letting them off, say to cross a public road. Dung/dirt builds up on the roadway, dirty udders, cows legs and feet are dirty leading to difficulty in controlling SCC, dirty clusters, open teats after milking, etc.
• Heavy machinery can cause a lot of damage to farm roadways, especially if the roadways are poorly constructed and maintained. Use the full width as far as possible, i.e. avoid travelling in the same track with machinery on every pass. If possible avoid heavy machine work in very wet weather.

Maintaining balance in the L

Catherine Keena & Ruth Carolan
Teagasc Crops Environment and Land Use Programme

The Irish uplands are prized for many reasons – extensive food production, their landscape and bio-diversity including birds such as red grouse and, not least, heather honey. Managing the hills is a question of balance and farmers play a key role.

Tommy Slevin, Farabar, Glenfarne, Co Leitrim, farms 38ha, including 17ha of commonage, on Boleybrack mountain. He shares commonage in the townslands of Bar of Farrow, Ballaghnabehy, Briscloonagh, Gortnalibbert, Lurgan, Meenymore and Moneenlom highlighting the complexity of grazing arrangements on commonage, which make it highly complicated to calculate stocking rates.

Tommy has 70 cheviot ewes lambing late March; lambs sell as stores in September. He is involved in the AEOS with payments for grazing the commonage in a sustainable manner and for species rich grassland on his lowland and has joined the Sheep Technology Adoption Programme (STAP).

"We won first prize for a pen of lambs at Manorhamilton Mart and I'd put that down to the creep feeding of lambs which was an option in STAP," says Tommy. Another option chosen by Tommy was faecal egg sampling pre- and post-drenching to check for resistance.

Egg counts were low which is typical for this extensive system of farming on the hill where the worm burden is low, according to his Teagasc adviser Sean Doorley.

Tommy Slevin, Farabar, Glenfarne, Co Leitrim, says there is an urgent need for a specific suite of measures to address the crisis in upland farming and to support rural communities in Ireland's upland areas.

Boleybrack Red Grouse Management Project

There is huge support from farmers for the Boleybrack Red Grouse Habitat Management Project according to Tommy, who is a member of Glenfarne Gun Club and an active member of ICSA. He represents farmers on the steering committee of the project.

"Farmers particularly welcome the presence of a gamekeeper on the mountain," says Tommy. "We see benefits from predator control, security and improved vegetation for sheep following burning. Since the grouse project started, local walkers on the mountain are more conscious of keeping their dogs on a lead which reduces the risk of worrying of sheep."

A benefit to the community is that the project has brought all those with an interest in the mountain together. Tommy says he is looking forward to appropriate measures for sustainable management targeted to the hills in the upcoming Rural Development Programme.

Conservation ethos

Glenfarne Gun Club has a strong wildlife conservation ethos. The decline of the red grouse or moor hen, as many local people call it, has been gradual and unheralded. In 2007, the club commissioned a report to provide for management of grouse on Boleybrack.

Key objectives in the resulting red grouse habitat and management proposal are to maintain and increase the grouse population and to maintain and, where possible, enhance sensitive habitats.

Heather honey

Michael Gleeson, Irish Federation of Bee Keepers Associations, spoke of the value of honey from heather – worth twice the value of honey from other flowers. Heather honey has its own particular flavour unlike that of any other honey. It is used in liqueurs such as Irish Mist. Irish heather honeys have claimed top prizes on many occasions at the London Honey Show.

Heather honey may be derived from ling heather (*Calluna vulgaris*) or bell heather (*Erica cineria*). Michael says bees should be placed in bell heather by 12 July and in ling by 1 August, with bees gathering nectar from heather flowers into the first week of September. Well managed young flowering heather which is not too strong is ideal for bees.

Left to right: Multifloral honey, ling (*Calluna vulgaris*) honey from the bogs of north Kildare and bell (*Erica cineria*) heather honey (darkest) from the Cooley Mountains in County Louth.

Leitrim hills

These objectives are being achieved through predation and heather management, including controlled burning.

The project received a major boost in 2012 with the appointment of a fulltime gamekeeper, funded jointly by NARGC and NPWS.

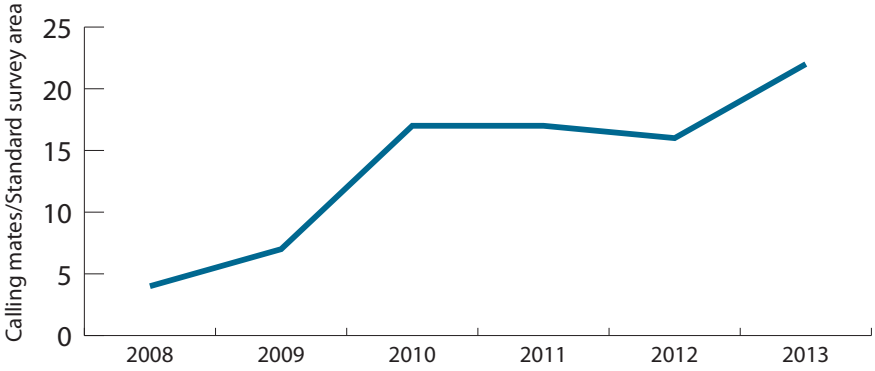
Red grouse numbers have increased from four to 22 springtime calling males in the standard survey area (9km²) from 2008 to 2013, according to Fiona Wheeldon, NPWS.

The Boleybrack project enjoys the support and goodwill of all its stakeholders, especially the Glenfarne community, which includes landowners and those with commonage shares and grazing rights on Boleybrack.

John Carslake, the gamekeeper on the project, stresses the importance of public relations and the inclusion of all interested parties, in conjunction with the 'on the ground' activities of the modern wildlife manager.

The steady rise in grouse numbers is testament to the effectiveness of this approach.

Figure 1
Number of grouse in standard survey area (9km²)



Red Grouse nó Cearc Fraoigh

The red grouse is a medium-sized game bird, slightly smaller than a pheasant. Grey partridge and red grouse are Ireland's only native game birds. Red grouse is on the red list of the Birds of Conservation Concern in Ireland due to a 50% decline in range over the past 40 years.

A 2006-2008 survey in the Republic of Ireland estimated the population at 4,200 adult birds. Red grouse are ground nesting birds and generally only fly when flushed. In Ireland, the average clutch size is six to seven. Young nutritious shoots of ling heather are the biggest part of their diet. They swallow grit to aid digestion. Heather is also required for shelter and nesting.

Controlled burning and sustainable grazing

Patches of controlled burning are carried out in line with a site-specific burn plan, appropriate assessment, and with the written approval of NPWS. Burning at Boleybrack is carried out in a planned sequence to encourage heather regeneration.

Burning is only permitted on wet and dry heath and is not suitable for blanket bog or areas dominated by Molinia (purple moor grass). The aim is to produce a patchwork of heather of different ages, which increases grazing quality, encourages livestock to graze the whole area and benefits wildlife.

While controlled burning in small patches is a critical part of the management of strong undergrazed heather, particularly for red grouse, sustainable grazing is also important for managing our hills and uplands.

This was stressed by Paul Gibney, Teagasc, speaking at the first of a series of Teagasc Hill Management Courses.

Traditional grazing maintains young palatable heather required for red grouse as well as for hill sheep production.

A red grouse photographed on Boleybrack in County Leitrim by Fiona Wheeldon NPWS

Undergrazing, or lack of grazing, results in large areas of strong heather and Molinia. Although Molinia is present as a typical component of many upland vegetation communities, it does become dominant in some situations, often to the exclusion of other species.

Heather and Molinia grass are fine stemmed, aerated and arranged in close proximity, and have all the suitable characteristics for a combustible fire – potentially dangerous wildfires.

Fire is a powerful but dangerous land management tool which needs to be used with skill and understanding. In the right hands and with the right preparation, fire can enable rapid and cost effective management of unwanted vegetation.

Uncontrolled burning leads to the destruction of fragile habitats and wildlife, and can place lives and property at risk. There have been over 10 wildfire related deaths since 2000. Estimated costs of the 2010 fires include: Coillte €3.5m; privately insured losses €3.45m with fire fighting costs of over €10m.

Teagasc is running a series of Countryside Management five-hour courses – see events page (P6-7) in this edition.

Don't waste this

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

Teagasc has teamed up with the Environmental Protection Agency (EPA), Department of Agriculture, Food and the Marine and local authorities to operate six pilot bring centres for farm hazardous waste across the country during November. The pilot campaign, which is part of a research initiative, will give farmers the opportunity to bring their farm hazardous wastes to these centres where it will be collected and transported to a hazardous waste facility for disposal or recovery.

Pesticides need to be managed carefully

Farm hazardous wastes can be toxic, corrosive, irritant and flammable and have the potential to cause harm to farmers, animal health and the environment. As well as the obvious harmful effects of these products, farmers need to be aware of their obligations under cross compliance when it comes to recording and storing pesticides and biocides.

One of the groups of hazardous substances most commonly found on Irish farms is plant protection products (PPPs) and biocides. PPPs refer to pesticides, herbicides and fungicides. Biocides refer to disinfectants, preservatives, pest control products and anti-fouling products. All such products must be authorised for use, stored correctly with proper records retained.

The body responsible for the regulation of pesticides in Ireland is the Pesticide Registration and Control Division (PRCD) which is located within the Department of Agriculture Food and the Marine.

Under cross compliance (SMR9), all farmers must abide by certain rules when using plant protection and biocidal products. The farmer requirements are summarised as follows:

Use of pesticides

Farmers may only use pesticides that are authorised by the PRCD. The full list is published each year by the PRCD and available from their website www.pcs.agriculture.gov.ie

Pesticides should be used and handled in accordance with current label recommendations.

Each year, a number of pesticides lose registrations for a variety of reasons – it is good practise to use pesticides in the season they are purchased.

The majority of pesticides may be used for up to 18 months after the product registration expires. After this time, the product cannot be used or stored.

To avoid problems, practice good stock rotation – use old stock before new stock and only purchase product quantities that you can reasonably expect to use within the growing year. All expired products can be brought to the farm hazardous waste bring centre.

Storage

Pesticides must be stored in a dedicated, lockable shed/press clearly signed. The pesticide store must be leak-proof and have a bucket of sand available to soak small spillages.

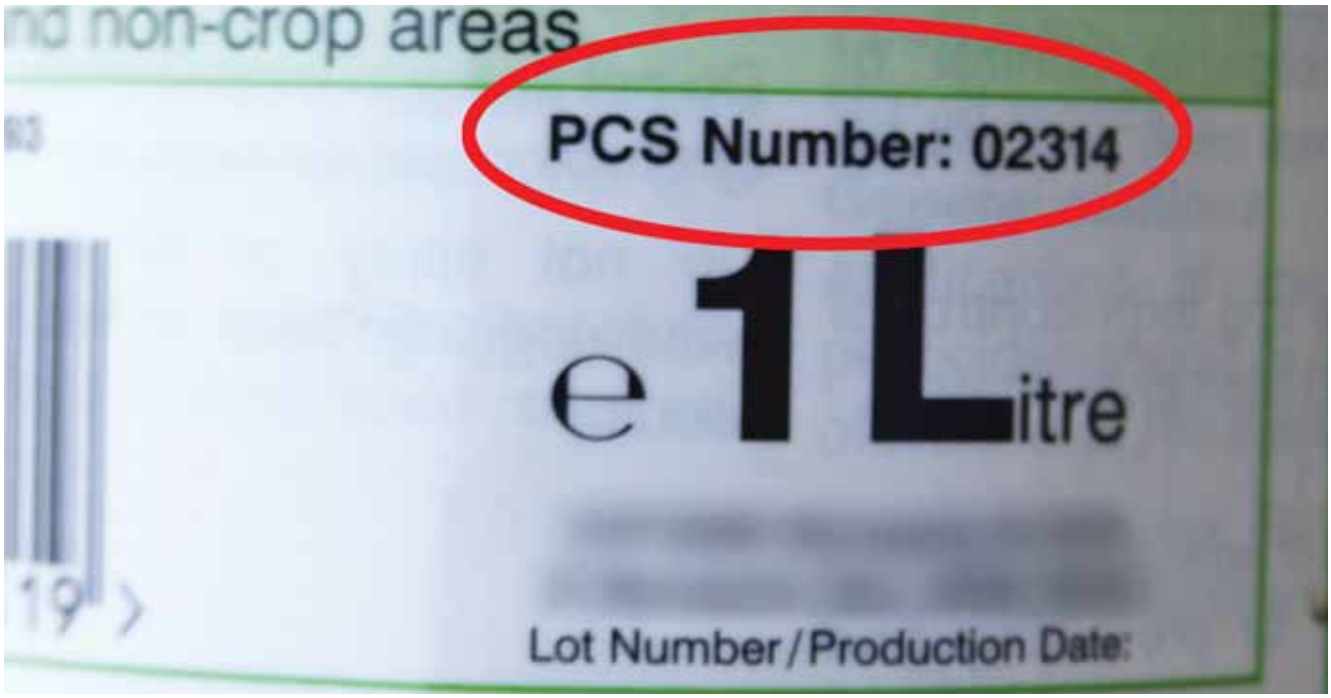
Stores should be bunded, i.e. if spills occur, material should be contained within the store. Alternatively, it is acceptable to stand/store products in plastic boxes within the store. Products should be stored in original packs, with powders stored above liquids.

Records of pesticides

Under cross compliance, farmers are required to keep a record of pesticide application date, rate and quantity. The PCS registration number of any pesticides purchased and used must also be recorded.

» Continued on Page 22

opportunity



Inspections

Approximately 1,300 farmers per year are inspected under cross compliance. The following is a summary of those inspections which took place in 2011.

Of the farms inspected:
- 90% had no issues arising with respect to SMR9 (pesticide component).
- Financial penalties (1%, 3% and 5%) were received by 86 farmers.

Common penalties:
- Exceeding the maximum individual and/or maximum total dose for a pesticide on a crop.
- Poor/incomplete record keeping, e.g. mixing up rates per acre and per hectare, failure to record all applications on a crop.
- Mixing up products and PCS numbers for similar products.
- Failure to record all products used – evident by half cans of product bought in the current year in store, but no records of use.
- If the label makes no reference to knapsack use, DO NOT USE IN A KNAPSACK.

Operation of Bring Centres

- Hazardous wastes should be handled with care when packaging and transporting to the bring centres. Protective clothing should be worn when handling these wastes.
- The type of hazardous waste being disposed of must be clearly identifiable from the packaging or by the farmer at the bring centre. Wastes which cannot be identified will not be accepted.
- Farm plastics such as silage wrap, fertilizer and feed bags and clean triple rinsed pesticide containers will NOT be accepted.
- The waste contractor will issue the farmer with a waste disposal certificate. Payment will be required by cheque or cash on the day. The cost for this service is detailed in *Table 1*.
- The bring centres will operate from 10am to 4pm and will operate on a first come, first served basis.

There will be two main points of offload at the bring centres – one area for waste electrical and electronic equipment (WEEE) and one area for all other hazardous wastes.

Farmers are asked to load their waste so that all hazardous waste can be off-loaded first and WEEE will be off-loaded second. The waste contractor will be responsible for off-loading the wastes on the day. Waste accepted at all bring centres are outlined in *Table 1*.

Input from Teagasc Crop Report is acknowledged.

Table 1: Waste accepted at bring centres

Farm hazardous waste type	Cost to farmer (excl. 13.5% VAT)	Rules
Unused, de-regulated, partially used pesticides and biocides including herbicides, fungicides and insecticides.	€2/kg	Products need to be identifiable from the labels or you must know what the container contains.
Waste engine oil	No charge	Accepted in containers but must not be mixed with vegetable oil
Waste hydraulic oil	No charge	
Waste brake fluids	€2/kg	
Waste cooltants	€2/kg	
Waste antifreeze	€2/kg	
Oily containers	€4 per 20 or 25 litre container €8 per 200 litres (45 gal drum)	Accepted
Oily wastes such as oil filters, rags, cloths, empty grease containers, grease guns, etc.	€2/kg	Accepted
Waste paints (including solvent and chromate based paints)	€2/kg	Accepted in containers
Obsolete, unused or partially used veterinary products including tubes, syringes, empty dose packs, empty sheep dip packs	€2/kg	Products need to be identifiable from the labels or you must know what the container contains.
Used needles A sharps bin will be provided on the day for needles	€2/kg	Needles should be in a separate sealed container.
Aerosol cans	€2/kg	Must be identifiable or farmer must know contents
Empty silicone guns	€2/kg	Accepted
Waste electrical and electronic equipment (WEEE)		
All batteries including tractor, car, electrical fences, AA batteries, etc.	No charge	Accepted
Waste electrical and electronic equipment (equipment that requires a battery or plug to operate) and includes old TVs, computer monitors, fridges, freezers, drills, saws, etc.	No charge	Fridges and freezers must be emptied of contents.
All used lightbulbs, including florescent light tubes	No charge	Accepted

Table 2: Locations of the six mobile farm hazardous waste bring centres across the country during November

Location	Dates
Ballinasloe Livestock Mart, Co Galway	Monday, 11 November
Tullow Livestock Mart, Co Carlow	Wednesday, 13 November
Ballymote Livestock Mart, Co Sligo	Monday 18 November
Royal Town & Country, Trim, Co Meath	Wednesday, 20 November
McDonnell's Grain Store, Saleen, Midleton Co Cork	Monday, 25 November
Thurles Livestock Mart, Co Tipperary	Thursday, 28 November

Bring centres will open from 10am-4pm.

Budget 2014

Fortunately, Michael Noonan didn't deliver a Halloween scare for the agri-sector in the recent budget.

Kevin Connolly
Financial Management Specialist, Teagasc Rural Economy and Development Programme

One income tax relief which did get adjusted was the relief applied to annual health insurance premiums.

Taxes on income

The income tax rates, tax bands and most of the tax credits escaped with no changes. The One Parent Family Tax credit was renamed the Single Person Child Carer Tax Credit and while the value remained unchanged (€1,650), this new credit is targeted at the main carer of the child.

There were no changes to the age exemption income thresholds. So for those people aged 65 years and over with income below €18,000 for single individuals and €36,000 for married couples no income tax will be liable.

There was no change to the rates of PRSI or the Universal Social Charge (USC) which feature in the calculation of the overall tax bill for farmers annually.

The highest rate of tax payable on income in 2014 remains at 52% for people with incomes below €100,000 or 55% on incomes (non-PAYE) in excess of €100,000.

One income tax relief which did get adjusted was the relief applied to annual health insurance premiums.

This relief was available at 20% on the gross value of the total premium paid regardless of the value; the health insurance company adjusts the final bill charged to the consumer accordingly.

This tax relief will be restricted to a maximum premium of €1,000 per adult and €500 per child. Amounts paid in excess of these limits will not be eligible for the 20% deduction.

Value added tax

The VAT rates of 23% or 13.5% and the 9% tourism rate were maintained. For non-VAT registered farmers (also called flat rate farmers) the flat rate VAT addition was increased from 4.8% to 5%.

The VAT flat rate addition is used to top up sales of farm product (milk, meat, live animals, grain) to compensate those farmers for the VAT they pay on certain farm inputs which they cannot reclaim directly from Revenue because they are not VAT registered.

For those who are building up savings in deposit accounts, there was bad news with an increase in Deposit Interest Retention Tax (DIRT) from 33% to 41% from 1 January next.

Savers may look at the DIRT-free options provided by An Post and Government savings as an alternative provided they stay competitive and that the usually long fixed terms imposed to achieve their tax free interest status are not an issue.

Asset transfer taxes

The main taxes in question here are Stamp Duty, Capital Gains Tax (CGT) and Capital Acquisitions Tax (CAT).

Stamp Duty is levied on the recipient of land and farm buildings at the rate of 2% where the assets are transferred when both parties to the transfer are alive.

This rate didn't change but there is a change coming to a key Stamp Duty relief with the abolition on 1 January 2015 of Consanguinity Relief, or related persons relief.

This relief reduces the Stamp Duty rate to 1% where there is a blood relationship between the parties. When this relief goes, then in the absence of any other reliefs, the 2% rate will apply in all cases. The Stamp Duty relief for Young Trained Farmers remains.

Over the last number of budgets, the tax rates for both CGT and CAT have been increased by 65% and the tax reducing reliefs for both taxes reduced or curtailed (see *Table 1*).

This has had the effect of increasing the potential tax burden on transferring farm assets.

The operation of CAT was left unchanged in budget 2014. CAT is levied on a person receiving a gift or inheritance and the tax is charged at 33% of the taxable value, after reliefs are applied. The tax thresholds and CAT agricultural relief were also unchanged.

»Continued on Page 24

For the person transferring the asset, the main tax to worry about is CGT. The rate remains at 33%.

The main relief that applies is CGT Retirement Relief and there were some changes in this area. Retirement relief is a very valuable relief. If the person disposing qualifies for it by meeting certain conditions, then the CGT bill can be wiped out or considerably reduced.

The change of most immediate concern here is the upper limit on the value of assets that will qualify for relief and which was actually announced in budget 2012.

From 1 January 2014, for transfers to children, an upper limit on the asset value of €3m which will qualify for retirement relief will apply where the person transferring is over the age of 66 years.

For individuals between 55 (the minimum age that retirement relief applies) and 66 years, there will be no limit on the assets that qualify. This change is a measure to encourage earlier transfers of farm assets.

For transfers that take place after 1 January 2014, to persons other than children, the normal upper limit on asset values that qualify for retirement relief is €750,000 but this will be reduced to €500,000 if the person transferring is over the age of 66. Between 55 and 66 the normal €750,000 limit will apply.

Farm owners considering transferring farm assets, whose value could exceed the limits as outlined, should consider bringing forward the transfer to before 1 January 2014 to get the transaction completed before the upper limits are imposed.

Table 1: Comparison of CGT and CAT in 2008 versus 2014

	2008	2014
Capital Gains Tax (CGT) rate	20%	33%
Capital Acquisitions Tax (CAT) rate	20%	33%
CAT tax free threshold for parent to child transfers	€521,208	€225,000
CGT Retirement Relief – upper limit on asset value that qualifies where transferring person is aged over 66 years		
- Transfer to child	No limit	€3m
- Transfer to person other than child	€750,000	€500,000

Leasing

A positive change was made to CGT retirement relief for those who have already leased, or are considering, leasing out land but who would like to keep the option open to transfer the land in the future.

One of the conditions of getting the much valued Retirement Relief was that the asset transferred had to have been owned and used for the 10 years prior to the transfer.

Where land was leased out, it would fail the 10-year usage rule. There was a concession introduced in 2007 to cater for these cases where the eventual transfer after the lease finished was to a child of the land owner.

This limitation where the transfer after termination of the lease can only be to a child has been relaxed in budget 2014. So, in effect, a land owner can lease out land and then transfer or sell that land to any person and avail of Retirement Relief.

There are likely to be conditions around this concession, such as the maximum length of time that the land can be leased, but we will await the publication of the Finance Bill for those.

Funding for agri schemes

Funding for the various agri schemes such as the BTAP, STAP, TAMS and Grassland Sheep Scheme was largely maintained. A new Beef Genomics Scheme was announced with the detail on how this will be operated to be published later by the Department of Agriculture, Food & the Marine.

National Beef Conference 2013

Profitable beef from the dairy herd

Reviewed By Karen Dukelow
Beef Specialist, Teagasc Animal and Grassland Research and Innovation Programme

Teagasc Director, Professor Gerry Boyle opened the National Beef Conference to a large attendance in Kilkenny. He commented that the strong attendance reflected optimism in the beef industry.

Aidan Murray, Teagasc Beef Specialist, set the scene for the conference with an introduction to dairy calf to beef systems.

Why dairy calf to beef?

- Food Harvest 2020 targets could result in 30% more cows to produce 50% extra milk output. This will mean there will be more dairy calves and beef cross dairy calves available for beef production.
- The fodder crisis 2012/2013 highlighted high suckler cow costs. The total cull cow kill is up 14% and calf registrations to suckler cows are down 7% year-to-date. Dairy beef can be produced at a lower economic and environmental cost than suckler beef as the overhead cost of the cow is borne by the dairy industry.
- When operated at high levels of animal performance from grass at high stocking rates, dairy calf beef systems can be quite profitable.

Opportunities

- We have good processing links with the UK, a large market on our doorstep.
- Dairy calf to beef has great potential as an integrated production system. The supply chain will only work where there is a return for everyone.
- Sexed semen, genomics, and dairy beef index; all new technologies can be used. Sexed semen offers the opportunity for increased beef crossing on the dairy herd.

Challenges

- Calving pattern/seasonality. February is the peak month. Marketing year round beef will be challenging.
- Breeding the correct dairy beef cross. Easy calving and short gestation is what the dairy farmer wants. Growth rate, carcass traits and weight from grass is required on the beef side.
- We need clear blueprints and new skill sets.
- Breed specific bonuses may come under pressure if larger numbers become available.
- Sustainable suckler beef systems. Fundamental changes required to ensure profitability.

The conference outlined options for dairy calf to beef systems with

speakers from research, farming and industry backgrounds. Here's a snap shot of what they had to say:

Michael Murphy, Tipperary farmer

Rears healthy bought-in calves.

This year Michael is running two calf to beef systems. Friesian steers will be slaughtered at 22 months and Hereford/ Angus heifers will be slaughtered at 18-20 months, both systems are grass based.

What drives Michael's calf to beef system?

- Clear systems with clear targets. Michael is producing 1,550kg live weight/ha.
- Grass and paddocks key to high performance.
- Weighing scales are his boss. Weighs calves every eight weeks. Aim is 1kg gain/day on average. Even hit this target last year!
- Not skimping on milk replacer, helps save on meal in the long term, calves off meal by June 1st.

Maggie Gould, Volac International Ltd

Rearing healthy beef calves.

"Michael Murphy is evidence that systems for efficient rearing of calves can be put into practice."

Key points for successful calf rearing

- Source quality calves.
- Don't overstock sheds.
- Draw up a Health Plan with your vet. Invest money in disease prevention!
- Set performance targets, measure and review.
- Manage weaning phase, you can lose a lot of margin here, animals need a developed rumen.
- Check performance and take ACTION!

Rob Prendiville, Teagasc Grange

Early Maturing Dairy Beef Systems

- Early maturing (Angus and Hereford) account for 25% of calves born from the dairy herd.
- Current research is looking at different finishing strategies for heifers and steers from low input pasture based production systems. The aim is a continuous supply of beef throughout the year.
- Lifetime gain from grass is critical to all systems, with intensive grazing and target pre-grazing covers of 1,200-1,300kg/ha used. The systems outlined required 10t DM/ha to 12t DM/ha grass grown at a stocking rate of 200kg organic N/ha.
- All systems were profitable. Heifer systems delivered a gross margin of €415/hd to €520/hd and steers delivered a gross margin of €528/hd to €745/hd at base price of €4.50/kg carcase and all bonuses included.
- Profitability of the systems is most sensitive to beef price and stocking rate.

Seamus Phelan, Kilkenny dairy-beef farmer

Seamus runs a fragmented farm with 90 spring calving cows. He uses an Angus bull to tidy up after AI. He rears all calves to beef with a low cost grass based system.

Why Angus?

- Easy calving the main priority, not wasting time observing cows. Time to do other stuff, ability to handle higher numbers!
- Short gestation length.
- Active calves.
- Polled, one less task!
- Docility.
- Good cross with his cows, calves bring size from the Holstein and beef traits from Angus.
- Early finishing.
- Angus premium.

Selling bull calves or bull beef, sexed semen may open up new doors. More cows bred to beef.

Very exciting! Angus bull will still be his choice as AI season of seven weeks is long enough!

Pictured at the Teagasc National Beef Conference 'Profitable Beef from the Dairy Herd' at the Newpark Hotel, Kilkenny, were (from left) Paul Mathews, ABP; Charles Smith, Certified Angus; Seamus Phelan, Kilkenny farmer and speaker, Prof Gerry Boyle, Teagasc director, and Michael Cleary, Hereford Prime.

Pearse Kelly, Teagasc Head of Drystock

Beef Production from Male Holstein-Friesian Cattle from the Dairy Herd.

Research at Teagasc Johnstown Castle has investigated bull and steer systems for Friesian calves since 2010. Bull systems with animals slaughtered at 15 or 19 months and steer system with animals slaughtered at 21 or 24 months were compared.

- At current grain prices the steer systems had higher profit/head and/hectare than the bull systems and the 21 month steer was more profitable than the 24 month steer.
- Bull systems are very sensitive to meal prices and become more viable at low grain prices.
- Meat quality research is showing no difference in eating quality between dairy bulls slaughtered at 15 and 19 and 22 month bull beef.
- Weight for age is high but achievable high margins depend on high stocking rates, soil fertility, drainage. Reseeding is vital.

Tom English, Wexford farmer

A farmer's experience of Friesian calf to beef systems

Tom's farm was traditionally operated as a calf to steer system. In 2010 he went into bull beef as he could do 240 bulls instead of 120 steers.

- Extra output without having to build extra sheds.
- Increased emphasis on paddocks.

Pictured at the Teagasc National Beef Conference 'Profitable Beef from the Dairy Herd' at the Newpark Hotel, Kilkenny, were (from left): John Moloney, Teagasc Regional Manager Kilkenny/Waterford; Aidan Murray, Teagasc Beef Specialist; Maggie Gould, Volac; Prof Gerry Boyle, Teagasc director, and Michael Murphy, Tipperary farmer and speaker.

He could increase stocking rate by one third by just having paddocks and moving cattle every day. An hour spent each day is well worth it. Worth 20ha extra on a 60ha farm.

- Measures grass and this tells you how many days ahead you have and gives you confidence.
- Runs bulls in groups of 40, no great problems. In cold, wet weather he uses 12 hour paddocks.
- Currently stocked at 3.5units/ha, might go to 4 units/ha (with a reserve of silage in place).
- Producing 1,700kg live weight/ha and hoping to achieve a gross margin of €1,500/ha for 2013 (similar to 2012).
- More work in bulls but they have pushed up output and profitability. Might look at steers if father retires and the farm goes back to one labour unit.

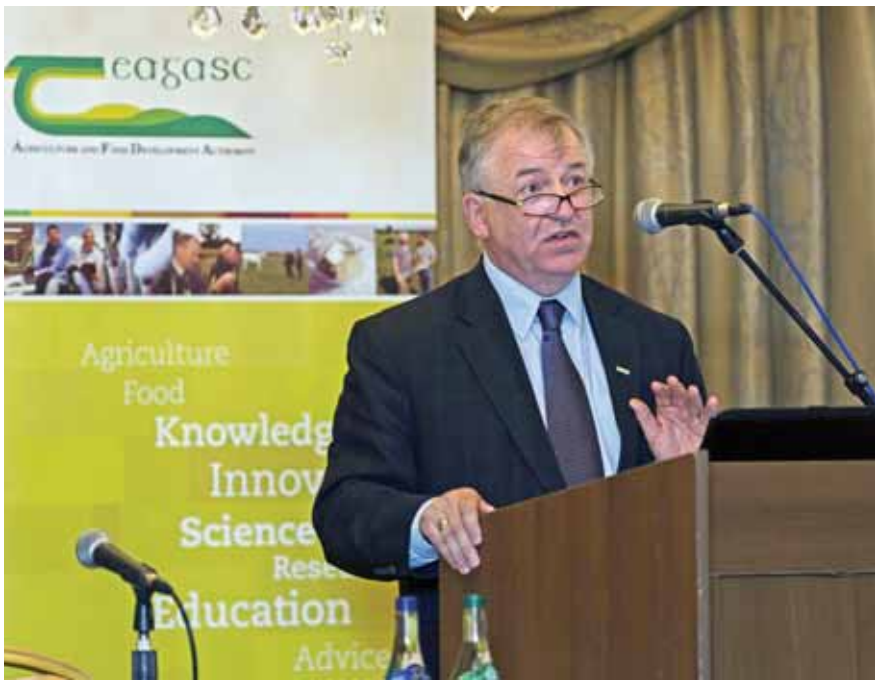
Darren Carty, Irish Farmers Journal

Lessons learned form the Dairy Calf to Beef Programme

The aim is to produce dairy-bred bulls slaughtered at less than 16 months. The programme involves 16 farms throughout the country.

Lessons Learned

- Need to hit targets all the way along. No room for a store period, or poor performance at any stage.
- 60% of bulls that started in the scheme achieved the programme requirements.
- Jan/Feb born calves hit the targets more readily. Need turnout weight of 100kg at 12 weeks and 150kg gain at grass.
- Need a housing weight of 250kg at 35 weeks.
- Only 30% of weight gain off grass in 16 month system.16 month bull beef system does not work optimally as a stand alone system (due to low grass usage).
- Economics highly sensitive to cereal price and input levels.
- High Levels of working capital required. Lifetime production costs ranged from €800-€1,000/hd.
- Fat cover was a major factor in pushing bulls out of spec. No room for a store period.
- Gross margins of €86-€330/hd were achieved on the programme.



Pictured at the Teagasc National Beef Conference 'Profitable Beef from the Dairy Herd' at the Newpark Hotel, Kilkenny, was Prof Gerry Boyle, Teagasc director.

Drystock discussion groups increase farm performance in the north west

Martina Moran
Teagasc / Lakeland Dairies Joint Advisory Programme Team

Recent research by Teagasc has shown that membership of dairy discussion groups increases technology adoption and farm profit. Between 2011 and 2013, I worked with nine drystock discussion groups in the north west region to see if these benefits hold true for the beef and sheep farming sector.

Teagasc has supported drystock discussion groups since the late 1990s and there are currently 433 groups around the country. Analysis of gross margins for drystock farmers in 2011, shows that there is huge potential for increased profitability (*Table 1*).

Table 1: Gross margins from profit monitor analysis for drystock farmers 2011

	Top 1/3	Average	Bottom 1/3
Gross Margin	€804	€485	€127

The top third of farmers generated a gross margin of €804 by producing 128% more output value than the bottom third with only 23% extra variable costs.

Discussion group member Gerry Reilly is a suckler farmer from Mohill, Co Leitrim, and a group member since 1999.

Gerry's reason for remaining in the group is: "You'd always pick up something from going to other farms."

When Gerry was asked what changes he had made to the farm since joining the group, he mentioned rotational grazing, creep grazing the calves ahead of the cows, calving heifers at 24 months, using heat detection aids and using AI.

"I've got an awful lot more from the group than that, but it's hard to think of everything with being in the group

so long," said Gerry.

"Creep grazing the calves ahead of the cows is easy to do, it costs nothing and once you get the first calf across the rest will follow. It really helps to get the cows back in heat. I enjoy going to other group members' farms that have the same soil type as mine and I can see how they manage it and bring ideas back to my farm."

PJ Barrins joined the Inniscrone Discussion Group in 2012 after reading about the Beef Technology Adoption Programme (BTAP) in the *Irish Farmers Journal* and said he thought it would be a big benefit to him.

When asked why he joined the group, PJ said: "I had heard about these groups before and always meant to enquire about them but just didn't get around to it until now. I joined really to see what I could improve on and see what I was doing right and wrong."

When asked had he made any changes to his farm since joining the group, PJ answered: "Yes, in a few ways at this stage. A big one was getting the land soil tested. The results were right because the fields with the low phosphorus, potassium and lime were the fields that grew the least grass."

PJ said: "From having one group meeting on the Sligo Teagasc/*Irish Farmers Journal* BETTER Farm, it was clear to see that improving the soil fertility was giving more grass and better use of fertilizer. I have now changed the type of bag fertilizer I use.

"At one group member's farm, we saw heifers that calved down at 24 months and were a good size. I used to calve heifers down at three years old as I thought they were too young at 24 months but now I can see that they're not, if you get them to the correct weight for breeding."

Why farmers join discussion groups

The study found that 73% of farmers joined drystock discussion groups to 'learn from other farmers', while 60% of farmers said the reason for not joining a discussion group prior to the BTAP was due to lack of understanding of the benefits, location and how groups operate. The study also found that farmers who joined discussion groups tended to be relatively young, with more agricultural education, had larger farms and were farming fulltime when compared to the average for Irish drystock farmers.

How to make groups better

Sixty percent of the farmers surveyed wanted more group meetings and more time for discussion by the farmers themselves as they regarded this as crucial for the success of the discussion group.

Vincent McNamee is a member of the Finn Valley Discussion Group since 1998 and he said: "Having younger members with new ideas, eagerness and willingness to try new things is needed in any discussion group to keep it fresh."

Figure 1
Farmer knowledge of five selected practices 2013

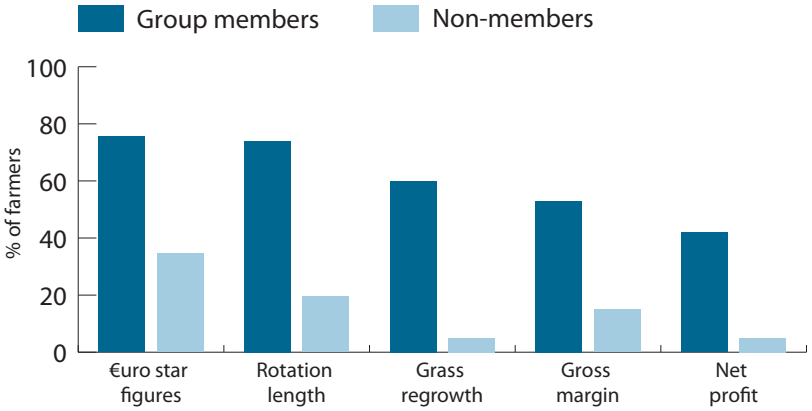
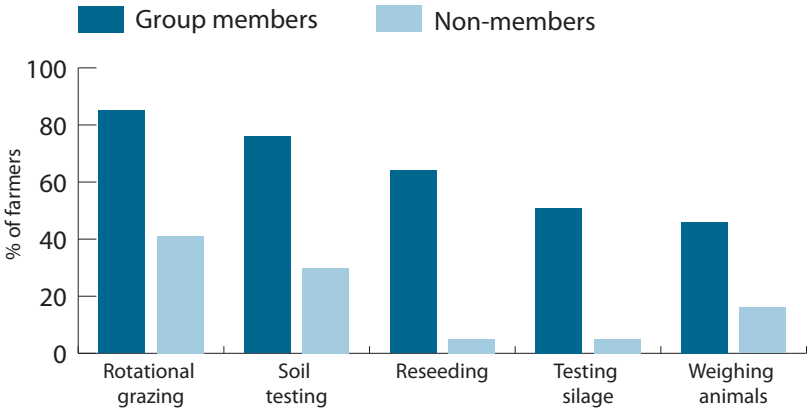


Figure 2
Farmer technology adoption 2013



Do discussion groups improve profits?

To determine the effectiveness of drystock discussion groups, the farmers were asked some questions on their farming knowledge and practices they were using on their farms.

Figure 1 shows discussion group members had more knowledge on breeding, grassland and financial analysis than farmers who were not part of discussion groups.

Adoption of best practice

Figure 2 shows that group members had also implemented a higher number of certain best practices on their farms. The study also found that farmers joined to drystock discussion groups for more than five years had higher adoption rates of best farm practices which increased beef output/ha.

Why consider joining a drystock discussion group?

Martin Harrison is a member of the Kilkelly Discussion Group since 2012. Before reading about BTAP, he said: "I hadn't heard anything about discussion groups. It's a great way to pick up new ideas and I look forward to the group meetings where I meet other farmers."

Within the first year, Martin has improved his grassland management through implementing a paddock system and has shortened the length of the breeding season by choosing high fertility bulls and creep grazing calves ahead of cows. "I'd be very surprised if any farmer would not gain something from being in a discussion group."

Conclusion

There seems little doubt that membership of drystock discussion groups helps farmers to increase farm productivity and ultimately farm profits. The knowledge and experience shared by the farmers in group discussions is the key to this success and contributes to farmers' willingness to take on best practice in drystock farming.

In brief, farmers sharing their own knowledge and experience of farming with their fellow farmers is a key ingredient to bridging the gap between low margins and high margins in the drystock sector.

Sheep Technology Adoption Programme

One year in, what are the benefits and the success stories?

Michael Gottstein
Teagasc Animal and Grassland Research and Innovation Programme
Head of Sheep Programme, Teagasc, Killarney, Co Kerry

Discussion groups have long been recognised as an excellent tool in aiding farmers to improve technical performance. Farmers learn from each other and, through the facilitation process, train themselves to solve problems. Farmers are also great at picking up new ideas on other member's farms. STAP embraces this principle and promotes the creation of discussion groups by offering participating farms a financial payment.

Payment

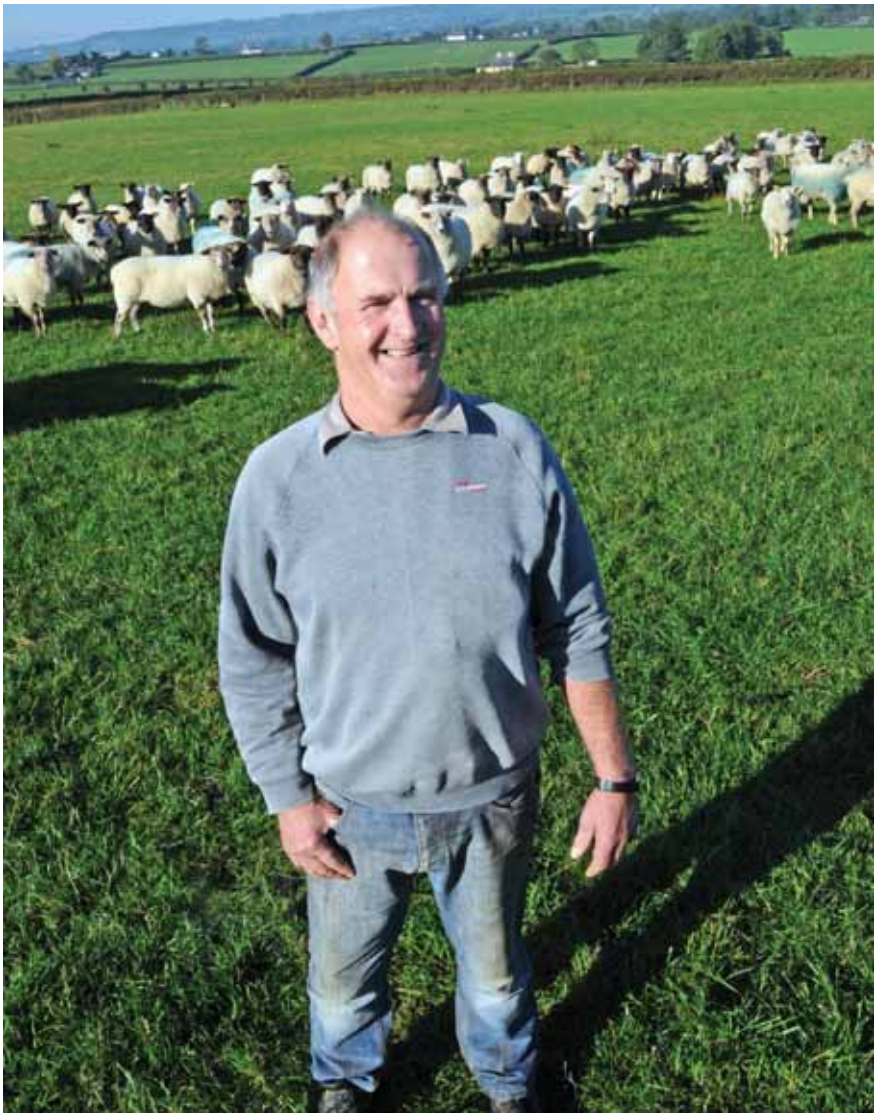
In order to qualify for payment, participating farmers must attend at least four meetings (one of which may be a qualifying national event).

However, in most groups, six or more meetings have been held with many group members attending significantly more than just the minimum number.

In addition to participating in the discussion group meetings, members also need to carry out two technology adoption tasks. The aim is to encourage new practice adoption on these farms.

Tasks

For the first year of the programme, nine technology adoption tasks were identified of which participants had to choose at least two.



Paddy McDonald, Paulstown, Co. Kilkenny.

Paddy has a 250-ewe flock as well as beef and tillage and is a member of the south Kilkenny STAP group which is facilitated by Teagasc adviser Terry Carroll.

"I wouldn't have described myself as an enthusiastic 'joiner' of groups but I joined STAP this year and I find it useful. You'd always pick up something through the discussion or simply by seeing what other farmers are doing," said Paddy.

Paddy selected soil sampling and completing a profit monitor as his tasks in year one. "I think the soil sampling was well worthwhile and we have acted on the results," he said. "The profit monitor was interesting too, though 2013 is unlikely to be an improvement on 2012." Paddy says he got lambs away in time for the Muslim holiday at the end of Ramadan which made a good price but lamb prices deteriorated later in the season.

"Joining STAP will do nothing for market prices but it does allow farmers to enhance what is in their own hands: technical management of the farm."

STAP tasks

Task 1

Increase the genetic merit of the flock by using a recorded ram.
Teagasc research has shown that genetically superior rams produce lambs that grow faster. Work carried out on farms participating in the BETTER Farm programme has demonstrated that genetically superior rams (five stars for production) produce lambs that grow 1-1.5kg faster up to weaning, reducing age at slaughter, feed costs, veterinary costs and increasing profit.

Task 2

Record key animal performance data on the Sheep Ireland database.
To improve the accuracy of recorded rams, data from commercial flocks is required. By participating in this task, farmers are assisting Sheep Ireland to validate and improve the accuracy of data recorded on pedigree flocks.

Task 3

Anthelmintic resistance drench test.
Anthelmintic resistance is arguably the single biggest threat to the sheep industry. Testing the efficacy of drugs at farm level is essential to reduce the speed at which resistance to the most commonly used anthelmintic is developing. Task three was the most popular task chosen in Teagasc-facilitated STAP groups and this has been a major success story of STAP.

Task 4

Flock health plan.
Spending on veterinary medicines is the second highest variable cost on sheep farms. Apart from the financial cost in terms of treating sick animals, there is also a cost in terms of lost performance. The flock health plan is drawn up by the farmer in conjunction with his/her health care professional and is aimed at preventing disease and ill health in a planned manner, thus saving money on treating sick animals and maximising animal thrive.


Task 1

Task 5

Soil sampling.
The use of soil samples to identify deficiencies in soil P, K or pH is essential to maximising grass production and utilising chemical and animal manures to maximum effect. To be successful, however, applicants must react to the result of the test and correct any imbalances present.

Task 6

Reseeding 10% of the farm.
New grass varieties grow more grass and do so particularly at the shoulders of the year (spring and autumn) when grass is in shortest supply. Encouraging farmers to reseed old pasture results in more grass in addition to higher quality grass being available in the spring when ewe demand is at its highest.


Task 7

Task 7

Rotational grazing system.
Good fences make good neighbours as the old saying goes. However, it is also important that sheep are controlled within the farm. Having at least four divisions per grazing group allows grazing to be controlled, facilitating better utilisation and grass quality as the year progresses.

Task 8

Complete a profit monitor.
For any business to improve, it needs to identify its strengths and weaknesses. Farming is no different – assessing both physical and financial performance through the use of a profit monitor analysis is an important tool in identifying where changes need to be made.

Task 9

Concentrate feeding of lambs being sold as stores.
This task is only available to hill sheep farmers who sell lambs as stores. The aim is two-fold. Encouraging farmers to feed concentrates to store lambs makes them heavier at sale. This also makes them more attractive to finishers who know that the lambs have been introduced to concentrates and are less like to suffer a setback after sale.

Conclusion

STAP offers participants a financial reward in terms of a payment for participating in the programme. This payment is, however, only a tiny part of the overall benefit in terms of knowledge gained through participation in a discussion group. Carrying out tasks that improve both the financial and physical performance of the sheep enterprise on the farm delivers the real pay-off.

Soil testing shows value

Mark Plunkett
Teagasc Crops, Environment and Land Use Programme, Johnstown Castle,
Ciaran Hickey
Teagasc, Enniscorthy
& Phelim MacDonald
Teagasc, Carlow.

The demise of the sugar beet crop led many farmers to move from crop rotation to cereal monoculture. Soil fertility suffered and tillage farmers are reviewing their soil testing and fertilizer strategies.

Mark Plunkett and Eddie Nolan.

Eddie Nolan, who farms 80ha of tillage land in Fenagh, Co Carlow, has worked closely with his Teagasc tillage adviser Ciaran Hickey to maximise crop returns by producing high yielding crops and controlling costs on the farm. He says the loss of the beet crop has had serious consequences for his cropping strategy. "The beet crop had demanded precise soil fertility management with rotational liming to control soil acidity. A significant part of growing sugar beet was soil testing in advance of sowing the crop.

"Based on the test results, tailored beet compound fertilizer supplied P and K to balance the crop rotation.

"When we stopped growing sugar beet in 2004, we moved to a rotation of continuous winter wheat and spring barley. The emphasis switched to above-ground crop management such as seeding rates, disease control, PGRs, etc., to maximise crop yield and less of a focus on soil fertility."

After the initial years in this new cropping regime, yields of winter wheat remained strong while yields of spring barley began to decline. This resulted in an increase in the area of continuous winter wheat as it was more profitable. In 2006, large patches started to appear in some fields of winter wheat (see picture on page 33) and Eddie felt this needed careful investigation.

Ciaran Hickey soil sampled the poor patches and this revealed that soil pH levels were very low, helping to explain why the yields of spring barley had started to slip on the farm.

"Soil samples had been taken for farm scheme work in 2007 and the results indicated that soil fertility was adequate; however, this was not in agreement with field crop performance," says Ciaran.

At this stage, continuous winter wheat yields had also started to decline due to take-all and, in order to maintain farm income, "we decided to return to a crop rotation of winter oilseed rape / winter barley / spring barley / winter wheat," said Eddie.

Ciaran highlighted the importance of balanced soil fertility for growing a range of crops compared to winter wheat monucultures.

Soil Sampling 2008

With grain yields slipping, a large proportion of the farm was sampled in September 2008. Results confirmed a problem with soil fertility levels, in particular a large drop in soil pH levels.

Soil pH had decreased to pH 5.49 in some fields and confirmed the reason for the low yields of spring barley. The results also revealed that soil P and K levels had dropped significantly as a result of the P and K off-take in high yielding cereal crops.

The fertilizer choice for winter wheat at that time was 18-6-12 which was good value for money but was not correctly balanced to meet crop P and K requirements.

This set of soil results provided an alert that soil fertility levels were declining and a starting point to correcting soil fertility levels. However, corrective action in subsequent years would coincide with high fertilizer prices in 2008 and 2009.

Firstly, lime was applied as recommended to boost soil pH levels. "We checked soil pH levels one year later in these fields to see the effect of lime on soil pH levels," said Eddie.

"The results indicated that the lime was increasing soil pH over this short time frame to the target levels

The effect of low soil pH on winter wheat in mid-May.

Table 1: Soil test results (mg/l)

Field 1	pH	P	K	Mg
A	5.89	3.4	100	87
B	6.58	6.6	99	99
Field 2	**pH**	**P**	**K**	**Mg**
A	7.38	6.5	44	136
B	6.46	3.8	78	128

required for the new crop rotation."

Additional P and K was also applied based on soil test results. Fields that had very low levels of soil K received additional potassium as 50% K (MOP) which was applied to balance both soil and crop requirements.

Eddie emphasises the importance of taking soil samples correctly and paying attention to the soil test results in order to understand what's happening in the soil.

Soil sampling 2010

Intensive soil sampling was carried out and Eddie and Ciaran decided to split fields based on previous crop performance to take a more detailed look at what was happening in the soil. These results identified differences in soil nutrient levels within fields. This provided the basis for more precise application of lime, P and K.

Table 1 shows how nutrient levels differed as a result of splitting fields and allowed a closer look at what's happening in particular parts of fields and a clear explanation why fields were performing differently.

The difference in soil pH, P and K levels are shown in *Table 1* for two of the fields sampled.

During the sampling, Ciaran kept detailed maps and records of all the sampling points so that the fields can be re-sampled in the future following a similar pattern.

These soil test results have formed the basis for nutrient applications on the farm. Based on these results, Eddie decided to import organic manures to help build soil fertility and organic matter levels.

Soil sampling 2014

In the autumn of 2014, Phelim MacDonald, Eddie's new tillage adviser in Co Carlow, will re-sample all fields based on the sampling maps prepared in 2010 to monitor soil fertility changes over the last years and to plan nutrient applications for the next four years.

Conclusion

When there was sugar beet on this farm, regular soil testing and liming were carried out to ensure soil fertility was maintained to maximise crop yield. These practices ensured soil fertility levels were also good for cereal crops grown on the farm.

Continuous, high-yielding cereal crops will take large quantities of nutrients from the soil and result in a decline in soil fertility if the nutrients are not replenished.

A good soil testing programme allowed Eddie to identify soil problems and formulate a fertilizer plan for the soils and the crops to be grown on his farm. The planned fertilizer and cropping strategy will be implemented by Phelim and Eddie to ensure profitable crop production into the future.

'It's a figure you need to know…'

Tim O'Donovan
Tillage Specialist Teagasc Crops, Environment and Land Use Programme
& Ciaran Hickey
Teagasc, Enniscorthy

Time spent analysing machinery costs is richly rewarded.

Machinery costs make up approximately 30% of total costs on the average tillage farm according to data from the Teagasc national farm survey 2012. Exclude land rental and machinery costs are closer to 40% of tillage costs.

Teagasc machinery cost calculator

Teagasc have recently developed a comprehensive but farmer-friendly machinery cost computer programme. Its purpose is to allow tillage farmers to collect basic information for each machine on their farms and derive the short and long term cost associated with it.

The programme can cater for farmers with a 'new', 'old' or a mixed machinery fleet and facilitates them to be compared. It takes account of trade-in values at the time of purchase and the expected value when the machine will be traded on, as well as annual repayments and associated repairs. If the machine is used for hire work (off-farm), then this income is also accounted for.

Table 1: Cashflow assessment

	Average (20 farms, 2012, per ac)	Range (per ac)
Total costs	€117	€68-€149
Fuel	€34	€25-€40
Repairs	€24	€22-€56
Repayments	€31	€19-€65
Depreciation	€28	€18-€57

Key questions answered by the Machinery Cost Calculator:

- 1. What is my exposure based on my machinery policy and what are the annual machinery repayments for the farm? This can be a sobering figure and raises the most constructive debate about the machinery policy on the farm.
- 2. Where am I relative to other tillage farmers of a similar size or cropping/farming system? This allows more informed decisions to be made with the confidence that many other farmers are operating that system.
- 3. Is there a reason why I am operating this machinery policy and are there changes I can make to optimise my investment?

Teagasc has analysed the machinery costs on 20 tillage farms from the southeast using this computer program. The farms ranged from large operations with shared machinery to more traditional one-man operations.

As expected, the machinery replacement policies varied greatly between the 20 farmers but this new programme accounted for that variation and allowed each of the farmers to make comparisons with his peers. Some of the summary figures are presented in *Table 1*.

These figures are from farmers who produce very good crops, mainly cereals, but there are startling differences between their machinery costs.

A number of management changes have taken place on these farms as a result of them completing the Teagasc machinery cost calculator. The figures illustrate why all tillage farmers should complete the programme this autumn.

Teagasc tillage advisers are available to help clients on this and will be running courses in some centres.

Farmer focus

Mark and Garrett Browne, Enniscorthy

They farm 1,170ac which is a mix of owned land, rented, stubble to stubble contracts and machinery share land.

The farm is somewhat fragmented but half of the land is within a two mile radius of the home yard," said Garrett. "The furthest block is 13 miles away. A yard there can be used as a base where machinery and materials can be securely stored. This helps to reduce fuel costs."

Dermot Forristal, Teagasc, Oak Park, has estimated that fragmented holdings can increase fuel bills by up to €26/ac, depending on the number of outside farms, distance, cropping system, etc.

By knowing and understanding all of your machinery costs, it is possible to make changes which increase the efficiency of your machinery fleet.

The Machinery Cost Calculator came up at a discussion group crop walk one day, and Mark and Garrett agreed that it was something they would like to do and, more importantly needed to do, to accurately determine their cost of production.

The machinery list here, along with repairs, maintenance and diesel costs, represents a charge of €97 per acre. This was a good result for this size operation and there are a couple of factors which help to reduce the figure.

• 1. There are two establishment systems on the farm and, where possible, min till is carried out because it offers substantial fuel savings. Where required, they can quickly opt for a plough-based system. As a follow on to this, and for 2014, they will be running a hybrid min till system often referred to as strip tillage with a 3m Mzuri drill to see if establishment costs can be reduced further.

• 2. Transport costs have been greatly reduced by the purchase of the truck in 2003. It has reduced the need to invest capital in tractor trailers but it has also reduced the wear and tear on the tractors significantly, where as diesel costs have largely remained the same due to the fact that for the same diesel usage the truck can haul twice as much in a reduced length of time cancelling out the extra cost of white diesel for the truck.

• 3. The machinery sharing system with Padraig Kehoe has been very successful as it offers access to skilled labour and a large tractor. These are two valuable components to make an operation like this successful.

Garrett Browne, Padraig Kehoe, Ciaran Hickey and Mark Browne

• 4. A good maintenance and repair system. Mark and Garrett are fortunate in that they have a good knowledge of their own machinery and have access to a good mechanic, so there is a lot of routine and preventative maintenance which ensures that the system is reliable and they have the confidence to keep machinery longer to gain the maximum value from their investment.

• 5. There is a rotation on the purchase of equipment to ensure that, at any given time, only a certain amount of repayments are on the books. The philosophy 'what I would like, what I need, and what I can afford' is practiced in relation to the machinery replacement policy. This helps to keep the overall figure low but the repayment exposure in any one year is also at a manageable level.

"It's too easy to carry on without actually looking in detail at your machinery cost per acre or tonne. But it's a figure you need to know," concluded Garrett. "Whatever it is, you are in the dark if you haven't got it."

Machinery inventory: Garret and Mark Browne

	Year of manufacture
Class Lexion 550	2008
Amazone Trailed spreader	2011
JCB 531-70	2011
Class Lexion 440	2000
Jd 6920S 4500hrs	2004
JD 6910 9000hrs	2000
JD 6610 11000hrs	1998
JD 3140 11000hrs	1985
JD 2140	1981
JCB 527-67	1995
Scania 124 Truck	1998
Fraser chaser bin 15t	2004
Vaderstad drill 4m	2001
Lemken Cult 4m	2000
Hardi Comander Air 28m	2004
Vaderstad Carrier 5m	2009
Two KV 4F ploughs	1999&1998
Vaderstad Roller 6.2m	2003
Lorry grain trailer on Air	2001
Lorry flat trailer on Air	2002
Redrock Grain trailer 20ft	2000
Redrock Grain trailer 18ft	1997
Delaney Grain trailer 20ft	1998
Toyota Land crusier	2000
Ifor williams trailer	2005
Diesel bowser	2008
Lime spreader Bredal	2000

Note: A John Deere 7920 (2004 4800hrs 200HP) does the majority of cultivating. This is part of a machinery sharing system with Padraig Kehoe from the Ballagh, Enniscorthy.

How does your forest grow?

Kevin O'Connell, Teagasc Forestry Development Officer, Ballyhaise, Co Cavan, takes a look at forestry fundamentals.

If you are considering a long-term investment like forestry, it is worth considering every angle. Take the decision to plant, for example. How is that decision made?

Don't base your decision solely on the amount of premium payments available for a particular species. The potential value of the crop itself is key. A well-managed Sitka spruce crop at yield class 24m³/ha/year could have an annual equivalent value (AVE) of €566/ha.

Species selection is important; some sites are suitable for growing a good conifer crop and are marginal for broadleaves. However, there are cases where broadleaves, or slower-growing conifers, are planted because of the initial higher premium.

Fast forward 15 to 18 years and the faster-growing conifer is ready for first thinning and is generating income. The slower conifers/broadleaves are not.

I have often visited an owner at first thinning time to hear 'if only I had planted it all with Sitka'. However, broadleaves have a higher biodiversity value, also worth considering. Always consult a qualified forester prior to planting.

Familiarise yourself with the needs of the individual tree species, e.g. their nutrient requirements, their light requirements, their rooting and branching habits, their speed of growth, etc.

Think also about how to manage the trees from the time they are planted until they are felled. What are the best management techniques to adopt to produce a sustainable crop of timber?

The Forest Service has produced excellent leaflets on the silvicultural characteristics of tree species, which are available to download from the Forest Service website: www.agriculture.gov.ie/forestry

Planting density

In general, our forests are plantation forests, comprised mainly of exotic conifer species, the majority of which come from the west coast of North America.

Most broadleaf trees planted are native species like oak, alder and birch (ash can no longer be planted because of the ash die back disease). Exotic species like beech and sycamore are also planted.

The majority of our forest plantations, broadleaves as well as conifers, are monocultures, comprised of one species. At establishment, trees are planted at a close spacing, usually 2.0m x 2.0m apart for conifers, to give a stocking of 2,500 trees per hectare. Broadleaf trees are planted even closer together.

Why plant so many trees? Well, some of these trees will die of natural causes (e.g. frost damage, poor plant handling, weed competition, suppression, etc.) so it is important to have enough trees to reach maturity.

Also, by planting trees close together, their 'taper' is reduced, producing a more cylindrical log. There is more recovery of sawn timber from the logs when they go for processing

In short

The forest area in Ireland is over 750,000ha, 11% of the total land area. There are approximately 15,500 private forest owners accounting for 47% of this total.

The average forest parcel size is 10ha. By 2020, estimates predict there will be over 820,000ha of forest cover representing 12% of the total land area.

in the sawmill. Closer spacing also results in smaller branch size and natural pruning, smaller knots and cleaner timber.

Thinning

Another reason for planting so many trees is that there are more to remove when thinning starts. Thinning is a vital operation. The normal practice is to remove some of the trees (that is to say a proportion of the standing volume) at intervals over a period of years.

This provides more growing space, less competition, reduces the risk of diseases/pests, ensures a reasonably equal distribution of final crop trees throughout the area and, importantly, gives an intermediate financial return. It is important to carry out thinning at the right time. Delaying the operation can result in windblow. Plan early for thinning and have everything in place to start the operation at the appropriate time.

First thinning in conifers takes place a few years after canopy closure, usually when a top height of approximately 10 metres is reached. First thinning in broadleaves takes place at a top height of about 12 metres.

Approximately 90% of the trees are removed as thinnings over the rotation or about 50% of the volume. So if 2,500 Sitka spruce are planted at day one, there will be only about 400 stems per ha at clearfell, the rest will be removed as thinnings.

First thinnings will not yield a bonanza. If an owner can get their infrastructure in place, roads, loading bays, turntables and break even, they are doing very well. It is in the subsequent thinnings where money can be made, as there is no major expenditure.

Taking the species, access and location of the stand into account if, as an owner, you are being offered 'big money' for your first thinnings, I would strongly advise you to get an approved forester to carry out thinning control as the thinning operation is taking place. Remember, you are only removing the smaller diameter trees at first thinning.

Final harvest

How long should the trees be left grow before they are clear felled? Some people are under the impression that trees, particularly conifers, can be felled after 20 years, as soon as the premium payments run out.

This is untrue I'm afraid. Trees are really only in their prime at about year 20 and there is a lot more growth needed before they are at a size to make sawlog – to 35 years for fast-growing conifers to over 80 years for most broadleaves. Remember, the big money is in the saw log.

All's not lost, of course, because the trees will still need to be thinned and the thinning will be carried out on a three to five year cycle, depending on the species and the growth rates. In each subsequent thinning, larger size trees are removed, resulting in more money for the grower.

The logistics of forest operation like establishment, road construction and harvesting might seem daunting but they shouldn't be.

Teagasc Forestry Development Department provides free, independent and objective advice on all your forestry queries. Our website www.teagasc.ie/forestry is full of forestry facts and information.

Why not sign up to our forestry e-news magazine and get information forwarded to you regularly. There are 26 forest owners group in the country – why not join one and share information and experiences with other forest owners.

A new way to control weeds: eat them!

Not all species, of course, but some weeds can be highly nutritious.

Eileen Murphy
Teagasc College at the National Botanic Gardens

Foodies encourage us to forage for wild food and we don't need to go far to find some useful plants. Nettles are probably the best known edible plants among the common weeds.

By now, of course, they have long gone to seed but in spring be ready to harvest young nettle leaves. They are rich in iron and vitamins and can be used with onion and potato to make nettle soup; they make a valuable addition to a quiche or vegetable tart.

Many other leafy weeds can still be picked and added to salads. Chickweed – *Stellaria media* – is edible and soft growth can be eaten raw mixed with other salad leaves. Be careful not to use Mouse Ear Chickweed (*Cerastium holosteoides*) which is not edible.

Cleavers (*Galium aparine*) can be used in the same way and, as it is one of the autumn germinating weeds that tend to become a complete nuisance by springtime, harvesting delivers a double benefit.

Young fat hen (*Chenopodium album*) can also be used in salads or, like chickweed, be cooked by wilting in gentle heat for a short time with a little butter. It has been rediscovered in recent times as a substitute for spinach but in fact it contains more protein and iron.

It was the introduction of cultivated spinach from south west Asia in the 16th century that led to the decline in its use. The leaves are not really worth harvesting at this time of year but the seeds are edible. They resemble buckwheat and if you favour adding some extra protein to your breakfast just sprinkle fat hen seeds onto cereal, porridge or brown bread mix.

Common sorrel (*Rumex acetosa*) is abundant in acid grassland. It is refreshing to eat raw or added to salads. A few leaves can be added to a plain omelette and it is also used as the basis of a classic French soup.

Eat the invader

Plants which pose a threat to biodiversity have become an important focus of nature conservation in recent times. Rhodendron, Himalayan Balsam and Japanese Knotweed are now subject to legislation under EC Birds and Habitats Regulation. Also included in the list is Sea buckthorn (*Hippophae rhamnoides*), a thorny shrub with orange berries.

Sea buckthorn has been planted for shelter and hedging in coastal areas around Ireland. It is a very successful windbreak but now poses a threat to the sandy areas that it has colonised because it outcompetes everything else in these sites and is proving difficult to control.

The sea buckthorn fruit is prized as a medicinal food in eastern Europe and Asia and has been identified as the premier berry for antioxidants and health promoting chemicals. So beneficial is the oil extracted from its pulp and seeds that trials are in place in Canada to explore the optimum conditions for extraction of this oil as a commercial functional food product. Since 1982, over 300,000 hectares have been planted in China.

The orange fruits are ready to pick in late autumn. They can be used for jams, jellies, sorbets or just juiced. The oil in the seeds is the most valuable part of the plant. It was used for treatment of eczema and even for repair of skin damage following Chernobyl. It contains plant sterols used for cardiovascular disease prevention, restores the immune system and has anticancer applications.

Weeds are successful because they have an advantage over other plants in using the resources available to them. By consuming some of these weeds we can affect the balance between the weeds and other, more desirable, plants while gaining some valuable health benefits.

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