



# Today's Farm

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



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# I DO A RISKY JOB.

REGULARLY FACING FIFTEEN ELITE ATHLETES WANTING TO PUT ME ON THE GROUND. RISKY, YES, BUT NOTHING COMPARED TO WHAT I FACE ON THE FARM. THE MOST DANGEROUS WORKPLACE IN THE COUNTRY. WHAT IF I GET OVERFAMILIAR WITH MY ROUTINE AND MISS SOMETHING? WHAT IF I'M TOO BUSY OR TOO TIRED TO MAKE THE RIGHT CHECKS ON MACHINERY? I FEEL I CAN TAKE CARE OF MYSELF BUT WHAT ABOUT THE CHILDREN OR OLDER PEOPLE AROUND OUR BUSINESSES? I AM MAKING POSITIVE CHANGES TO MY GAME PLAN TO MAKE SURE I'M ALWAYS SAFE ON THE FARM.



Sean O'Brien,  
Farmer & International  
Rugby Player.



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**Cover** | Teagasc tillage adviser Conor Dobson, Gerald Potterton, a tillage farmer near Trim, Paraic Fay of CLW planners and Luke Bogue, a Cavan pig producer. Luke sends pig manure for spreading on Gerald's tillage fields. Read more about the CANtogether project on page 26.

COMMENT



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

What's your strategy?

As an editor for nearly 25 years I like a clear separation between the advertising and the stories in a magazine. In the story about a business strategy course which Teagasc and the Michael Smurfit Business School are offering (see P20) I could be accused of mixing the two.

In the article, I describe the experience and views of the 21 farmers who participated in this challenging course last year. The participants came from Tipperary, Cork, Clare, Waterford, Kildare, Louth, Monaghan and Meath and the group contained dairy, beef, tillage and pig farmers. So you could say we had a representative sample!

The key point is that in an anonymous survey, every single farmer said that their business would benefit from their participation.

This course will run again this autumn and I am happy to plug it, because I believe that having a well-formulated strategy has never been more important for farmers of all types.

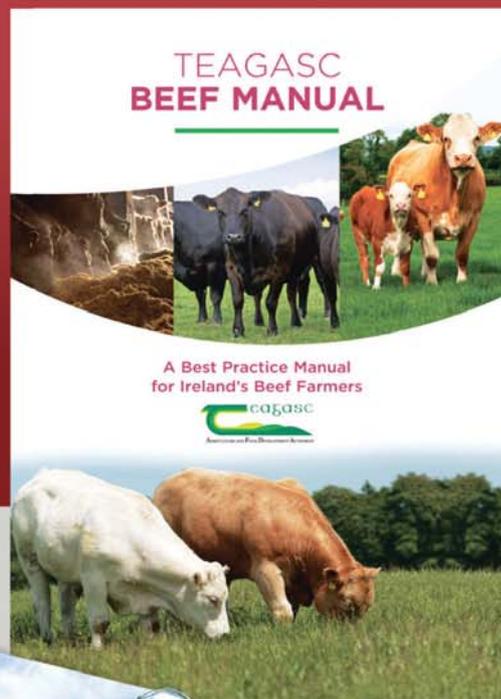
Cén straitéis atá agat?

Agus mé mar eagarthóir le nach mór 25 bliana, is maith liom deighilt ghlan a dhéanamh idir na fógraí agus na scéalta in irisleabhar. Sa scéal mar gheall ar chúrsa Straitéis Ghnó atá á thairiscint ag Teagasc agus Scoil Ghnó Michael Smurfit (féach leathanach 20), d'fhéadfaí a chur i mo leith go bhfuil an dá rud á meascadh agam.

Déanaim cur síos san alt ar thairtí agus ar thuairimí an 21 fheirmeoir a bhí páirteach sa chúrsa dúshlánach seo anuraidh. Tháinig an dream a bhí páirteach as Tiobraid Árann, Corcaigh, Port Láirge, Cill Dara, Lú, Muineachán agus An Mhí; bhí feirmeoirí déiríochta, mairteola, curáíochta agus muc sa ghrúpa. Mar sin d'fhéadfaí a rá go raibh sampla ionadaíoch againn!

Is é an príomhphointe ná go ndúirt gach feirmeoir i suirbhé gan ainmneacha luaite go mbainfeadh an gnó acu tairbhe as iad a bheith páirteach sa chúrsa. Beidh an cúrsa ar siúl arís an fómhár seo chugainn agus táim sásta é a mholadh toisc go gcreidim nach raibh sé riamh chomh tábhachtach is atá sé anois go mbeadh straitéis dea-bheartaithe ag feirmeoirí de gach sórt.

# TEAGASC BEEF MANUAL



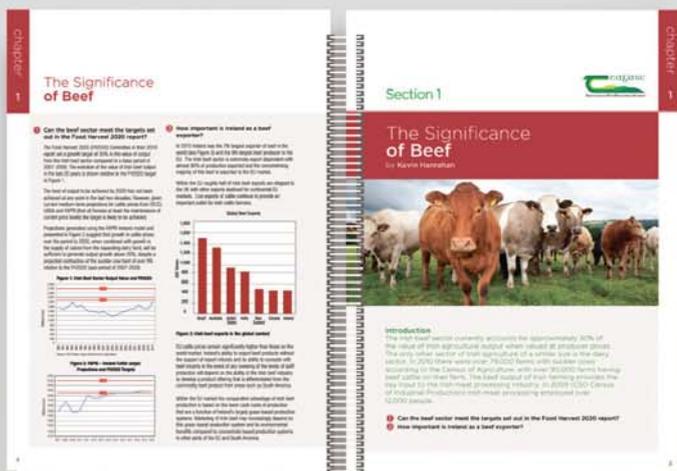
**A comprehensive source of practical advice for any beef business.**

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

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

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

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



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



A national beef open day takes place on 14 July on the farm of Donie Ahern, Herbertstown, Co Limerick.

### TEAGASC NATIONAL RURAL DEVELOPMENT CONFERENCE

This year's Teagasc National Rural Development Conference takes place on Wednesday 8 July at the Castle Troey Park Hotel, Limerick, and is themed around innovation to enterprise, supporting the future development of rural Irish businesses.

The morning session of the conference will draw on the experiences of past participants in the Rural Innovation Awards in addition to insights from successful entrepreneurs. The afternoon session will bring a focus on the enterprise supports necessary for rural businesses to develop or expand an enterprise.

Speakers will include: Pat McDonagh, Supermac's; Prof Bill Ashton, University of Guelph; John Francis Concannon, JFC; and Paul McCarthy, Full Health Medical; with an open discussion chaired by Mairead Lavery, *Irish Farmers Journal*.

For more information, please visit [www.teagasc.ie/ruraldev](http://www.teagasc.ie/ruraldev)

### BETTER FARM BEEF WALK

A national beef open day takes place on Tuesday 14 July on the farm of Donie Ahern, Herbertstown, Co Limerick. This BETTER farm event will demonstrate the strides and improvements Donie and his family have made since joining the BETTER farm

beef programme in 2012.

The BETTER farm team, along with local Teagasc staff and specialists, will demonstrate what steps Donie has taken to increase his profitability.

Donie himself will outline the challenges he faced when taking these steps and how he overcame them.

Other farmers, who are participants in the BETTER farm beef programme, will also be present on the day and will speak about their experiences and problem-solving in relation to improving their grassland management, breeding and financial performance.

The tours kick off at 2pm and 6pm.

### TEAGASC DAIRY SEMINAR

The sixth seminar in the Teagasc ICOS Dairy Expansion Seminars Series – "Collaborative Farming Options for Dairy Farming" – will be held at 2pm on Wednesday 15 July in the Killeslin Hotel, Portlaoise, Co Laois. The purpose of this seminar is to increase awareness of three collaborative farming options available to Irish dairy farmers. Each of the options can potentially increase the availability of land for dairy farming and benefit both the land owner and the dairy farmer.



A review of collaborative farming options currently available to Irish dairy farmers will be discussed, along with the Department of Agriculture, Food & the Marine perspective on collaborative farming arrangements. There will be three workshops: share farming for dairy farmers; partnerships and contract heifer-rearing.

### TEAGASC KILDALTON COURSES

Teagasc Kildalton College is taking applications for full-time and part-time QQI Level 5 and Level 6 courses in horticulture. Potential students have the opportunity to study individual modules, such as plant propagation, plant identification, nursery production, landscape design and construction, market gardening, garden centre operations or turfgrass on a part-time basis or work towards completing a Level 5 or 6 horticulture qualification over time. Each module passed will be certified as a stand-alone module, which allows workers to gain a qualification while still in employment. The Level 6 course meets the requirements of the green certificate. For further information on QQI Level 5 and 6 full-time and part-time courses, please contact Teagasc Kildalton College at 051-644400 or visit our website <http://www.teagasc.ie/training/forms> for an application form. For other Teagasc courses, please consult the Teagasc website or contact Teagasc colleges directly.

# Milking skills – top tips

It pays to check you are still doing the basics right

**Pádraig O'Connor**  
Teagasc, Animal and Grassland,  
Research & Innovation Programme



Cows are creatures of habit and the more you can make each day exactly the same as the previous one, the more relaxed and productive they'll be

It does no harm to recap the main points relating to milking routine once in a while to make sure that you are not missing anything really obvious. Getting your milking routine right is good for you, your cows and your business. The benefits of are threefold:

- Maximum product quality.
- Safety for milker and cow.
- Efficient use of time spent milking.

Routine is key. Cows are creatures of habit and the more you can make each day exactly the same as the previous one, the more relaxed and productive they'll be.

## Preparing for milking

A proper milking routine requires clean milking garments, i.e. disposable nitrile gloves and a clean parlour apron/suit. This helps prevent the spread of mastitis and ensures that the operator is clean and safe from any discharges. Rinse and disinfect gloves regularly during the milking.

The cow's teats should be clean and dry prior to milking. If dirty, they must be washed and dried. A dry wipe with paper towel is sufficient for clean teats. All teats should be fore-milked approximately 90 seconds

before the cluster is attached.

Where pre-spraying is practised, allow 30 to 60 seconds contact time to elapse before drying the teats and attaching the cluster. This allows time for the bacteria to be killed.

## Preparing cows in batches and maximising milk let-down

Preparation of cows should take place in groups of four to six starting from the front of the row and working downwards towards the end. Preparation of each cow takes place first, followed by cluster attachment to the same group in the same sequence.

This routine is efficient because an interval of approximately 90 seconds will elapse between preparation and cluster attachment, ensuring that optimal milk let-down occurs. It also reduces the amount of walking up and down the parlour – one study showed this could be by a factor of 2½ times.

## Attaching clusters

When attaching the cluster, keep the pulse and milk tubes on the cow exit side of you, ensuring that they are not in the way when moving to the next cluster.

Hold the cluster with the hand closest to the cow exit side (usually the hand nearest to the dairy). This means that you will change hands to hold the cluster depending on which side you are attaching the cluster (see Figure 2)

Kink the tail of the liner when attaching to the cow's teat and also guide the teat into the liner with your finger. Attach the liners in a circular motion, starting with the one closest to the thumb of the hand holding the cluster.



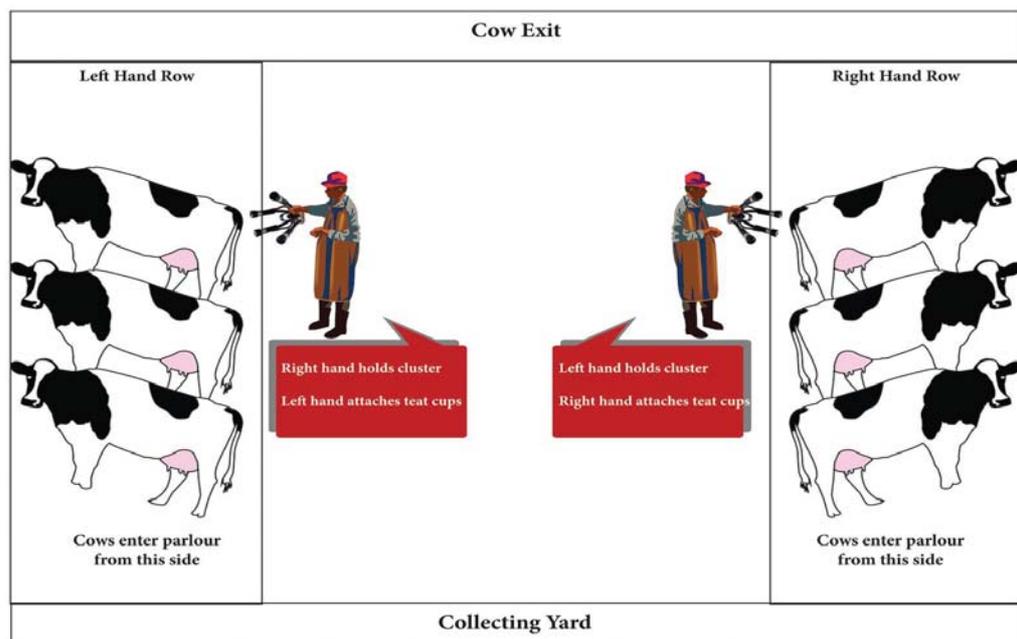
Figure 1 (above):  
Milking in batches.



Continued  
on p8



Figure 2 (right): Milker position when attaching cluster to left-hand and right-hand rows.



## » From page 8

Changing hands will help minimise the risk of repetitive strain injury and means you'll have a better reach when attaching the cluster. Make sure that the cluster hangs on the cow properly.

Good cluster alignment is where the cluster hangs in line with the cow's backbone when applied between the back legs, and at 90° to the backbone when applied in front of the back leg. Correct alignment means all four quarters will be milked out completely.

### Removing clusters

Manual cluster removal should start when a single stream of milk is visible in the claw piece. This minimises the risk of over-milking. Remove the cluster without causing air blasts. Turn off the vacuum by kinking the long milk tube close to the claw piece or using the button on the claw piece and allow the cluster to become limp on the udder (two to three seconds before attempting to remove the unit).

Always ensure that the air bleed hole is not blocked as this may slow down air ingress and therefore cluster removal. Allowing the unit time to become limp on the udder minimises the risk of an air blast occurring when clusters are being removed, which reduces the risk of both mastitis and teat end damage occurring.

The cluster should be detached with the hand that you intend to use to attach it to the next cow. If automatic cluster removers (ACRs) are installed in the parlour, make sure that they are removing the clusters at the proper flow rate.

### Teat disinfection

When a batch of four to six units has been removed, teat spray or dip the batch of cows in the same sequence. Ensure that at least 15ml of the spray or 10ml of the dip is applied evenly to the teats of each cow after milking.

Ideally, this should be done as soon as possible after cluster removal. Cover the entire teat from top to tip. A recommended teat disinfectant list is available at [www.agresearch.teagasc.ie/moorepark/Articles](http://www.agresearch.teagasc.ie/moorepark/Articles).

Aim to get complete coverage of the teat, as this will kill the maximum number of bacteria, and use a disinfectant containing an emollient to improve teat condition.



Pádraig O'Connor (middle) and Pádraig and John Keane, who completed the milking course in 2014.

## FARMER'S VIEW

**Pádraig Keane**  
New entrant dairy farmer  
Kilcormac, Co Offaly

"I can highly recommend the best practice in milking course to other farmers," says Pádraig. "I undertook a similar programme (AgITO national certificate in on-farm milk quality) during my time in New Zealand. Although both courses covered the main topics very well, the one aspect of the Irish programme that I thought put it ahead of the Kiwi equivalent was the teaching of correct cluster attachment.

"During the best practice in milking course, the training technicians showed us how to attach clusters with alternate hands on opposite sides of the parlour to prevent repetitive strain injury.

"I had come across this concept a

number of times in the past, including in New Zealand, but failed to understand it fully. A visual demonstration is so much more powerful than reading it in a book.

"The best practice in milking course is designed to develop your skills as a milker, to ensure that milking is performed effectively and efficiently. The benefits of the programme to a new entrant are obvious. Receiving good advice now could prevent bad habits forming.

"For some existing farmers, much of the course content may seem basic. However, I would still encourage participation, particularly if you don't attach clusters with alternate hands on opposite sides of the parlour.

"I get the feeling from some established operators that they think it is too late to learn this method of milking. However, you may also have felt this way about the EBI or grassland management and look how they have benefited you and your business today."

## Certified milking training

Teagasc, FRS and AHI have developed a certified QQI Level 6 milking course aimed at developing your skills as a milker and to ensure that milkings are conducted to the highest quality standards.

The two-day course is unique, as it brings together the theory elements of

milking and the practical implementation of the theory through on-farm instruction. The tutors for the course have been specifically trained and course content approved by experts in the area of milking best practice.

Full details of the course can be found on [www.frstraining.com/milkingcourse](http://www.frstraining.com/milkingcourse) or by calling 1890-201 000. Visit [www.teagasc.ie](http://www.teagasc.ie) or [www.animalhealthireland.ie](http://www.animalhealthireland.ie) for more.

# TEAGASC MANUAL ON DRAINAGE - and Soil Management



A Best Practice Manual  
for Ireland's Farmers



Price €40,  
or €20 for  
Teagasc  
clients



AVAILABLE AT TEAGASC OFFICES

# Limited platform, but

Four cows per hectare, a modest 760kg meals fed per cow and just shy of 1,800kg milk solids/ha on the milking platform places Tipperary dairy farmer Jim Delahunty among the top spring milk dairy farmers

## George Ramsbottom

Dairy specialist, Teagasc Animal and Grassland Research & Innovation Programme

**R**eaders of this magazine will remember Jim's previous success in competitions such as Protein 350 and EBI €100. Over the past decade, herd size has more than doubled from a modest 40 cows in the early 2000s to 120 cows today.

### Efficiency before expansion

Efficiency before expansion underpins the exceptional track record that Jim has set for others to follow. He's fortunate to own dry, free-draining land, but like a lot of other dairy farms, the holding is split, almost equally into a 30ha dairy platform and a 29ha outfarm located around 2km away.

As Jim continually purchased quota as it became available from his co-op Arrabawn over the past decade, he tackled the how to expand profitably dilemma, which many other dairy farmers face now that quotas are gone. In this article, I'm going to focus on farming philosophy, grassland and genetics. A copy of the booklet from the open day held on the farm on 24 June is available on the Teagasc website.

### Management tools used by Jim

Four recording systems are used on the farm:

- eProfit Monitor to benchmark financial performance against others.
- Cashflow monitoring to budget costs and receipts.
- The PastureBase grass management programme.



**Table 1:** Dairy herd financial performance (2014)

	<b>Cent/litre</b>	<b>€/cow</b>	<b>€/ha</b>
Gross output	41.12	2,419	6,577
Variable costs	11.70	688	1,871
Including: Feed	3.95	232	631
Fertiliser	1.61	95	257
Common fixed costs	7.06	415	1,129
Common costs	18.76	1,103	3,000
Common profit	22.36	1,315	3,577

- The EBI system to improve herd genetic merit.

### Farming philosophy

When it came to the question of expansion on the Delahunty farm, the order was efficiency first, expansion second.

The data in Table 1 shows the financial performance of the dairy enterprise on the Delahunty farm in 2014. Average milk yield per cow was 5,882 litres per cow (4.33% fat and 3.50% protein – 475kg milk solids), while stocking rate was 2.72 LU/ha on the

overall farm (3.77 LU/ha on the milking platform).

As dairying proved by far the most profitable enterprise, Jim made the decision in the mid-2000s to change from running a mixed dairy cow farm, with all cattle and replacement heifers reared, to a more intensively stocked dairy farm, with replacement heifers reared for his own use and the surplus sold in-calf.

The changes in the average numbers of cows, replacement heifers and dry stock on the farm are presented in Figure 1.

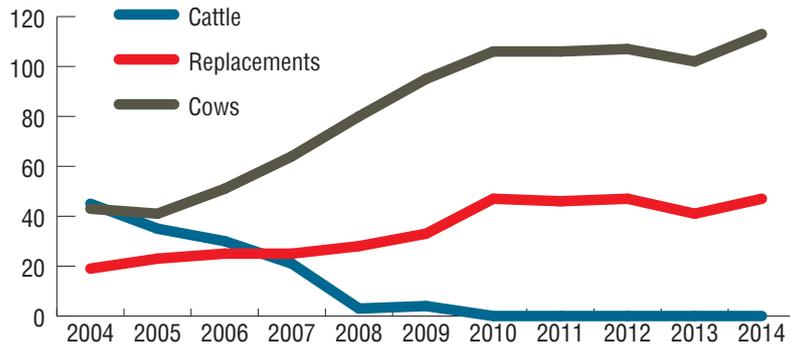
# huge performance



Teagasc dairy advisor Michael Hogan and Jim Delahunty.

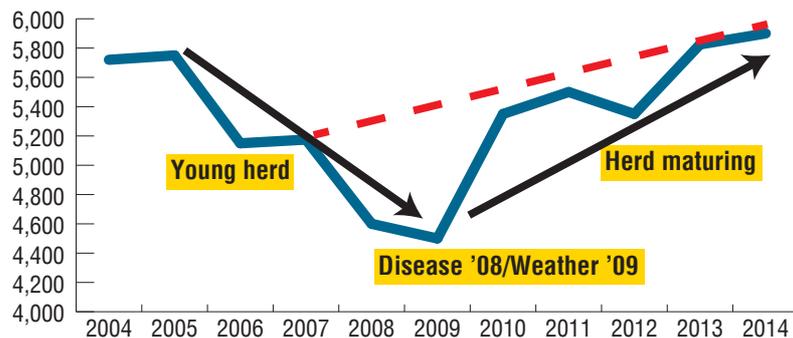
**Figure 1**

Changes in average number of cows, replacement heifers and dry stock



**Figure 2**

Average milk yield



**Table 2:** Expansion funds (€,'000's)

	06-08	09-11	12-14	Total
Quota	29	32	-	61
Buildings	29	90	122	241
Machinery	16	28	64	108
<b>Total</b>	<b>74</b>	<b>150</b>	<b>186</b>	<b>410</b>

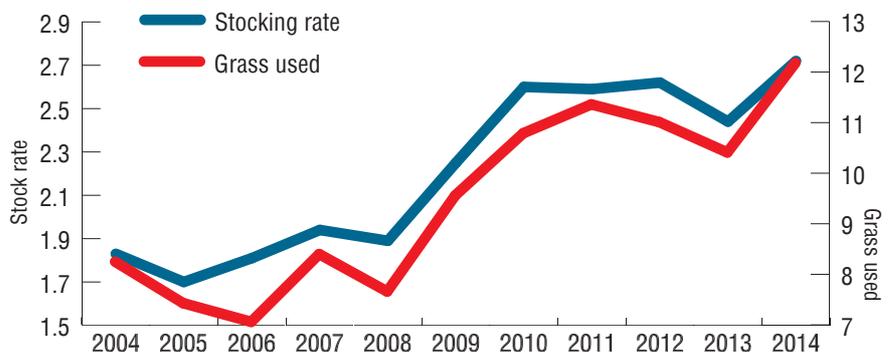
The expansion that took place has not come for free. The money invested in expanding the farm is detailed in Table 2.

The investment has totalled approximately €5,000 per extra cow (€410,000/80 cows). This is before the opportunity cost of the extra cow is included, which at a conservative €1,400/head means that the total cost of expansion is €6,400 per extra cow on the farm. The majority of the investment took place from 2010 onwards, when there were over 100 cows on the farm.

Expansion resulted in an increase in the number of younger cows in the herd as more heifers were milked.

**Figure 3**

Overall farm stocking rate (LU/ha) and grass used (t DM/ha)



Continued on p12

Younger cows are lower yielding than more mature cows, so average milk yield declined during the early years of the expansion phase on the farm.

Despite operating a closed herd, an outbreak of salmonella affected milk yield in 2008. In 2009, wet weather had a huge effect on milk yield.

Milk yields have increased in recent years as the herd size has stabilised and the herd matured. The yields obtained in 2014 are based on an average lactation number of 6.5 – 25% of the herd was in its seventh or higher lactation.

Excellent fertility management (including top genetics for fertility) underpin such herd maturity. Details of the milk yield per cow are presented in Figure 2 (page 11).

### Grassland management

Stocking rate has increased on the farm over the past 10 years. Critically, so also has grass production as shown in Figure 3 (page 11).

- The soils on both the milking platform and outfarm are practically all index 3 or 4 for P and K.
- Soil pH is at or above 6.3.
- In 2014, an average of 235kg N/ha (188 units N/ac) were applied.
- The total chemical P allowance for the farm is 250kg P (10 tonnes Pasture sward 27:2.5:5)
- The slurry is all spread on the silage cutting area of the farm. The soiled water from the milking parlour and collecting yard area is spread periodically by a contractor on grazed cow paddocks.
- Between 5% and 10% of the farm is reseeded annually with the lowest yielding paddocks generally selected for reseeded (in April/May because of the high stocking rate).

Figure 4 shows the grass growth on the 18 paddocks on the milking platform. Despite the high average yield (13.5t DM/ha), there is still considerable variation in the quantity of grass grown between paddocks on the milking platform. The top third yielding paddocks grew over 2.5t DM/ha more grass than the bottom third of paddocks in 2014. The paddocks in the lowest third are targeted for reseeded over the next number of years.

### Breeding and genetics

Calving interval on the Delahunty farm was 370 days for the 2014-2015 period. This figure is based on a 12-week calving period, with approximately 30 cows sold either in-calf or empty.

- The breeding season begins three weeks before insemination starts, with all cows tail-painted and heats recorded.
- AI is used on all cows and heifers for the duration of the breeding season.



Animal Group	Num of Cows	Milk Kg Fat Prot	% %	Surv% CI Days	Milk % Cont	Fertility % Cont	Calv % Cont	Beef % Cont	Maint % Cont	Mgmt % Cont	Health % Cont	EBI €
<b>Cows with EBI</b>	<b>120</b>	<b>41</b>			<b>€ 49</b>	<b>€ 137</b>	<b>€ 33</b>	<b>€ -8</b>	<b>€ 8</b>	<b>€ 1</b>	<b>€ 0</b>	
Missing EBI*	0	9.4	0.15	3.2	20.6%	58.1%	14.2%	-3.4%	3.3%	0.3%	0%	€ 220
Total Cows	120	6.4	0.1	-7.9								
<b>15 Calves</b>	<b>50</b>	<b>140</b>			<b>€ 73</b>	<b>€ 150</b>	<b>€ 36</b>	<b>€ -11</b>	<b>€ 8</b>	<b>€ 2</b>	<b>€ -1</b>	
Missing EBI*	0	13.4	0.16	4.1	25.9%	53.4%	12.8%	-4%	2.7%	0.7%	-0.5%	€ 256
Total Calves	50	10.8	0.12	-8.2								
<b>14 Calves</b>	<b>49</b>	<b>100</b>			<b>€ 61</b>	<b>€ 145</b>	<b>€ 40</b>	<b>€ -12</b>	<b>€ 10</b>	<b>€ 2</b>	<b>€ -2</b>	
Missing EBI*	0	11.9	0.15	3.9	22.5%	53.5%	14.8%	-4.3%	3.6%	0.6%	-0.7%	€ 243
Total Calves	49	8.6	0.11	-7.8								

• All maiden heifers are grazed on the outfarm for the whole of the grazing season.

• Friesian sexed semen was used for the first three weeks, with conventional AI used to 10 June; then Aberdeen Angus AI was used.

• This year, all 49 heifers were bred in 22 days; over 90% of the cows were submitted in the first three weeks.

• This year, 10 mainly late-calving cows received a CIRD in mid-May to induce heats. Last year, a similar number were CIDR-ed and had a 50% conception rate to fixed time AI.

• Sexed semen will not be used again on the farm. The cow non-return rate this year was approximately 45% – not good enough for a high fertility

herd. The EBI and milk and fertility sub indexes for the Delahunty cows and replacement heifers are shown above.

### Economic reward

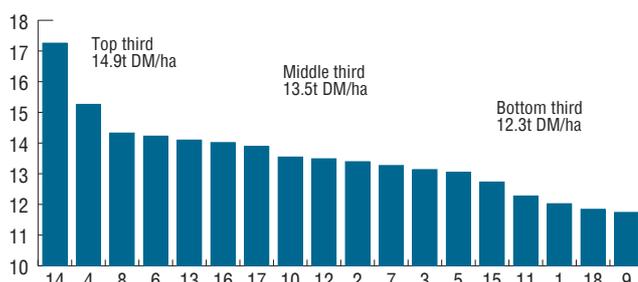
The reward for expanding and intensifying milk production on the farm is shown in Figure 5.

Relative to 2004, the farm profit has increased fourfold. This is because expansion delivers greater profit on efficient farms. Also of importance is the close association between milk price and farm profit. As farms intensify and specialise in milk production, profit increases and milk price volatility has a greater impact on overall farm profitability.



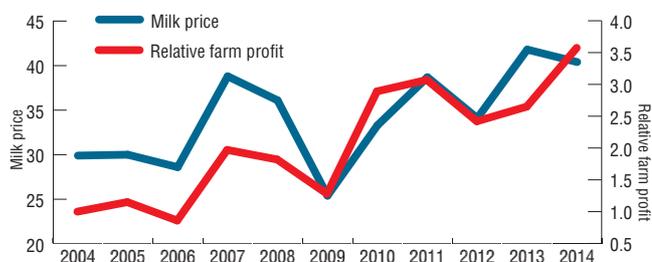
**Figure 4**

Grass grown (t DM/ha) on 18 paddocks in 2014



**Figure 5**

Milk price and relative farm profit



## FUTURE PLANS

Asked about his future intentions, Jim said that there is scope for further improvements on the farm, particularly in growing and using more grass. "I'm not interested in zero grazing the outfarm and bringing it home to feed more cows. It's difficult enough to manage one area for them without starting a second. I'd make baled silage instead. Anyway, during dry weather, I wouldn't have grass on either the milking platform or the outfarm if I went zero grazing. Now that quotas are gone, I'll fine tune my system a little more and see how things are going for a few years before making any decisions about where to next," he concluded.



### Thinking Expansion, Think



**DAIRYMASTER**



- ✓ Milk each cow up to 1 minute faster
- ✓ Excellent milk out
- ✓ Typically 5% more yield

- ✓ Natural milking
- ✓ Low liner slip
- ✓ Better teat end condition

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*Brian Rushe, Carbury, Co. Kildare.*



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# A new Dawn for Newford in Athenry

This demo farm aims to boost technology uptake by beef producers



**Adam Woods**  
Beef Systems Research,  
Teagasc Animal and Grassland  
Research & Innovation Programme

The latest, 2013, profit monitor analysis showed that the average suckler farm had a net profit of €15/ha, excluding premia, compared with €352/ha, excluding premia, on the top one-third of farms. There are many reasons for this but a key one is that the level of technology uptake in the drystock sector is relatively low.

To encourage technology uptake, Teagasc and Dawn Meats have established a new standalone suckler herd at Athenry, Co Galway. The herd, which will be known as the Newford Herd, will be run on a fully commercial basis and will demonstrate the potential of a moderately large suckler beef farm to generate a viable family farm income when operated to the highest level of technical efficiency and best practice.

Economic, environmental, animal welfare sustainability and occupational health and safety will be central principles of the project and the management of the farm. This project is also supported by McDonald's global sustainability team and it demonstrates the company's ongoing commitment to Verified Sustainable Beef Production.

The idea is similar to that of the Greenfield dairy farm in Kilkenny. World-best practice in suckler beef farm systems will be developed and demonstrated. New benchmarks for achievable performance will be set for profitable, low-cost beef production.

## Background

In 2012, a key recommendation in the Food Harvest 2020 report was for Teagasc to set up a standalone demonstration herd in the west of Ireland. The farm should act as a shop window for the technologies that drive profitability in a suckler herd.

The model of the Newford Herd is that Dawn Meats operates the farm, owns the animals and employs the labour, with Teagasc providing expert advice. Teagasc has full access to all data for analysis and dissemination and will ensure that this is disseminated widely.

Dawn Meats has employed a full-time farm manager, Matthew Murphy, who has full responsibility for the day-to-day running of the herd. I will lead the Teagasc involvement in the herd and Sarah Haire, group agriculture manager with Dawn Meats, will lead the Dawn Meats involvement.

## The farm

The farm is located at Newford, Athenry, on a standalone unit close to the Teagasc Mellows Campus. The farm is 55.8ha (138 acres), split into three blocks. Much of the land can be described as free-draining with about 8ha (20 acres) requiring drainage.

A total of 10ha (25 acres) of the farm were reseeded in October 2014 and a further 9ha (17.5 acres) were reseeded this spring/summer. We hope to reseed a further 10ha in the autumn and 10% of the land area per year thereafter. Single stands of top pasture profit index (PPI) grass varieties – Glenveagh, Abergain, Aberchoice and Abergreen – have been sown and their performance will be measured



ABOVE: Adam Woods with the Newford Herd, established at Athenry, Co Galway.



Teagasc and Dawn Meats have established a standalone suckler herd at Athenry, Co Galway

## CONTACT

Farmers or others wishing to visit the Newford Herd should contact Adam Woods on 087-1218734 or email adam.woods@teagasc.ie



## FARM FACTS

- 55.8ha.
- 100 cows.
- Stocking rate: 2.7 LU/ha.
- System: Steer and heifer finishing 20 to 24 months.
- Cow type: AA and HE/Holstein Friesian cross.
- Terminal sires: Limousin, Charolais, Simmental.
- Replacements sourced from the dairy herd.
- One labour unit management.

through the project.

Soil fertility is quite good. The farm averages a pH of 6.14; 97% of the farm is at Index 3 and Index 4 for phosphorus and 51% of the farm is Index 3 or 4 for potassium. Paddocks low in K have been earmarked for slurry this spring and paddocks low in pH are being addressed at reseeding time with three tonnes of lime/acre.

Cattle will be housed in slatted accommodation during the winter with straw-bedded loose housing being used to house some of the weanlings. Sheds have been converted this spring to calving pens and loose pens for cows after calving

### The farm system

The farming system will be a suckler-to-beef steer and heifer system, with steers finished at 20 to 24 months and heifers finished at 20 to 22 months. The aim is for heifers to be finished at 320kg carcass weight and steers at 350kg. The farm will be stocked quite highly at 200kg organic nitrogen/ha or 2.7LU/ha. The system is projected to deliver a gross margin in excess of €1,000/ha.

Cow type is an early maturing (Angus/Hereford) cross from the dairy herd. High terminal index bulls will sire progeny to be slaughtered. Replacements will continue to come from the dairy herd for the duration of the project.

The option of replacement heifers being purchased as calves, contract-

reared and then brought back on to the farm close to calving at 24 months is currently being looked at. While some may question this replacement strategy and cow type, it is important to be aware of the expansion in the dairy herd. This type of replacement will be readily available to suckler farmers and the farm will demonstrate its suitability or non-suitability for a suckler-to-beef system.

This will allow the farm to generate maximum output/ha and keep the system simple with a minimum of stock groups grazing on the farm.

In 2016, calving will take place from 20 February to 30 April – 10 weeks. As the farm is managed by one labour unit, calving difficulty is important when selecting terminal sires and a limit of less than 6% calving difficulty was set. Other criteria for AI sires were five stars on the terminal index, greater than 25kg carcass weight and higher than 40% reliability.

### What has been happening so far?

It's been a busy spring, with cows moving on to the farm in mid-January and calving starting in mid-February. In March, new drinkers and a water system were installed to service paddocks and we also put in place new paddock fencing, a mixture of single-strand electric along paddocks and double-strand electric along roadways.

Sheds were converted into calving pens and there are currently nine

calving pens in place for calving in spring 2016. Other shed conversion building works will take place over the summer before the winter housing period. The herd has settled in well, with breeding starting on 7 May and scheduled to end on 17 July. Reseeding has been completed on 9ha and first-cut silage was made on 3 June. Grass is being measured weekly and, to date, 90 round bales have been taken out as surplus grass in the past two months. Up to 17 June, the best paddock in Newford had grown 9t DM/ha and the worst growing paddock had grown 3.9t DM/ha, showing the differences already between paddocks on the same farm.

### Data collection and reporting

The farm will operate in a completely transparent manner, with all measurements and data available to visiting groups, other interested parties and the farming public.

In the coming weeks, a new website will be launched at [www.newford-sucklerbeef.ie](http://www.newford-sucklerbeef.ie) and weekly farm notes will be uploaded, so that farmers can keep track of progress and management changes on the farm.

The farm is also open to the public for pre-arranged farm tours and open days will be arranged in the near future.

The farm has already hosted a number of groups of advisers and farmers this spring and it is envisaged that more will visit in the coming months.

# Options for suckler calf-to-beef systems

This analysis confirms the importance of good management of reproduction, soil fertility and grass utilisation

**Paul Crosson and David Kenny**  
Teagasc Animal and Grassland Research & Innovation Programme, Grange

**G**rassland and animal productivity are key to net returns from all cattle systems. The cost of producing grazed grass ranges from 33% to 50% of the cost of grass silage and 20% to 25% of the cost of concentrate feed rations, depending on farm circumstances and prices.

The productivity of many pastures is low, however. Average herbage utilisation on beef farms is less than half that achieved on the most efficient farms and only 10% of soil samples sent for laboratory analysis are at index 3 for phosphorus and potassium. Many swards need liming. Less than 2% of pastures are reseeded annually, resulting in low proportions of perennial ryegrass.

Soil nutrient plans and an increase in the proportion of perennial ryegrass in swards are key components in increasing output and profitability.

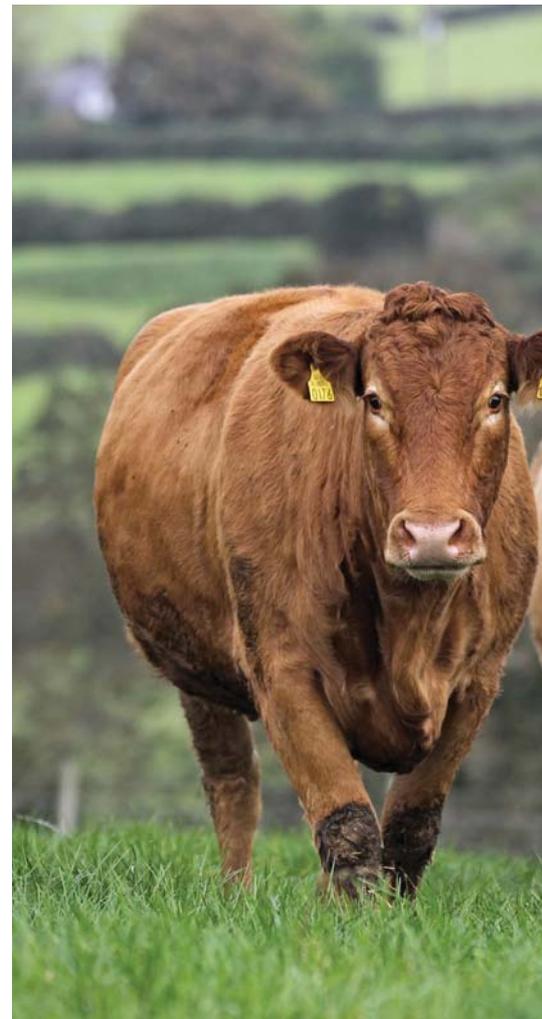
The annual cost of keeping suckler cows ranges from €550 to €700 per head. This range reflects differences in feed, replacement heifer and breeding costs. It is important for each

cow to produce a healthy and heavy weanling annually so that suckler cow costs per calf or kilo of weight weaned is minimised.

Currently average animal productivity is low, with age at first calving 32 months; cows requiring more than 13 months between successive calvings. This results in annual calving rates of just 0.8 calves per cow. The three most important factors controlling reproductive performance are level of management, herd health and genetics.

Having assessed grassland and animal productivity, farmers must consider the most appropriate production system for their farm. This involves decisions around calving date (spring/autumn), trading system (when/what to buy/sell) and stocking intensity.

Autumn-calving systems incur much greater costs than spring-calving systems and require higher income to cover these additional costs. For this reason, the majority of suckler cows in Ireland calve in spring with 75% of



calving between January and May.

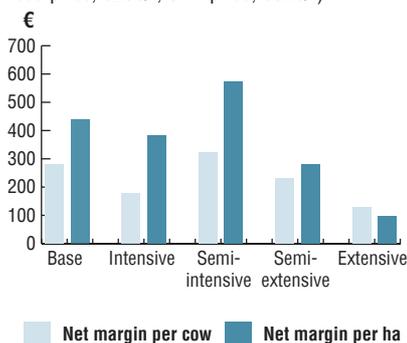
Recent analysis investigated the implications of finishing system and stocking intensity (Table 1) on the profitability of spring-calving suckler calf-to-beef production systems. Five systems were evaluated with a mean calving date of 17 March and a total farm area of 40ha (100 acres).

The baseline system involved finishing steers at 24 months of age and heifers at 20 months of age. The stocking rate was 2.6 livestock units (LU)/hectare (ha) (i.e. a 62-cow herd on 40ha). The intensive production system involved finishing bulls and heifers at 13 and 16 months of age, respectively. In this system, weanlings were housed shortly after weaning and finished on a high-concentrate diet. The stocking rate was 2.8 LU/ha (86 cow herd).

The semi-intensive system also finished males as bulls, but in this case bulls were turned out for a short second grazing season, prior to housing in early summer for an intensive finishing period. The age at slaughter was 18 months with heifers at 20 months of age similar to the baseline system. Stocking rate was 2.7 LU/ha (71-cow herd).

**Figure 1**

Effect on net margin of five production systems varying in production intensity (beef price, €4/kg base R3; concentrate feed price, €250/t; CAN price, €320/t)





**Table 1:** Five production systems evaluated to assess the effect of system intensity on profitability

	Base	Intensive	Semi-intensive	Semi-extensive	Extensive
<b>Steers/bulls</b>					
Finishing system	Steers, 24m	Bulls, 13m	Bulls, 18m	Steers, 28m	Steers, 28m
ADG (kg/d) <sup>1</sup>	0.91	1.22	1.06	0.85	0.85
Carcase (kg)	395	305	404	418	418
<b>Heifers</b>					
Finishing system	20 mo	16 mo	20 mo	26 mo	26 mo
ADG (kg/d) <sup>1</sup>	0.87	0.88	0.87	0.78	0.78
Carcase (kg)	312	317	312	366	366

<sup>1</sup> Lifetime average daily gain from birth to slaughter

**Table 2:** Effect on sales and total farm feed budget of five production systems varying in production intensity

	Base	Intensive	Semi-intensive	Semi-extensive	Extensive
<b>Sales (head)</b>					
Steers/bulls	29	40	33	22	14
Heifers	19	26	22	15	9
Cull cows	8	11	9	6	4
Carcase output (kg/ha)	493	580	571	410	254
<b>Feed consumed (t DM/ha)</b>					
Grazed grass	6.8	6.9	6.8	6.7	4.3
Grass silage	3.3	3.0	3.2	3.4	2.0
Concentrates	1.1	2.3	1.8	0.7	0.4

In the semi-extensive system, males were finished as steers at 28 months of age near the end of their third season at pasture. Heifers were also finished at pasture at 26 months of age. The stocking rate was similar to the baseline scenario but due to the older ages at slaughter, the number of animal units (cows and progeny to slaughter) was lower (48-cow herd).

The final scenario (extensive) assessed the implications of low-output systems on profitability. The animal production system was the same as the semi-extensive system, but in this case, stocking rate was 1.6 LU/ha (30-cow herd).

Profitability derives from generating high levels of output (animal sales) at low costs (high quantities of grazed grass relative to grass silage and/or concentrates). The level of output and feed consumed is presented in Table 2. When compared with the intensive system, carcass output was similar for the semi-intensive system (-2%) and somewhat less for the baseline system (-15%). However, output was much lower in the semi-extensive (-30%) and the extensive systems (-55%) when compared with the intensive system.

Corresponding to the higher levels

of output in the more intensive systems was a decreasing proportion of grazed grass in the total farm feed budget. In the baseline scenario, grazed grass represented 60%, and concentrates 10%, of the total farm feed budget. For the intensive system, these proportions changed to 55% grazed grass and 20% concentrates.

As production intensity declined, the proportion of grazed grass increased and concentrate feeding levels decreased, so that for the extensive system, grazed grass represented 65% and concentrates 5% of the total farm feed budget. At the same time, however, the total yield of grass and grass silage per hectare decreased as the production system extensified and the number of animals on the farm decreased.

Profitability was highest for the semi-intensive system and lowest for the extensive system. The profitability of the baseline system (similar stocking rate to the semi-intensive system but finishing males as steers) was 15% lower per cow and 30% lower per hectare highlighting the benefit of bull-beef systems in delivering greater productivity per head and enabling higher animal numbers to be finished

due to earlier finishing ages.

However, bull beef systems are limited by the requirement to have a sale agreement with a meat processor. While operating at the highest level of intensity in terms of stocking rate resulted in the highest carcass output per hectare, the higher costs that were incurred meant that this system was less profitable than either the baseline or semi-intensive system. Thus, output is an important driver of profitability, but this must be balanced by operating low-cost systems with a high proportion of grazed grass in the total farm feed budget.

Extensify production by finishing at older ages and/or reducing stocking rates, reduced margin per head and per hectare. The extensive system resulted in lowest costs per hectare but costs per cow were highest because of the long life-cycle, and associated costs, of progeny on the farm. This indicates that although extensive systems may appear to provide the opportunity to deliver more profitable production systems, in this analysis high costs per cow and low output per cow and per hectare meant that the more intensive systems were more profitable.

**Michael Gottstein,**  
Head of Sheep KT Teagasc  
Animal and Grassland  
Research & Innovation Programme

Approximately one in four of the national ewe flock in Ireland are hill sheep (Scottish Blackface or Cheviot mostly). Every year from August onwards many hill farmers market the current year's crop through local livestock markets as store lambs. Over the last number of years we have seen considerable fluctuation in the prices that these lambs achieve, depending on grass availability and market conditions.

Despite these fluctuations, where the enterprise is well-managed, finishing lambs has become a very profitable enterprise. Particularly where the finished lambs are targeted at the January to April period when hogget prices are usually at their highest.

Over the past two years Prof Michael Diskin and PhD student Noel Claffey based at the sheep research centre in Athenry have been running a trial looking at various aspects of finishing hill lambs. Even though the study is not yet complete, there are some very important messages emerging from it which potential store lamb purchasers should bear in mind.



When purchasing store lambs, a clear marketing strategy should already be in place

### Performance

When purchasing store lambs, a clear marketing strategy should already be in place. Is the aim to finish the lambs off grass, forage crops, grass plus concentrate or is the final finishing phase going to be indoors on an intensive concentrate diet? The Athenry study shows that feeding blackface lambs with good grass will give the performance levels outlined in Table 1.

The expected sale date, coupled with the amount of concentrate supplementation and the amount of gain that is going to be achieved from grazed grass will determine profitability. In most cases, simply housing the lambs and intensively meal feeding them is the least profitable option. Systems that allow the lambs to graze for a number of months in the autumn with a final finishing period on concentrates tend to be the most profitable.

Starting weights are a big factor. Historically, heavier lambs have tended to achieve a higher price per kilogram liveweight. However, these lambs will have to be finished earlier (possibly before the price rises from January onwards) and will have poorer performance at grass. From two years' work with these lambs in Athenry we have seen that the lambs that have the highest level of perfor-



Where the enterprise is well-managed, finishing lambs from hill breeds has become a very profitable enterprise.

mance are those that are purchased at the lightest weights. Lambs with purchase weights of less than 25kg liveweight grew 32% faster than lambs between 25kg and 30kg and 39% faster than the lambs with a starting liveweight over 30kg. Therefore, for long-keep lambs where there is grass available to feed them before intensive finishing takes place on concentrate diet, there is a distinct advantage in favour of light lambs. This is due to their higher growth rates and the fact that they are often discounted in terms of store purchase price.

**Table 1:** Performance of Scottish Blackface lambs on good grass (no concentrate supplementation)

Grazing period	Expected liveweight gain/week
August – early Sept	1kg
Mid Sept – mid Oct	0.7kg
Mid Oct – mid Nov	0.4kg
After mid Nov	0.1kg



## Conclusion

Store lamb production systems have delivered good profit margins in recent years. The data from Teagasc research in Athenry clearly shows that to maximise the profitability of the system high levels of management and animal performance are required.

A grazing period prior to an intensive finishing phase is important to allow lambs to grow before being intensively fed. Lighter lambs perform best, but there is huge variation between animals and a small proportion of lambs will never perform.

Plan when you intend to market the lambs and feed them accordingly. Teagasc have developed a Store Lamb Budget calculator to assist farmers in planning their store lamb finishing enterprise. Contact your local Teagasc adviser for more information.

the past outbreaks of the disease have affected performance and mortality.

### Concentrate feeding

Concentrate feeding is critical in getting lambs to the French market (16kg + min O3) specification. The aim should be to use a high-quality concentrate that is balanced for protein, fibre, minerals and vitamins. Ideally, the concentrate should consist of cereals/pulps in conjunction with good-quality protein sources.

Avoid poor-quality ingredients such as wheatfeed/pollard, sunflower and palm kernel. Aim for a protein level of at least 14% and a crude fibre level greater than 7% to ensure proper rumen function. It is important that the correct mineral vitamin mix is included. For lambs being finished on intensive concentrate regimes, the concentrate should include 0.5% ammonium chloride to prevent urinary calculi.

When feeding on concentrates, lambs should be started with small amounts (max 0.2kg/feed) and increased gradually (increase by 0.2kg every three days) until they reach ad-lib feeding levels. A roughage source should be available at all times until the lambs reach ad-lib at which stage it is optional as to whether or not the roughage part of the diet is maintained.

### Health care

Preventing ill thrift and disease in purchased animals is important if lamb performance is to be maximised and mortality reduced. External and internal parasites need to be controlled at purchase and, depending on the length of the grazing period; there may be a need for follow-up treatments for both liver fluke and stomach worms.

On entry to the holding it is a good idea to use a quarantine drench to eliminate parasites resistant to the

normal spectrum of anthelmintics. The use of a product such as Startect or Zolvix plus avermectin is important to kill stomach worms that are resistant to the three main anthelmintic families (benzimidazole, levamisole and macrocyclic lactones).

Fluke and external parasites such as ticks, lice and scab should also be considered in the health programme – talk to your adviser/veterinarian. Vaccination against Clostridial disease and pasteurilla should also be considered. In Athenry, store lambs are also vaccinated against Orf as in

**Table 2:** Performance of Scottish Blackface male lambs on lowland Pastures Athenry 2014

Lamb Weight Category (kg)	<25	25.1-30	>30
Wt on 1 August (kg)	24.3	27.3	30.5
ADG to 10 October (g/day)	145	110	104
10-week gain (kg)	10.2	7.7	7.3
Wt 10 October (kg)	34.9	35.30	38.10

Source: MI Diskin et al. 2015

# Are you sure you have a strategy?

Teagasc and the UCD Michael Smurfit Graduate Business School have created a high-level business strategy course

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



The course is fully accredited by UCD and those who complete it receive a professional certificate

I recently got a call from a farmer to tell me that he had just completed a lengthy negotiation session. I could sense the exhilaration in his voice that comes from making a significant, and successful, business move. “We were able to use negotiation strategies and skills we learned on the course,” he said. “And we could also identify some of the negotiation strategies the other side was using!”

I'm not going to tell you the farmer's name, but he was one of 21 participants who took part in the first Teagasc/UCD Michael Smurfit Graduate Business School course in Business Strategy. The phone call proved that the course, which we first ran last year, gave participants a business edge in the real world. In this article I'm going to tell you about the course, include comments from identified farmers and urge you to consider taking part this year.

### Why are we doing it?

In 2014, encouraged by Teagasc director, Professor Gerry Boyle, I gathered a team of colleagues including Tom O'Dwyer, regional managers John Moloney in Waterford/Kilkenny, Brendan Heneghan in Galway/Clare and oth-

ers to consider how we could offer a high-level business strategy course to farmers. The removal of quotas and the general increase in price volatility suggested that there might be a need for increased strategic thinking.

Ultimately, we decided that an alliance with the UCD Michael Smurfit Graduate Business School was the best solution. It would bring together the business expertise of that organisation and the intimate knowledge of farm businesses possessed by Teagasc. Our initial contact at UCD, Helen Brophy – director of executive development at the UCD Michael Smurfit Graduate Business School at UCD – was enthusiastic.

Working with Helen and Professor Patrick Gibbons (academic director, UCD Smurfit Executive Development), we designed a course which includes topics such as:

- “What is business strategy and how does it relate to my farm business.”
- “Understanding your role as a leader.”
- “Preparing for negotiations.”
- “Managing change and working through conflict.”

The aim is to help farmers to develop the skills and awareness which they need to create a clear strategy for their businesses in volatile times. “Having done the course, you feel confident that you have ticked all the boxes when looking at your business as a whole,” said Martin Quigley,

a dairy farmer from Co Louth and a member of the class of 2014.

Dairy farmers were well represented but beef, tillage and pig producers were also present. Jason McGrath, whose family produce and finish pigs in Co Waterford, said: “It made me look at our

Back row: Jim Treacy (Tipperary), Leo Nulty (Meath), Brendan Horan (Teagasc Mentor) and Tony Kenny (Tipperary).

Second row: Sean Bugler (Clare), Michael McKeown (Teagasc mentor), Jason McGrath (Waterford), Michael Barry (Tipperary), William Kingston (Cork), Denis O'Donovan (Cork), Simon Breen (Tipperary), Martin Quigley (Louth), James O'Connor (Monaghan), Tom O'Dwyer (Teagasc Mentor), Pat Gibbons (UCD) and Mark Moore (Teagasc mentor).

Front row: Cathal Moran (Kilkenny), Conor Moloney (Tipperary), John Butler (Tipperary), Jim Dwyer (Laois), Nicholas Kearney (Offaly), Dermot Tobin (Waterford), Heinz Eggert (Kildare) and Ger Pardy (Offaly).

Front foreground: Brendan Heneghan (Teagasc mentor) and John Fitzgerald (Cork).





enterprise as more of a business than a family farm.”

### What's involved?

The course is fully accredited by UCD and those who complete the requirements of the course receive a professional certificate. To earn the qualification, participants must attend all six days (broken down into three days, a gap of several weeks, two days, another gap and then a final, single, day. The course will take place in the late autumn of this year.

The venue for the classroom sessions will be a hotel (last year, we used the Lyrath Hotel near Kilkenny). Farmers will stay overnight at the hotel for the two and three-day modules. By remaining at the hotel, it's possible to get away from the day-to-day pressures of running a business and focus on your medium- and long-term business goals. It also means that there are lots of opportunities for networking and interacting with classmates.

As last year, the course participants will be welcome from right around the country. The course is not excessively academic and there is no specific requirement to have achieved academic results or certificates. UCD can accept evidence that you have been managing a commercial business for at least five years as proof of ability, the final decision on eligibility rests with UCD.

The sessions are highly interactive with lively discussions on business

issues. This is not like being back at school. “The course was really all about bigger picture stuff. Where you want to go with your farm and your business... actually your whole life,” said Denis O'Donovan of Rosscarbery, Co Cork. “It also gave us a shove to sit down as a family and discuss where we want to be in five, or even 10 years' time.”

### Mentors

As well as the Smurfit Business School lecturers, the courses are attended by Teagasc staff who act as mentors to the participants. These mentors all have postgraduate business qualifications, as well as a deep knowledge of the technical aspects of farming. The mentors are a “resource” for the participants on the course. While the material delivered on the course is straightforward and delivered in terms and language that any farmer can understand, the mentors can help put the material in a farming context.

As well as the mentors, those taking part receive a workbook, which contains an outline structure for a strategy – be it for business expansion, family succession, etc. Mentors will discuss the progress being made by students as they develop a unique strategy for their own business. On the final day of the course, students are interviewed about the strategy they have developed for their busi-

ness. There are no examinations on the course.

“It certainly broadened my perspective and allowed me to take into account many more dimensions of my own situation,” said Sean Bugler from Scariff, Co Clare. “You can become preoccupied with perfecting your day-to-day farming when you should really be putting more energy into having a long-term strategy. The course really helped me focus on that.”

If interested, what should you do? The course will not begin until October and will finish well before the end of January. But the number of places will be limited, so it's important that you register your interest now. So, please contact me on 087-4179131. Alternatively, you can email me at Mark.moore@teagasc.ie



### How much does it cost?

The full cost of the course is €2,200. Teagasc clients receive a €200 discount and there is a further discount for booking early. For further details, contact me. All materials, food and overnight costs are included, and the course leads to a fully accredited certificate at Level 8. The cost of the course is a tax-deductible business expense.

To learn more or register your interest, contact Mark Moore on 087-4179131 or email mark.moore@teagasc.ie

# Partnership preparation

Succession is not just about transferring land. It should be a gradual process and a partnership can be a very useful component

**Tom Curran**  
Farm Structures Specialist,  
Teagasc Rural Economy and  
Development Programme



What really counts for young people is that they get a say in decisions made and that they have responsibility for part of the farm operations

Research carried out by Dr Aine Macken Walsh of Teagasc Athenry has shown that most young people are not particularly concerned with ownership of the land when they return home to farm. What really counts for them is that they get a say in decisions made and that they have responsibility for part of the farm operations.

A farm partnership agreement allows this to happen, as duties are clearly divided out between the parents and son or daughter through the on-farm agreement.

The three key areas of an on-farm agreement are:

- Enterprises and areas of responsibility.
- Structuring/sharing of workload, weekends off and holidays.
- Establishing what the profit share should be and where to set monthly salaries or drawings.

A partnership provides the structure for a young person to have the desired responsibility and input into decision-making on the farm.

It also allows the parents to maintain a guiding hand and be there as a source of support to the son or daughter. In other words, they can give responsibility to the future successor and keep an eye on how they are getting on.

Frank, Kitty and Ivor Tanner from Newcestown, Co Cork, have been farming in a registered partnership since 2008. They milk 90 cows and

rear all replacements. Ivor says: "The partnership gave me a recognised role in the farm business. At the beginning, I would have checked things out with Frank, but now I can make my own decisions."

The structure works well for parents as it provides reassurance that they are not handing over the farm assets in any way. The assets are merely made available to the partnership for the farm business, but they return to the parents should the partnership end at any time.

Kitty says: "The partnership rewards Ivor for the work he puts in and the commitment that he has shown to the farm."

## Farm development

Since the partnership began, the farm has been further developed to improve the infrastructure for the dairy enterprise. The Tanners have invested significantly in cow housing, slurry storage, roadway improvements and, most recently, a new milking parlour.

Frank, Kitty, Ivor and their Teagasc advisor Grainne Hurley have planned this development carefully.

"Carrying out the investment in stages spreads out the financial outlay over a longer period of time and eases the pressure on cashflow," says Grainne. The capital investments were needed to meet with regulations, but also to improve the quality of life by making the day-to-day operations easier.

"Milking through the new parlour is a joy and saves time for other jobs as there is less time spent in the parlour each day," says Ivor.

The new parlour allows the Tanners to finish up their busy working day at a reasonable hour.

## Discussion group

Ivor joined his local Teagasc dairy discussion group and has become more involved with Grainne in the development of the farm. The focus moved towards better efficiency using the e-Profit Monitor, learning grassland management skills and improving the EBI of the herd.



## Conclusion

The partnership with Frank and Kitty has given Ivor the opportunity to develop his skills as a dairy farmer by taking responsibility for farm operations and gain confidence in his own decision-making, while having the support of his parents through this period of the succession process. Further down the road, the final step in this process may be the transfer of the farm at a time that suits the family.



A registered farm partnership provides the structure for a young person to have the desired responsibility and input into decision-making on the farm.

# Registered farm partnerships

Forming a registered partnership is an ideal way for farm families to plot a successful course through the succession process.

The partnership creates a structure where the parents and a son or daughter can operate the farm without getting hung up on the transfer of assets.

The partnership can continue until such time as the parents are happy to transfer the farm.

A partnership is essentially an arrangement where responsibility, decision-making and workload are shared between the parents and the son or daughter.

The reward for both parties is a share of the farm profits. It is up to the family to decide what the appropriate share for each partner should be.

The profit share can vary over time, but generally the son/daughter will start off

on a low share and increase gradually as they take on more responsibility and family circumstances allow.

- A partnership is a legal business arrangement that is registered with the Revenue Commissioners. In completing the partnership agreement, consult your Teagasc advisor or consultant, solicitor and accountant. Once the agreement has been completed and signed off, you should follow the DAFM application checklist carefully and include all listed documentation to avoid any delays in having your partnership registered.
- The new Dept of Agriculture, Food & Marine partnership registration office is based at Agriculture House, Kildare Street, Dublin 2. All documentation should be sent to this address.
- There is a Teagasc template agreement available at [www.teagasc.ie/advisory/milk\\_partnership/info\\_forms.asp](http://www.teagasc.ie/advisory/milk_partnership/info_forms.asp) that can be used to put a partnership agreement together. Consultation with your solicitor on any relevant legal matters is advisable.
- Your accountant also needs to be involved to register the partnership with Revenue and set up the partnership correctly. A partnership needs to be set up in line with your tax year. For example, if your tax year is from January to December, then your new partnership should start on 1 January.
- The costs are those quoted by the consultant, accountant and solicitor for any general, legal or financial advice. A new grant scheme is currently being finalised to help with set-up costs. The grant will be a 50% rate to a maximum of €5,000. Therefore, the maximum grant payable is a potential €2,500.

# What a relief

Temporary tax reliefs offer the possibility to tackle farm fragmentation at reduced cost

**Fintan Phelan**  
Head of Farm Management and Rural Development Dept, Teagasc Rural Economy and Development Programme

**I**n 2010, more than 80,000 farms consisted of three or more separate land holdings. The inefficiencies associated with fragmented farm holdings are well understood by farmers.

Daily herding, moving stock, fodder,

machines or the logistical issues such as access to mains fencers and a good water supply are all more difficult on a fragmented farm. There is also the pressure on the home block as more stock tend to be held there, potentially leading to overgrazing at home and under grazing on the "out" land.

The other tax associated with land purchase is stamp duty. The rate applied to land transactions has reduced substantially over the last few years and is currently just 2% of the purchase price for unrelated people. So, in the example opposite, this would result in a stamp duty bill on the 15 acres purchased of €3,300 (€220/acre) – just one year's rent of good land in some parts of the country.

#### Take the initiative

The time to take action on this is now as the tax relief has a time limit on it. Nothing may happen if you don't take the initiative as the volume of land sales in Ireland is relatively low. The possibility of the piece of land



## Calculation example

Exposure to tax is one of the big concerns for farmers when disposing of or acquiring land. A worthwhile relief that is available until the end of 2016 is the capital gains tax restructuring relief. This relief allows a farmer who is selling an outfarm and purchasing land closer to home, to reduce the value of the land that is sold, by the amount they have paid for the new land before capital gains tax is calculated.

An example of the calculation is:

- John sold 20 acres valued at €9,000 per acre = €180,000.
- John purchased 15 acres valued at €11,000 per acre = €165,000.

The money that was used to purchase the new land is taken off of the sale proceeds before tax is calculated. So, €180,000 less €165,000 = €15,000. The €15,000 is the maximum amount of money exposed to capital gains tax. In addition, the value of the 20 acres when John acquired it initially is also deducted before the tax liability is calculated.



that could make a difference to you coming up is even lower.

In many cases, it might require a number of transactions involving several farmers to get the piece of land that you are looking for.

Could you talk to your neighbours and see if they are willing to sell land close to you? If so, what land would they like to purchase and so on.

By exploring the possibilities and creating a chain in this way, you may ultimately be able to save yourself a lot of time and increase your farm's efficiency.

There have been recent changes to how the restructuring relief operates that have removed some barriers to availing of it. These include the ability of a farmer to sell land as a private individual and purchase it in their farming company.

As farming companies are an efficient way to repay loans on land debt, this is often a favoured way of purchasing land. Until recently, farm companies were not allowed to avail of the relief.

Another improvement is the fact

that farmers can dispose of their entire holding of a number of separate parcels and purchase a new farm where the land is in one block.

If you were exploring the possibility of this type of transaction in the past and didn't go ahead due to the guidelines of the scheme, you should now review the new guidelines. It may be worth another look.

### Good advice

It is important to take good taxation advice as there may be implications for retirement relief that was gained on the land or that you may wish to receive within the next 10 years on disposal.

Teagasc issues the farm restructuring certificate. You can get the guidelines document on the Department of Agriculture, Food and the Marine's website by typing "farm restructuring" into the search box. This outlines the terms and conditions and the documents that you will need to provide Teagasc with to make a decision on the transaction. Contact your local advisor for further information.



## Conclusion

Farms are very fragmented in Ireland. There is recognition of this in the relief that is currently available. Talk to your neighbours and explore the possibility of an exchange of land or bring more farmers into the chain to benefit everybody. If you succeed in reducing the number of fragments you are farming, it will likely be the best work you will have done all year.

# Distributing pig manure by computer

**CANtogether matches pig producers and farmers capable of making good use of slurry**

**Eimear Ruane**  
Research Officer,  
Teagasc Animal and Grassland  
Research & Innovation Programme

**P**ig manure is a great fertiliser for crops or grass – it improves the nutrient status of a soil and improves the soil structure by increasing the soil organic matter. Mineral phosphorus (P) found in chemical fertilisers is finite. It can't be manufactured, which makes it all the more important that the P content in manure is used to its full potential. Pig manure is generally applied on farms located near the pig production unit.

With the introduction of the Nitrates Directive, many farms which previously accepted pig manure are reaching capacity. The organic nitrogen (N) loading from livestock on these farms may already be at the limit of 170kg N/ha, meaning that farmers cannot take in any additional organic manures. The phasing out of the transitional arrangements regarding P in the nitrates regulations in 2017 is driving the need for additional land for spreading pig manure.

Cavan is the largest pig-producing county, followed closely by Cork and then Tipperary. The problem facing pig farmers in these relatively pig dense counties is not only the distance between them and suitable spread lands but also the fact that pig farmers and potential recipient farmers simply don't know each other.

Gerald Potterton, who farms over 500 acres of crops at Moyrath Castle near Trim receives pig manure from

## MAXIMISE VALUE

To maximise the nitrogen value, pig slurry should be well mixed, applied under the correct weather conditions and rapidly incorporated into the soil. Pig slurry builds soil organic levels and improves soil fertility, which creates the soil conditions that will result in successful future crop yields.

Pig manure can reduce the cost of your overall fertiliser bill, depending on the amount of chemical fertiliser you can replace. Based on the cost of fertiliser in February 2015, the current value of pig manure, at 4.3% solids, is €5.87 per cubic metre when there is a requirement for N, P and K. This translates to €26.65 per 1,000 gallons.

Luke Bogue, a major pig producer in Co Cavan. "I'm an ideal candidate because I have storage capacity for manure and the transporters can unload it there and leave immediately. Potential savings on bagged fertiliser and the possibility of a boost to soil organic matter attracted me."

Having a store for manure on a tillage farm can also act as a buffer between the pig producer and tillage ground, resulting in a more consistent manure product going out on soils. Gerald sells some of his grain to a mill owned by Luke.

As part of the CANtogether project (see panel), an online tool has been developed to facilitate communication between pig farmers, such as Luke, and recipient grassland/tillage/livestock farmers, such as Gerald.

Pig farmers using the system can search for a recipient farmer, based on a number of factors including distance, the amount of pig manure they require and whether the farmer has storage for pig manure on his farm. The latter is particularly important in the case of tillage farms.

The route calculator used in the brokering tool takes account of the method of transportation of the pig

**ABOVE:** Teagasc tillage adviser Conor Dobson; Gerald Potterton, a tillage farmer near Trim; Paraic Fay, CLW planners; and Luke Bogue, Cavan pig producer. Gerald receives pig manure from Luke's pig units.



Pig manure can reduce the overall cost of your fertiliser bill, depending on the amount of chemical fertiliser you can replace



slurry and it chooses a route suitable for a truck or a tractor and tanker. Routes containing low bridges or sharp turns that would hinder either a truck or tractor will be avoided. The distance calculated is displayed on the website for the purposes of selecting a suitable recipient farmer but farmers' locations are not disclosed.

A tillage farmer who wants to source pig manure can search for a suitable pig farmer based on distance and volume available. The brokering tool also acts as a forum for the exchange of grain between tillage and pig farms. Email acts as the first point of contact between farmers, ensuring confidentiality.

The objective of the project is to reduce the reliance of both the pig producer and tillage farmer on imports of feedstuffs and chemical fertiliser, respectively. It will also develop an environmental and economical system for land spreading of pig manure on tillage farms. A lower environmental footprint for pig and crop production and reduced exposure to price fluctuations in fertiliser and feed are just some of the benefits.

For more information contact Eimear at Teagasc Moorepark.

## CANtogether

The pig development unit in Teagasc Moorepark has been participating in CANtogether, crops and animals together, an EU-funded project since 2012. The aim of the project is to design and develop innovative mixed farming systems across different regions of Europe.

The project also looks at existing mixed farming systems and analyses them relative to specialised farming systems in terms of economic performance and environmental footprint. Teagasc is supported by CLW Environmental Ltd, private environmental planners based in Co Cavan. Across Europe, there are a total of 27 partners involved in the project, research institutes and SMEs representing 10 different countries, including France, Poland and Spain.

The project is made up of 24 case studies, which look at different types



of farming systems, such as individual farms or a collection of farms in a district. There are three Irish case studies involved in the project – two farm level case studies comparing specialised dairy farms (dairy cows and grassland only) and mixed dairy

farms (those that, in addition to having cows and grassland, grow crops for consumption by the dairy animals).

There is also a district level case study involving pig farms and tillage farms in the Cavan/Monaghan/Westmeath/Louth region. There are six pig farms all based in Cavan involved in this case study and ten tillage farms in the surrounding counties.

The tillage farms can be split into two groups - farms that receive pig manure from the pig farms involved in the study and farms that do not use any pig manure.

# Poultry in motion

## Getting the best out of poultry manure in spring barley

**Mark Plunkett**

Teagasc Crops Environment and Land Use Programme

**& Martin Bourke**

Teagasc Tillage Advisor, Co Wicklow

**T**he 2015 growing season for spring barley has proven challenging for crop growth and development. Well-fertilised spring barley crops have performed better in terms of tillering and colour to date.

A trial undertaken by Teagasc in Co Wicklow is showing the benefits of applying poultry manure to spring barley. The trial, the first of its kind in Ireland, is investigating the optimum timing of application for hen layer manure to minimise nitrogen (N) losses and maximise N uptake by spring crops. The hen manure used in the trial was from a modern purpose-built hen layer house with ancillary facilities in place for drying the manure. Figure 1 shows a sample of the manure.

As well as being dry (89%DM), the hen manure is odourless and very easy to handle compared with wetter manure. Most importantly, it is a well balanced fertiliser, with good levels of both major and minor nutrients. Low application rates (5.5t/ha) can deliver a balance of N, P and K. Table 1 shows a nutrient analysis for the hen layer manure used in the trial.

Over the past number of years, hen manure has been used as an effective source of N, P and K for tillage crops in the Wicklow area. Results to date have been very positive, especially for spring barley crops. The manure has a high N content and can supply a sig-

nificant proportion of the crop's early N requirements. To reduce N losses from organic manure such as cattle and pig slurry or poultry manures, incorporate them as soon as possible after application to reduce N losses to the air through volatilisation.

With this in mind, many questions had been raised as to the most effective time of application for the dried manure.

To date, local farmer Tommy Delahunt has applied the manure in a number of different ways to his spring barley crops. He found that surface application and incorporation during drilling of the crop produced the best results. Having listened to grower experience, this trial was set up to assess the most effective method of applying layer manure to spring barley.

A number of application methods were included in the trial as outlined below. For the purposes of the trial, manure was weighed for each plot equal to an application rate of 5.5t/ha and applied by hand (see Figure 1). The manure treatments were as follows:

- Manure applied to stubble ground and ploughed in seven days later (delayed application).
- Manure applied to stubble ground and ploughed in immediately (rapid incorporation).
- Manure incorporated during sowing (surface application).

Tommy Delahunt said that "surface application of the dried hen manure before sowing has resulted in excellent crops of spring barley which emerge rapidly and tiller vigorously, which is an essential ingredient for high yields".

Martin Bourke, Tillage Advisor in Wicklow, has been monitoring the poultry manure trial over the last number of weeks. He believes the surface application treatment



**Figure 1:** Dried hen layer manure used in the trial.

**Table 1:** Total nutrient content of hen layer manure by analysis

Nutrient	N	P	K	S	Mg	Ca	Mn*	Zn*	Cu*	DM%
kg/tonne or grams/tonne	35 <sup>1</sup>	6.8	17.5	4.5	1.2	39.2	317	225	22	89

<sup>1</sup> The N in poultry manures is deemed to be 50% available. Therefore ~17kgN/ton is available for crop uptake during the growing season.



Figure 2: Trial layout, design and application of hen manure at trial site.



Figure 3

to date looks to be the best method of application. Dr Richie Hackett, Teagasc Researcher, Oak Park, shares that opinion, but cautioned that until the combine cuts the plots, we won't really know the true benefits in terms of grain yield.

Martin believes the application of the manure to the seedbed before sowing and incorporating it into the seed zone during sowing is very like combine drilling fertiliser with the seed. It's important that available nutrients are in the best place to aid rapid plant development in the first six weeks of the crop. This is critical for achieving good rooting and tiller production required for high-yielding crops, bearing in mind that spring

barley has a short growing season.

Both of the treatments in Figure 3 received 85kg N/ha from layer manure plus 65kg N/ha bag N (ASN 26%N). The plot on the left received layer manure surface applied. The plot on the right received layer manure ploughed in immediately.

Ivan Whitten, Teagasc Tillage Advisor, Kildare, has a number of growers using pelletised poultry manure from Neutrog in winter cereal production and results to date are very positive from growers.

This trial promises to deliver new information on optimising the timing of layer manure application for spring crops and its N fertiliser replacement value.

## SOURCE

Paraic Fay B.Agr.Sc. of CLW Environmental Planners Ltd (049-4371447) was responsible for sourcing the manure used in this trial from Dava Farms in Monaghan. There are a number of other similar type poultry farms in operation mainly in the northeast (Monaghan) area, and Paraic can advise on the potential availability of manure from such farms. There are approximately 1.8 million layers in Ireland, so potentially there is enough layer manure produced annually to spread on approximately 13,000ha at a 5.5t/ha application rate.

## soil management

# Mole and gravel mole drainage

Pat Tuohy, James Humphreys, Nick Holden and Owen Fenton  
Teagasc Crops, Environment & Land Use Programme

**M**ole drains are unlined channels installed in high clay content soils; gravel mole drains are used in less cohesive soils to prevent channel collapse. Gravel moles are, in effect, mole drains packed with gravel. Mole and gravel mole drains are installed as shallow drainage systems in Ireland, but many questions remain about their use. Farmers and contractors constantly ask questions such as:

- How does the performance of ordinary mole and gravel mole drains compare?
- Do installation conditions affect performance of mole and gravel mole drains?

These are important questions as gravel mole drains are much more expensive than ordinary mole drains. A project conducted recently at the Teagasc research farm in Solohead provided answers.

## Where should mole drainage be used?

Where soils are poorly permeable, the drain spacings provided by conventional drainage systems are not adequate to provide satisfactory drainage. It is necessary to resort to drainage methods which disturb and crack the soil, improving its water carrying capacity. These methods include mole drainage and gravel mole drainage.

The suitability of a soil for mole drainage is open to debate. While there are some soils where mole channels have a long life (typically they have more than 45% clay and less than 20% sand), there are others (fine sandy and gritty soils) where gravel mole drainage is called for. There is a range of soils between these limits where uncertainty exists. The soil cracking, which is required for effective mole drainage performance, depends on the soil water content

during installation. Dry soil conditions during installation encourage a high rate of soil cracking but, due to weather, farmers are often forced to install mole channels in less than ideal conditions. The consequences of this are poorly understood.

## Assessment of techniques

The recent study looked at the relative performance of such techniques on one of these "borderline" soils where it is not clear which technique is most appropriate. The study was undertaken on the Teagasc Solohead research farm, which is dominated by poorly permeable clay-loam textured soils (sand 36%, silt 36% and clay 28%); not ideal for stable mole channel formation. While gravel mole drainage, designed for such situations could be used, the high cost (€1,500/ha to €2,800/ha vs. €125/ha to €300/ha for mole drainage) make it unattractive.

Four drainage treatments were established: (A) un-drained, (B) mole drainage installed in January 2011 (in non-ideal installation conditions), (C) mole drainage installed in July 2011 (ideal installation conditions) and (D) gravel mole drainage installed in July 2011. The installation of treatment B resulted in extensive surface and sward damage on the wet soil. This was due to the timing of the operation and the high soil water content. However, the mole channels themselves were formed in good conditions. Surface disruption was minimal during the installation of treatments C and D, as a result of drier soil conditions.

## Drain system performance

Both mole and gravel mole drainage were effective in the removal of excess water. The mean total amount drained via overland flow and subsurface drain flow during rainfall events in treatments A, B, C and D was 7,700, 14,140, 14,700 and 19,740 litres, respectively, from identically sized (1,500 m<sup>2</sup>) plots. Gravel mole drainage was generally more effective than mole drainage in removing excess water, with consistently higher peak flow



rates and greater total flows.

The performance of the mole drainage systems (B and C) was similar throughout and, therefore, were not affected by installation conditions. There was a clear behavioural change

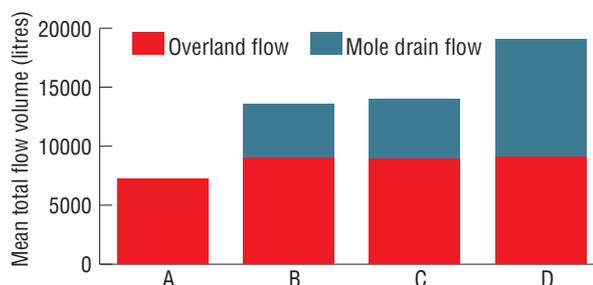


in flow response during the study with a decrease in drain flow from all treatments over time. The watertable was consistently closer to the soil surface in the un-drained plots relative to the drainage treatments. Mean

**Soil type is a key factor in deciding what type of drainage to use.**

### Figure 1

Mean total overland and mole drain flow during rainfall events from treatments; A (un-drained), B (mole drains installed in January 2011: non-ideal installation conditions), C (mole drains installed in July 2011: ideal installation conditions) and D (gravel mole drains installed in July 2011) from identically sized (1500 m<sup>2</sup>) plots.



water-table depth was 0.52m in treatment A relative to 0.71m, 0.72m and 0.78m in treatments B, C and D, respectively.

### Practical application

Despite the deterioration in effectiveness over time, mole drain flow was maintained, albeit at a lower level, for approximately two years and the drainage provided was adequate to control watertable depth below that of the un-drained plots.

Mole drainage is a temporary measure, which must be repeated in order to maintain effectiveness. Given its low cost, mole drainage could be repeated every two years on this soil type. The cost of gravel mole drainage does not allow for frequent repetition of the operation.

Given the disparity between installation costs, it is likely that regularly rejuvenated (two years) mole drains, while less effective than gravel mole drains, could provide adequate drainage on such a soil at a much lower long term cost.

The capacity and life-span of mole and gravel mole channels is substantially improved by the installation of a piped drain network, excavated at right angles to, and deeper, than the mole drains acting as an outfall. This shortens the mole channels and substantially increases drainage capacity, lessening both the chances of failure and the impact of isolated failures on the whole system.

Future research studies will need to look at the optimum mole/gravel mole channel length in a range of soil types for such combined systems, having mole or gravel mole drainage as a supplementary measure to a field drain network. This would have significant cost implications, however, as such field drains cost approximately €5-7/m.

The impact of repeated installation on soil compaction would also need to be evaluated, particularly where installed in wet conditions.



Mole drainage is a temporary measure, which must be repeated in order to maintain effectiveness

# tillage

# Unlock the growth potential of low pH soils

Late summer and autumn is the ideal time to apply lime

**David Wall**

Soil Scientist, Teagasc Crops Environment & Land Use Programme, Johnstown Castle

The majority of farm soils in Ireland are naturally acidic (they have a low pH). Soil pH is a measure of acidity or alkalinity of a soil and when low (pH <6.0). Crops may suffer reduced yields or fail entirely due to high levels of aluminium (Al) and manganese (Mn) interfering with root growth and nutrient uptake. Applying lime will help to promote pH conditions, which are more favourable for grass and crop production.

On mineral soil types, a target soil pH of 6.3 is recommended for grassland while slightly higher target soil pH levels are recommended for more sensitive tillage crops such as cereals (pH 6.5) and beet, peas and beans (pH 6.8). Peat soils have lower quantities of Al and Mn present and therefore the target soil pH required is also lower, at pH 5.5.

In recent years, there has been a declining trend in soil pH on Irish farms and approximately 60% of soils have sub-optimal soil pH levels (i.e. soil pH less than 6.3). With the majority of farmed soils at low soil pH status, the under-application of lime is likely to cost farmers dearly in terms of crop nutrition and yield.

### Increasing soil nutrient availability

Lime is a soil conditioner and corrects soil acidity by neutralising the acids present and allowing the microorganisms and earthworms to thrive and break down plant residues, animal manures and organic matter. This helps to release stored soil nutrients, such as nitrogen (N), phosphorus (P), potassium (K), sulphur (S) and micro-nutrients for plant uptake.

Ryegrass and clover swards will persist for longer after reseeding where soil pH has been maintained close to the target levels through regular lime applications. Grassland soils receiving regular lime applications have been shown to release up to 80kg/ha additional N compared to soils that did not.

Recent research from Johnstown Castle clearly shows the importance of lime in relation to the availability of soil P and the improved efficiency from applied chemical P fertiliser.

Figure 2 shows the benefits of lime for unlocking soil P and is the first step to consider when setting out to building-up soil P levels. Figure 3 shows the grass yield response to lime and P fertiliser in grassland.

The application of 5t/ha ground limestone produced similar grass yields compared to the application of 40 kg/ha P fertiliser alone. However, the addition of lime + P fertiliser in combination produced the largest grass yield response (1.5 t/ha more grass than the control).

These results show how effective lime is at increasing the availability of both stored soil P (from previous fertiliser and manure applications)



and freshly applied fertiliser P.

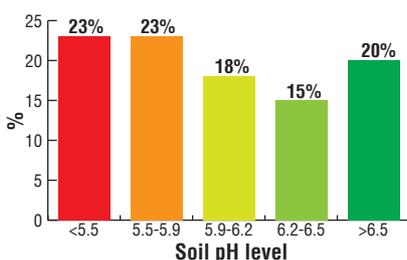
Figure 2 shows the average change in soil test P (Morgan's) across 16 soils (average pH 5.5) treated with lime (5 t/ha of lime), P fertiliser (100 kg/ha of P), and P + lime and incubated over 12 months in controlled conditions. Figure 3 shows the relative grass DM yield response in grassland treated with lime (5 t/ha of lime), P fertiliser (40 kg/ha of P), and P + lime over a full growing season.

### Tips to increase lime efficiency

- Apply lime based on the soil test report. Where lime recommendations exceed 7.5 t/ha, it is best to split the application, up to 7.5 t/ha initially and the remainder in year three.
- Lime can be applied at any time of the year, but late summer and autumn is an ideal time to apply lime as the soil is still firm and there is less interference with slurry or N fertiliser applications. At this time of year, there are more spreading opportunities in grazing, silage and tillage fields. Rainfall over winter will wash the lime into the soil where it will become effective before spring.
- Ground limestone is the most cost-

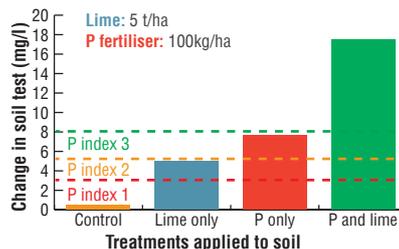
**Figure 1**

Percentage of soil samples submitted through Teagasc in 2014 in different soil pH bands



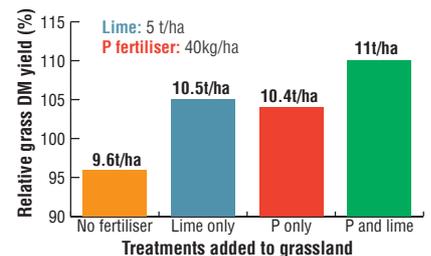
**Figure 2**

Average response across 16 soil types (average pH of 5.5)



**Figure 3**

Treatments added to grassland





Lime is a soil conditioner and corrects soil acidity by neutralising the acids.

effective material. It will start to work once it is applied and washed into the soil. The finer fractions of the ground limestone will adjust soil pH upwards to your target soil pH over the shorter term (pH increases should begin within three to six months), while the coarser components will

maintain this pH adjustment over the longer term (12 to 36-month period) as they break down. Within each tonne of ground limestone, 35% is of a fine grade (<0.15mm) and is the most readily reactive part of the lime, it gets to work during in the year of application, improving the availability of major soil nutrients for the current crop.

- Use magnesium limestone rather than calcium limestone as a source of magnesium (Mg) where soil Mg levels are low.

- If granulated lime is being used, annual applications are required. Apply at a ratio of 3:1 (ground limestone: granulated lime). For example, where 7.5 t/ha ground limestone is required, you would need to apply at least 2.5t/ha of granulated lime over a five year period ( $2,500 \div 5 = 500\text{kg/ha/year}$ ), so beware of cost implications.

- Maintaining soil pH will result in increased release of soil N from soil organic matter, which is valued at up to €80/ha/year.

- Heavier and organic matter-rich soils may poach more easily after liming (due to rapid break down of soil organic matter). On these soils, apply a reduced rate of lime on a regular basis to control soil acidity rather than as one large application as this avoids "softening the soil".

## Key messages

- Aim to maintain a soil pH 6.3 to 6.5 on mineral soils.
- Always apply lime as recommended on the soil test report.

### Liming soils:

- Increases grass and crop production annually.
- Increases the release of soil N by up to 80kgN/ha/year.
- Increases the availability of soil P and K.
- Increases the response to applied N, P and K as either manures or fertiliser.

- Leave at least three months between liming when following with urea/slurry application to reduce the risk of N loss through volatilisation. Apply urea/slurry first and apply lime seven to 10 days later.

- On grassland soils with high molybdenum (Mo) levels, increasing soil pH above 6.2 can lead to increased Mo levels in the herbage. High intakes of Mo in ruminant animals can lead to an increased risk of copper deficiency. Maintain soil pH at 6.2 on these soils.

# Big Difference Big Performance

## Reseeding in 2015?

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## Human consumption is the growth area for this traditional staple

**John Finnan**  
Teagasc Crops,  
Environment and  
Land Use Programme

**A** new research programme on the agronomy of oats has started at the Crops Research Department at Teagasc Oak Park, Carlow. The programme will focus on improving the yield and quality of oats but also on reducing lodging, a persistent problem in many years.

At the same time, Teagasc staff at the Food Research Centre, Ashtown, will conduct research on the inclusion of oats in novel bakery products such as breads, biscuits etc. Given that little research has been conducted on oats in recent decades, it is hoped that significant progress can be made on improving both the growing and the utilisation of oats.

### History

Oats are a very traditional Irish crop and once covered almost 700,000ha. Oats were domesticated later than wheat and barley and for millennia they were a weed species in these cereals crops. Evidence suggests oats were first farmed in their own right in the Middle East and in Spain before eventually spreading to north west Europe.

In England, the invading Romans needed fodder for their horses and it is possible that oat cultivation in Ireland also stems from this period. Oats suited the more outlying regions of the British Isles such as Scotland and Ireland more so than other cereal crops and became the predominant cereal crop in these regions.

### Uses:

Oats have traditionally been the preferred grain feed for horses, with higher levels of fibre and more digestible starch compared with other cereals. The virtual elimination of horse transport and the advent of farm machinery for ploughing/cultivation over the past 150 years has been mirrored by a substantial decline in the oat crop. In Ireland, the acreage of oats stabilised at 20,000ha to 25,000ha by the 1980s. However, there has been renewed global interest in the use of oats for human nutrition.

# Oats on a roll



The first use of oats in the human diet was probably in the form of a soup. That was before oat milling processes became available which could remove the outer husk from oat grains (called groats) before consumption.

For porridge making, the groats are typically heat-treated to help preservation before being cut in halves or quartered. While the value of oats for human nutrition has long been appreciated, recent advances in nutrition have provided the scientific evidence of the value and importance of oats.

Oats are a great source of fibre, essential amino acids, unsaturated fatty acids, minerals (especially Iron and Phosphorus) and vitamins. In addition, oats are rich in Beta-glucans and oat Beta-glucan has been shown

“ In general, interest in oats as a health food has stimulated demand for the grain

to have cholesterol, insulin and glucose lowering effects, reducing the risk of diabetes and heart disease. Oat Beta-glucans reduces both levels of total blood cholesterol, but it also blocks the uptake of harmful forms of cholesterol by forming a viscous layer in the small intestine.

Although oats do not contain many of the storage proteins (prolamins) which are found in wheat, they do contain avenin, which can trigger adverse intestinal reactions in coeliacs. Therefore, coeliacs need to be extremely careful when it comes to consuming oat-based products, and they should ensure that the products they select contain <20 ppm gluten.

Recently, oats that have been specially produced in a way which avoids contamination by wheat, rye, or barley have become available. As a result substantial markets have developed for gluten-free oats. In general, interest in oats as a health food has stimulated demand for the grain. In addition to porridge and breakfast cereals, a wide range of oat products are now available such as pasta, breads, biscuits, bars, cakes and snacks.

The absence of gluten in oats makes it difficult to make good-quality bread when high levels are used. Conse-



quently, oat-based breads tend to contain a maximum of 25% in the mixture.

Aside from nutrition, oats have long-established skincare benefits. Oat baths were historically used by the ancient Greeks and Romans to heal skin ailments.

Nowadays, there is an expanding range of oat-based dermatological products.

#### Growing:

From an agricultural point of view, oats are considered to be well adapted to a wide range of Irish soil conditions and are more tolerant of wet conditions than wheat and barley. Oats don't perform well under dry conditions however. More importantly, oats can be used as a break crop in a cereal rotation as they are not susceptible to the same species of take-all as wheat and barley.

While oats work well in a cereal rotation, winter oats should not be grown continually due to the likely build-up of oat mosaic virus in the soil. Oats can be grown with lower inputs than other cereals.

Recently, there has been increased interest in growing oats due to the requirement to grow a greater variety of crops under the CAP greening rules, but also due to the availability of contracts for gluten-free oats.

The Tillage Sector Development Plan identified potential to increase the area under oats by almost 14,000ha. However, it is important to note that the Irish market for oats is still limited and is comfortably filled by the existing oat acreage. Increased demand for oats for human nutrition has yet to make a significant impact on the Irish oat market and growers are advised to ensure that they have a contract before sowing oats.

One significant exception at present is the market for organic oats for human nutrition, which has expanded significantly in recent years and which has to be partially filled by imports due to insufficient production of organic oats within Ireland. Oats fit well into an organic rotation as they are quite competitive with weeds, both because of their tall growth habit but also because of the fact that they release chemicals which suppress weeds.

Oats are rapidly heading for "super-food" status. So, if you don't see yourself growing them, you should certainly consider eating them!

# Personal touch paying rich dividends

A staunch tribesman, Christy Tighe is also particularly proud of his 20 year hands-on involvement in forestry

**Noel Kennedy**  
Forestry Development Officer,  
Teagasc Crops, Environment  
& Land Use Programme

Standing among the straight-stemmed ash trees in his award-winning plantation in north Galway, Christy Tighe says: "Forestry has been a positive experience and rewarding investment – I have no regrets." Born and bred in Tuam into a dairy farming family, Christy and his brothers Michael and Peter took over the business owned by his father and uncle, and farmed in partnership. Their hard work culminated in the establishment of Tuam Dairies in 1985.

At its peak, Tuam Dairies was milking over 800 cows and employing a staff of 30. By the time the business diversified into the Galway Bay Cheese Company in 1987, Christy had left the farming side and was managing the processing end of the business. Towards the end of the 80s, the big supermarkets began to squeeze milk prices and, with strong downward pressure on margins and profitability, the brothers took the decision to sell the business to the Kerry Group in 1992.

## Diversification into forestry

By this stage, Christy and his brothers had seen the investment potential of forestry and in 1988 bought and planted three farms with Sitka spruce in Roscommon, Leitrim and Cavan. Fast, in some cases spectacular, growth rates; competitive land prices; an early planting grant; a premium scheme; and tax efficiency forestry; ticked a whole range of investment boxes.

## Growing the investment

Convinced of forestry's potential, Christy took a major personal and business decision in the mid-90s to begin seriously investing in forestry. He recognised that, to maximise returns from forestry, he needed large accessible blocks of heavy mineral soil ideal for growing high-yielding Sitka spruce. Naturally, he needed to buy that land at a good price.

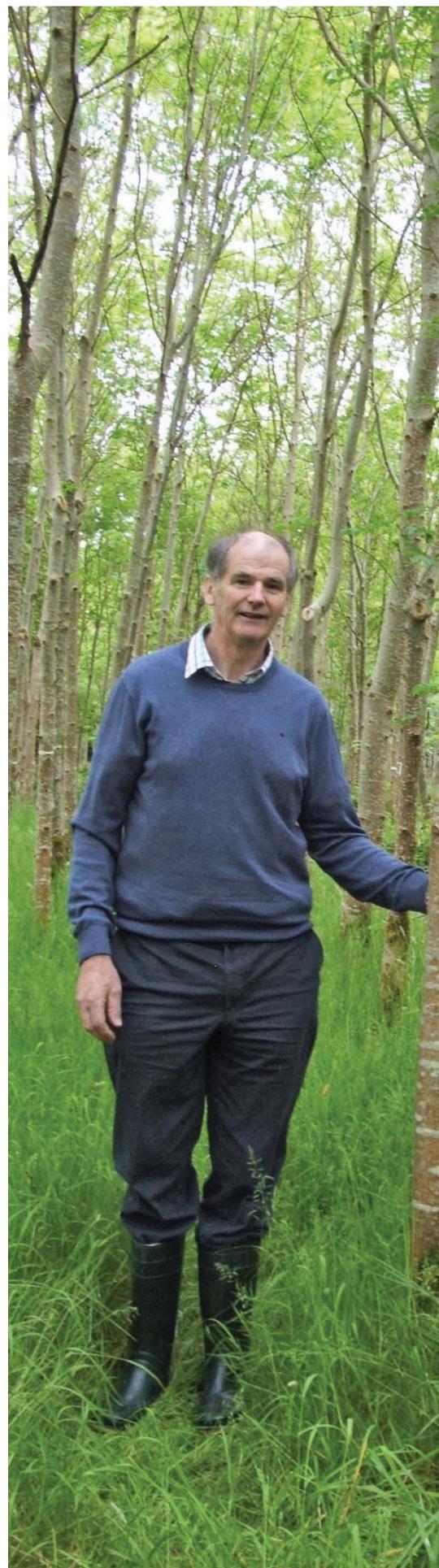
In 1995, Christy re-entered the forestry market and bought an 80-acre farm to plant for €80,000 near Strokestown, Co Roscommon. In the intervening years, Christy has rigidly stuck to this investment criteria – building a forestry portfolio that now extends to eight plantations totalling over 140ha across Roscommon, Leitrim and Galway. The forests range from 12 to 28 years old. Dominated by high-yielding Sitka spruce, which provides the strong commercial drive to his investment, the average plantation size of 17.5ha – more than twice the national average – generates considerable economies of scale.

“Forestry has been a positive experience and rewarding investment. I have no regrets  
– Christy Tighe

## Importance of good management

Good husbandry is critical, whether you're talking about a high-performance dairy cow or a high-performing stand of Sitka spruce, ash or oak. From the outset, Christy was determined to follow best forest management practice and employed professional forestry companies to oversee the planting and early maintenance of all of his plantations. But he then went a step further deciding to take personal responsibility for the day-to-day maintenance of the plantations after they passed the maintenance grant stage at four years old.

Maintenance varies with plantation, species and age. Jobs can include





Christy Tighe and Noel Kennedy at the Creggs, Co Galway, plantation site.

## Records

Good recordkeeping is an important element of good forest management practice. The following is a record of Christy's level of involvement after year four in the maintenance of his award-winning plantation in Creggs, Co Galway.

### Christy Tighe's forestry maintenance and management

Maintenance	Age of plantation	Year
*Formative shaping of broadleaves (second)	5	2002
*Formative shaping of broadleaves (third)	7	2004
*Control of briars and woody weeds	11	2008
*First high pruning (to 4m)	11	2008
Submit 10-year management plan	11	2008
*Control of briars and woody weeds	14	2010
**Second high pruning (to 5m)	14	2010
Tending of ash	17	2013
Construction of 220m forest road	17	2013
First thinning of Sitka spruce	17	2013
*Carried out by Christy Tighe		

grass cleaning, briar control, formative shaping, high pruning and cutting inspection paths. Christy has done it all and committed hundreds of man hours, but he retains a particular soft spot for looking after his 12ha of oak, ash and sycamore.

With broadleaf trees, it is all about the challenge to produce long lengths of straight and valuable timber. Nature doesn't make this easy to achieve; trees need plenty of ongoing formative shaping and high pruning. "There is no point in doing just one 'shaping' to get the grant and then forgetting about the crop," Christy stresses. "It is like sowing a crop of barley and closing the gate until you move in with the combine."

Walking through the Creggs, Co Galway, plantation, surrounded by uniform lines of straight ash – all high pruned to 4m – the fruits of Christy's hard work and consistency of management are clearly evident. His work and the quality of the plantation was recognised with a prestigious RDS forestry award in 2012.

With a substantial forest portfolio to manage, requiring a range of management skills and knowledge of schemes, Christy says he keeps himself informed and skilled by regularly attending Teagasc and other field days.

A recent cause for concern is the arrival of ash dieback in the country. With a substantial investment in ash, Christy is pragmatic: "Fingers crossed it won't arrive here but I will be vigilant."

### Maturing investment

Thanks to his diligence, determina-

tion and hard work, Christy is now nearing the completion of all of his broadleaf pruning and is looking forward to a more extensive programme of thinning conifers and broadleaves for which he will use professional harvesting contractors.

"First thinning of Sitka spruce has already been carried out on three sites; first and second thinning has been completed on a further two sites," says Christy.

"One of the second thinning sites, the original Strokestown plantation, is only 20 years old."

Thinning accelerates growth in the remaining trees and enhances yield of valuable commercial timber. The end game is a high-volume final crop that maximises the most valuable sawlog timber category at as early as thirty years old.

Christy conservatively estimates that the return on investment from Strokestown and other early plantations to date is 10% per annum. Increases in land price have reduced the rate of return on his younger plantations which he estimates still return a healthy 5% per annum.

### The future

The future for forestry in Ireland is bright, according to Christy, and he advocates that more farmers should be considering forestry on marginal land as an investment in their farming future.

Together with his children, who are now joint owners of the forests, he is looking forward to growing more quality trees and leaving a solid and sustainable legacy for the next generation.

Kevin Hutchinson



A fairy tree (hawthorn) on the Hill of Tara, Navan, Co Meath.

# Wondrous WOODS

Trees were mystical for our ancestors and some retain surprising influence today

**Eileen Woodbyrne**  
Lecturer in the Teagasc College  
at the National Botanic Gardens



It is well recognised that trees have positive effects on human health and wellbeing

**H**uman beings have always had an affinity for trees. Perhaps it is partly because they fulfil so many of our needs – for fuel, shelter and building materials, food, medicines and implements of all types from musical instruments and sports equipment to weapons.

It is also well recognised that trees have positive effects on human health and wellbeing. Hospital patients recover more quickly when they can see trees from their windows. Students perform better in assessments when they can see trees and shrubs from their classrooms and planting in public spaces is associated with reductions in crime levels.

But there is more to the relationship between people and trees than that. The Irish, in particular, seem to have a spiritual affinity with trees. There was a famous case in Co Clare some years ago in which a new road construction was re-routed to accommodate a tree that was the meeting point for all the fairies in Munster. It seems a little incongruous to think of planners and engineers having to consider the needs of the fairies, but

there you go. Many readers will be familiar with the concept of holy wells. There are reportedly more than 3,000 of them around Ireland, and most have a tree (often a hawthorn or an ash) associated with them. In lots of cases, the trees are festooned with objects pinned or tied to them, usually because tradition suggests that a cure for some ailment may result.

The rowan or mountain ash is another tree that features in mythology. There is an Irish tradition that the rowan protects houses from fire, and another says that if you carry a walking stick made from a rowan it will protect you from the fairies, so it's clearly something of a multipurpose tree. It might be wise to bring that stick if you were thinking of visiting the fairy tree in Clare, just to be on the safe side.

Holly is another tree that you can plant near your house to protect it from witches (and apparently from lightning as well, which is very useful). Don't misuse it though – apparently the fairies don't like if you use their holly to clean your chimney.

Be careful with elder trees too. They are allegedly bad-tempered trees associated with witchcraft and evil. Fall asleep under one at your peril and don't burn the wood in your fire or you will attract death or the devil into the house. Elder is bad news for children, in particular – a cradle made of elder will make a child sick, and a child won't grow any more if you beat him/her with elder.

So, take a walk in the woods, or better still plant some trees. But choose carefully.. you don't want to upset the fairy folk.

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