



Today's Farm

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

Succession done well in Waterford

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COMMENT



Mark Moore
Editor,
Today's Farm

What Teagasc does for young people

Young people are underrepresented among the ranks of farmers. Here, just 6% of farmers are under 35, slightly higher than in the six counties at 4% and a bit below the EU average of 7.5%. What's rare is precious and Teagasc puts a disproportionate effort into supporting this "demographic". More than 1,500 have applied to undertake Green Cert courses. As well as in the ag colleges students can undertake such courses through distance learning or even at the Teagasc college at the National Botanic Gardens.

New entrants to dairying are not to be found exclusively among the young but those under 35 are likely to be attracted by the higher levels of technology and scope to grow in that enterprise. Teagasc has recently launched a special service for new entrants to dairying and it's available to everyone regardless of their age.

Please read further from page 6.

An méid a dhéanann Teagasc ar son daoine óga

Tá daoine óga faoi ghannionadaíocht i measc feirmeoirí. Tá díreach 6% d'fheirmeoirí faoi bhun 35 bliana d'aois anseo, beagán níos airde ná mar atá sna sé chontae ag 4% agus beagán faoi bhun an mheáin in AE ag 7.5%. An rud is annamh is iontach, agus déanann Teagasc iarracht dhíreireach chun tacú leis an déimeagrafach seo. Tá iarratas déanta ag breis is 4,000 díobh tabhairt faoi chúrsaí Teastais Ghlais. Anuas ar na cúrsaí sin a dhéanamh sna coláistí talmhaíochta, is féidir le mic léinn cúrsaí den sórt sin a dhéanamh trí chianfhoghlaim nó fiú ag coláiste Theagasc ag Garraithe Náisiúnta na Lus.

Mar atá ráite inár bpríomhscéalta, ábhar an-tábhachtach do chomhairleoirí áitiúla is ea ceist an chomharbais. Tá leabhrán foilsithe ag Teagasc le déanaí ar an ábhar. Ní den aos óg amháin a bhíonn na feirmeoirí déiríochta nua i gcónaí, ach is minice a mhealltar na feirmeoirí faoi bhun 35 bliana d'aois leis na leibhéil níos airde teicneolaíochta agus deiseanna fáis san fhiontar sin. Tá seirbhís speisialta seolta ag Teagasc le déanaí le haghaidh daoine ag tosú amach i gcúrsaí déiríochta, agus tá sé ar fáil do gach aon duine, beag beann ar an aois atá acu!

PROFIT FROM GRAZED GRASS

The Derrypatrick herd

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Cover | Ger Murphy, Teagasc advisor Seamus Kearney and Gerry Murphy. The Murphys live in Waterford, not far from Carrick-on-Suir, and their story shows that succession can progress smoothly and lead to a satisfactory outcomes if communication is good and key turning points are not missed.

All roads lead to Kilkenny

Teagasc National Dairy Conference to take place at Lyrath Estate Hotel on 8 and 9 December

Dr Tom O'Dwyer
Head of Dairy Knowledge Transfer

The Teagasc National Dairy Conference 2015 takes place in the Lyrath Estate Hotel, Kilkenny on 8 and 9 December. The past 12 months has seen the removal of EU milk quotas, an increase in national milk production and a decrease in milk price (although this drop in price is more to do with global supply and demand than the removal of quotas per se). With these events in mind, the theme for this year's conference is "Managing in a New Era".

Technologies which dairy farmers can use to improve their farm business performance are the focus of this year's event. Adoption of these technologies by farmers will allow them to remain profitable and sustainable into the future.

This year's conference takes a new format compared with previous years. Firstly, it will be held over two days, with attendees having the option of attending on either or both of the days. Secondly, we have identified four high-quality keynote speakers from diverse fields to address the topics of dairy markets, measuring the financial performance of a growing business, managing yourself and managing others.

The most innovative aspect of this year's conference is the inclusion of break-out sessions. Attendees can choose to attend three break-out sessions from a list of seven on each afternoon. The break-out sessions focus on six key topics: grassland, breeding/herd fertility, finances, animal health, labour and systems.

Table 1: Break-out sessions*

Day one, Tuesday 8 December

Three sessions from the seven listed to be selected at the time of booking.

- Growing more grass – getting to the root of the problem.
- How to breed the right cow for your farm?
- How to manage 90% of your herd calving in six weeks?
- Managing volatility in your business
- Controlling parasites in young stock and milking cows
- A closer look at stocking rate for expanding dairy herds
- Getting your tactics right to manage through 2016

Day two, Wednesday 9 December

Three sessions from the seven listed to be selected at time of booking.

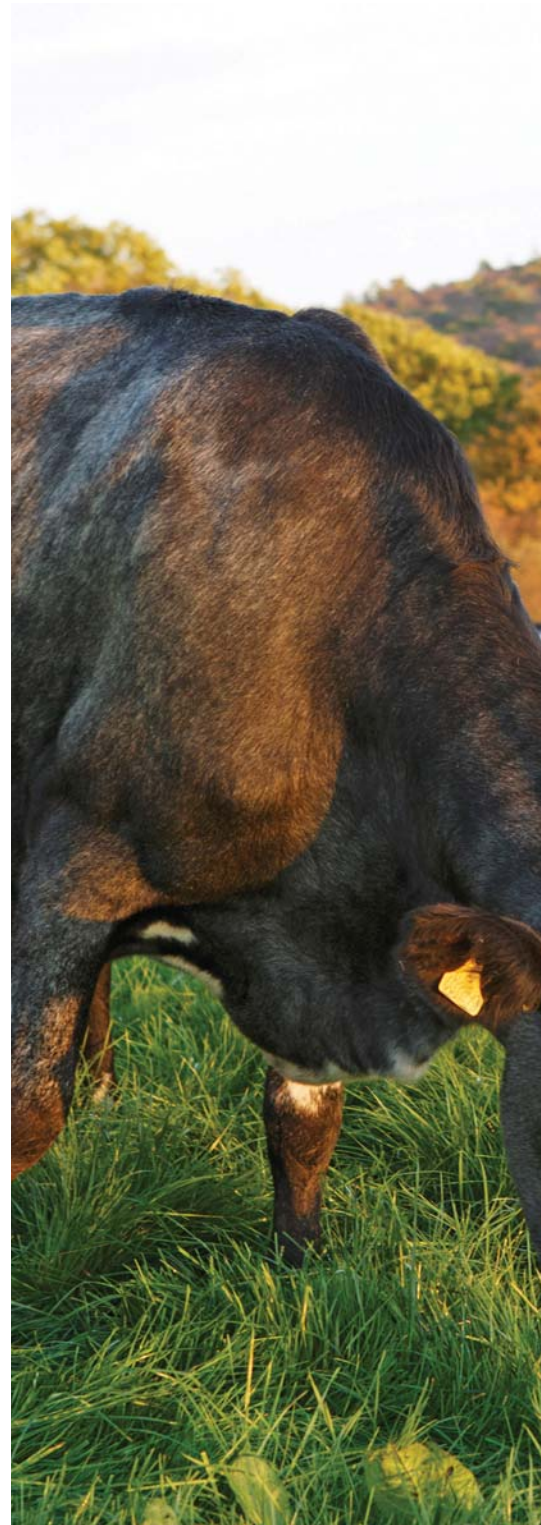
- Grazed grass – your lifeline in spring 2016.
- Why is six-week calving rate important to my farm?
- Employing labour – getting the basics right.
- Why are you farming: more cash, more assets or both?
- Keeping the udder healthy for the next lactation.
- Setting up a second milking block to produce milk profitably.
- Improving farm performance with technology.

*Further details at www.teagasc.ie

All of these sessions will be interactive, with plenty of time for audience involvement. All break-out sessions are listed in Table 1. Further details are available on the conference at www.teagasc.ie.

There will also be a social aspect to this year's event, with a conference dinner to be held at 8pm on the evening of 8 December.

Further details and booking for the Teagasc national dairy conference are available at www.teagasc.ie. Spaces



are limited by venue capacity on both days. Consequently, early booking is recommended. Attendees will be asked to indicate the break-out sessions which they wish to attend when booking.

Dairy farmers can avail of a special early bird booking rate of €50 for one day or €80 for both days if registration is completed before Tuesday 24 November. All other booking rates are listed in Table 2.

Registration includes entrance to



Technologies which dairy farmers can use to improve their farm business performance are the focus of this year's event.

the conference, including your choice of three break-out sessions, morning/afternoon teas, lunch and a copy of the conference proceedings.

Table 2: Booking fees

	Bookings	One day	Both days
Farmer	Early bird – before 24/11	€50	€80
	After 24/11	€70	€100
Non-farmer/industry	Early bird – before 24/11	€100	€160
	After 24/11	€120	€180

COLLEGE OPEN DAY

Date and time: Thursday 3 December, 10am to 2pm
Venue: Pallaskenry Agricultural College, Salesian Agricultural College, Pallaskenry, Co Limerick.
Principal: Derek O'Donoghue
Phone: 061 393100
Email: info@pallaskenry.com

ECONOMIC OUTLOOK CONFERENCE

Date: Tuesday, 1 December 2015
Venue: RDS, Ballsbridge, Dublin 4
Time: 10.30am to 1pm

In this half-day conference, Teagasc economists will examine short-term prospects for the dairy, drystock, tillage and pig sectors. Visit the Teagasc website for registration details, etc.

TEAGASC FARM BUSINESS CONFERENCE

Date: 26 November 2015
Venue: Tullamore Court Hotel, Co Offaly

This full-day conference will take the format of a plenary session with speakers on topics including:

- DAFM operation of the Basic Payment System and, in particular, entitlement transfer.
- Procedures involved in setting up partnerships and other collaborative farming arrangements.
- The agri-tax review – main changes implemented and procedure for feeding through ideas for future change.
- Overview of measures to facilitate land mobility.

Two discussion forums/workshops will also be held on the following topics:

- Financial measures used in farm financial performance benchmarking.
- Legal paperwork involved in setting up partnerships/share-farming arrangements.

This conference is targeted at professionals working within the agri-sector, including accountancy and tax professionals, legal professionals, banking officials, estate agents/auctioneers, private consultants and others.

A certificate of attendance to fulfil unstructured CPD requirements will be issued at the close of the conference.

Table 3: Collection centres

Date	Venue
Tuesday 17 November	Cahir Mart, Co Tipperary
Friday 20 November	Deeside Agri Country Store, Ardee, Co Louth
Wednesday 25 November	New Ross Mart, Co Wexford
Friday 27 November	Bandon Mart, Co Cork

INTERNATIONAL CONFERENCE ON MIXED FARMING SYSTEMS

Teagasc is hosting the first international conference on the challenges and innovations in mixed farming systems. This conference will look at the sustainability of mixed farming systems (MFS) from an environmental, economic and social perspective. Members of the CANtogether Consortium will present the findings of CANtogether; crops and animals together, an FP7 project, that assessed the relevance of farming systems combining crops and animals to increase sustainability of farms and regions across Europe.

There were two Irish case studies involved in the project; one that looked at the use of pig manure on tillage land in the northeast of the country and another that compared dairy farms with and without a homegrown crop in the south of the country.

Topics on the day include:

- Identifying the challenges to MFS.
- Farm and district level lifecycle assessment of MFS.
- Impact of MFS on regional trends in soil organic matter and nutrient losses.
- Crop-livestock integration at the district scale.
- Socio-economic aspects and conditions for the development of MFS.

The conference will take place in the Crowne Plaza Hotel, Dublin Airport, on Thursday 26 November. Registration is €40 and includes lunch.

HAZARDOUS WASTE COLLECTIONS

The Environmental Protection Agency (EPA) has teamed up with Teagasc, the Department of Agriculture, Food and the Marine (DAFM), local authorities, WEEE Ireland, European Recycling Platform (ERP) and Enva Ireland Ltd to operate collection centres for the collection of farm hazardous waste. This provides farmers with an excellent opportunity to dispose of their hazardous wastes in a manner that protects human health, livestock and the environment. The remaining options for farmers to avail of this opportunity are shown in Table 3. Collection centres will open from 9.30am to 3.30pm.

Please refer to the Teagasc website for further details on costs, materials accepted, etc.

Focus on succession

In this edition of *Today's Farm*, we have a number of articles which focus on Teagasc activities supporting young people who plan a career in farming. Our cover story focuses on a story from Seamus Kearney about a farm family succession in Waterford. We have an article by Patrick Gowing starting on page 9, which features a young new entrant to dairying in Westmeath.

In addition, we have an article on

page 26 by James O'Donoghue on distance-learning, which enables those in full-time employment to gain their Green Cert. Our article from the Teagasc College at the National Botanic Gardens by John Mulhern points out that students can earn a Green Cert there. It's a great time to be entering farming and all Teagasc staff are working hard to assist those who make this exciting career choice. – Mark Moore

Succession done well in Waterford

Gerry Murphy had just collected his son Ger, from Dublin Airport. As they were driving back home to the family farm in Co Waterford, Ger was enthusiastically relating his experiences in Australia where he had been working for over a year. As a qualified metal fabricator, he had been impressed by the technology and earning potential in the mines of Western Australia. As Ger made it clear that he couldn't wait to get back to Oz, Gerry had a "light-bulb" moment.

"I could see that Ger was never going to come home to farm if he returned to Australia and that I had to make him an attractive offer," says Gerry, who as a young man had himself made the decision to leave a job in a bank to come home and farm.

"Dad made a promise that he would hand over the farm and the cows in a couple of years if I still wanted to farm," says Ger. "That meant I could see a real future in staying here."

According to local Teagasc advisor Seamus Kearney, there are key moments for any family when succession issues must be addressed. "Despite the fact that it's clear that succession needs to be discussed and planned to ensure that all parties' needs are met, the topic is often placed on the long finger. Sometimes, turning points can be reached (such as a potential successor considering a job offer) and if they are missed, the eventual outcome might not be the best possible.

"Gerry was shrewd to recognise that his son needed the prospect of something solid in order to commit to the farm. Too often, young people don't know for certain they will inherit the land or at least when they will have a

major say in how it's run. If parents make a conditional offer, then the younger generation can plan."

For Ger Murphy, the agreement was that if he worked on the farm for a couple of years and still wished to farm, his father would sign over a good proportion of the 240-acre farm and stock. "With retirement on the horizon, I had been reducing dairy cow numbers and considering drystock," says Gerry. "But my preference was for one of my children to take over."

Gerry and his wife Moy have five children: his daughters were not interested nor was his eldest son. "Ger had the education (both a Green Cert and his qualification as a metal fabricator) and skills to take the business forward," says Gerry.

Transition phase

When Ger began the transition phase, there was a six-unit milking parlour which meant that milking the 65 cows was a laborious process. Having put in many hours milking, Ger began making innovations to make running the farm less labour-intensive.

Once Ger had taken over the business, he also set about investing in new capacity. "If succession has not been resolved it can act as a brake on investment," says Seamus Kearney. "No one is keen to make major investments unless they see a future."

With the succession issue resolved (Gerry rejected the idea of having a partnership as an interim step on the basis that Ger had earned the right to outright ownership), Ger Murphy investigated the potential of robot milking machines. "We visited a number of farmers who are operating robot milking machines," he says. "We



and new entrants

Gerry Murphy and his son Ger.



decided to install two robots as we are up to about 105 cows and rising.

“This is another example of why the family are a great example of a well managed succession,” says Seamus Kearney. “Ger has started a new era with a substantial investment in new technology. Gerry has also genuinely stepped back – some parents continue to try to influence decisions when allegedly retired.”

According to Seamus Kearney, responsibility and the freedom to make decisions are often more important than income for young people considering a career in farming.




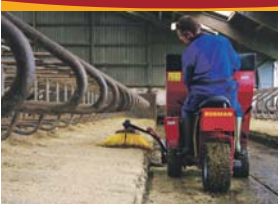

Ger, who is happy to consult his father on issues on the farm, tells about the time he was going to do the final deal on the robots. Just before he was about to leave, he said to his father: “Do you think I should go ahead and buy the robots?”

“Whatever you think is best, it’s up to you,” was Gerry’s reply. “It’s at moments like that when you have the satisfaction of knowing you’re running the business yourself,” concludes Ger.



Once Ger had taken over the business, he set about investing in new capacity

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Dr Monica Gorman of UCD, Tomás Russell and Teagasc director, Professor Gerry Boyle, at the launch of the *Farm Succession & Transfer Guide*.

Teagasc guide to farm succession and transfer

Teagasc has produced a new *Farm Succession & Transfer Guide*, which aims to support farm families in making decisions on succession and farm transfer. Tomás Russell of Teagasc/UCD, and author of the book, said: “This book provides farm families with a step-by-step guide through the processes of succession, helping them to deal with the emotional and complex issues involved in identifying a successor and discussing the future of the farm.”

Through information and self-complete exercises, it helps farm families to tease out the various issues relating to the farm transfer. It addresses key issues such as the potential of the farm, the role and implications of other family members, communication, management responsibilities and farm transfer. This is a book which should be completed with the help and support of the farm family, Teagasc advisor and other key professionals.

The book was created by Tomás Russell, as part of his PhD study in the Teagasc/UCD Agricultural Innovation Support Programme. His studies were funded through the Teagasc Walsh Fellowship Programme. The

guide was produced with collaboration from farmer representative organisations, as well as the banking and legal sectors and a number of farmers and successors who are currently confronting this challenge.

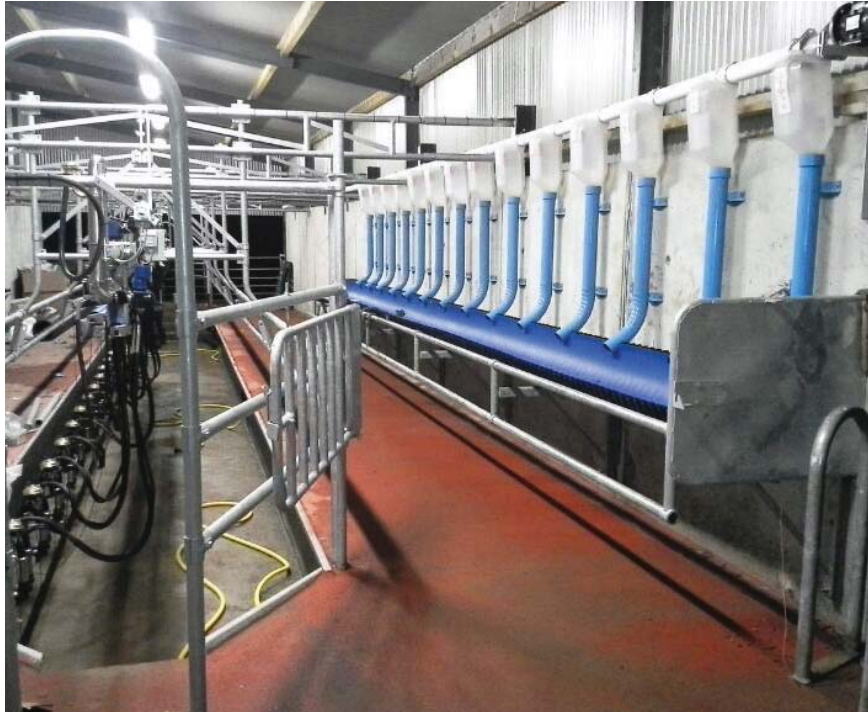
Tomás Russell said: “Starting the conversation on succession and farm transfer with the family can be one of the most difficult tasks and keeping the lines of communication open can help farm families to go through the process while minimising conflict and anger.”

Those interested in getting a copy of this booklet should contact their local Teagasc office. The publication is chargeable, but free to Teagasc clients.



Tips for succession

- **Communicate:** It is sometimes easier said than done. It may be better to have discussions away from the home farm.
- If a young person begins discussing a full-time off-farm job, they may really be asking: “Have I a future around here?”
- Genuine responsibility and the power to make decisions are often more important to a young person than income.
- The rights and expectations of parents/grandparents/siblings should all be discussed and addressed.
 - A partnership or a concrete offer to pass on ownership subject to a successful period working on or managing the farm may be a way to manage risk while meeting the aspirations of the potential successor.
 - Newly installed successors will value support but must be allowed to manage the farm without unwanted interference from retirees.
 - An outside view can be useful. Many Teagasc advisors work with farm families on succession.



Robert English's new milking parlour. He emphasises the need to invest prudently when starting out.

Partnership underpins expansion



Robert is keen to highlight the need to have a good contingency budget, as unforeseen things crop up

Patrick Gowing
Teagasc Dairy Expansion Service

Located on the Westmeath/Longford border near the village of Tang, Robert English and his father Mervyn farm in partnership. They converted the farm from drystock to dairying in 2014. While talking to them both, you would think they have been milking all their farming careers such is their knowledge, yet they are only in their second year of milk production.

Prior to converting, the farm was in a suckler-to-beef-and-sheep system and Robert, who is a qualified engineer, was working off farm. The land is in a 121ha block with an additional 2ha across the road. The farm is a mixture of high dry land (approximately 70ha) that runs around the existing farmyard and is bounded by lower land (51ha) that is drained on a pumped system into neighbouring Lough Ree.

Why get into dairying?

A question Robert has been asked over and over again is why he left a stable job to go back home farming. As Robert worked as an engineer, he was finding it harder and harder to get work close to home and his commutes to work were getting longer, especially during the downturn.

"I always had an interest and desire to develop the farm. Returns were poor from the drystock enterprises. It was obvious that dairying was the only option to allow me to achieve his goals for the farm and to become a full-time farmer."

With the backing of his parents, Robert contacted Teagasc to see if it was feasible to convert. Initially, a simple one-page assessment page was used to see if it was a viable move. The farm was also walked to see what capital would be required.

The main question to ask any potential new dairy farmer is: have you milked before and do you know what you are getting yourself into?



Continued on page 10

» From page 9

To answer these questions, Robert left his job early to do a calving season in 2013 with Gerry Fallon, a local dairy farmer who was himself expanding onto new land. This gave Robert valuable experience on a large-scale, spring-calving dairy farm on a grass-based system. It also answered the question of whether he like milking cows while showing him the potential of a well-run dairy farm.

Robert joined the "Going Forward" dairy discussion group a year prior to starting in milk. He is adamant that all potential new entrants should join a local discussion group. "It's the only way to learn and upskill yourself. You see how to do it right on other farms and you make connections with existing farmers who are a valuable source of information, especially in the early days of milk production."

The decision was made to proceed with the changeover and Robert purchased quota and applied to the new entrant quota under section B.

The business plan

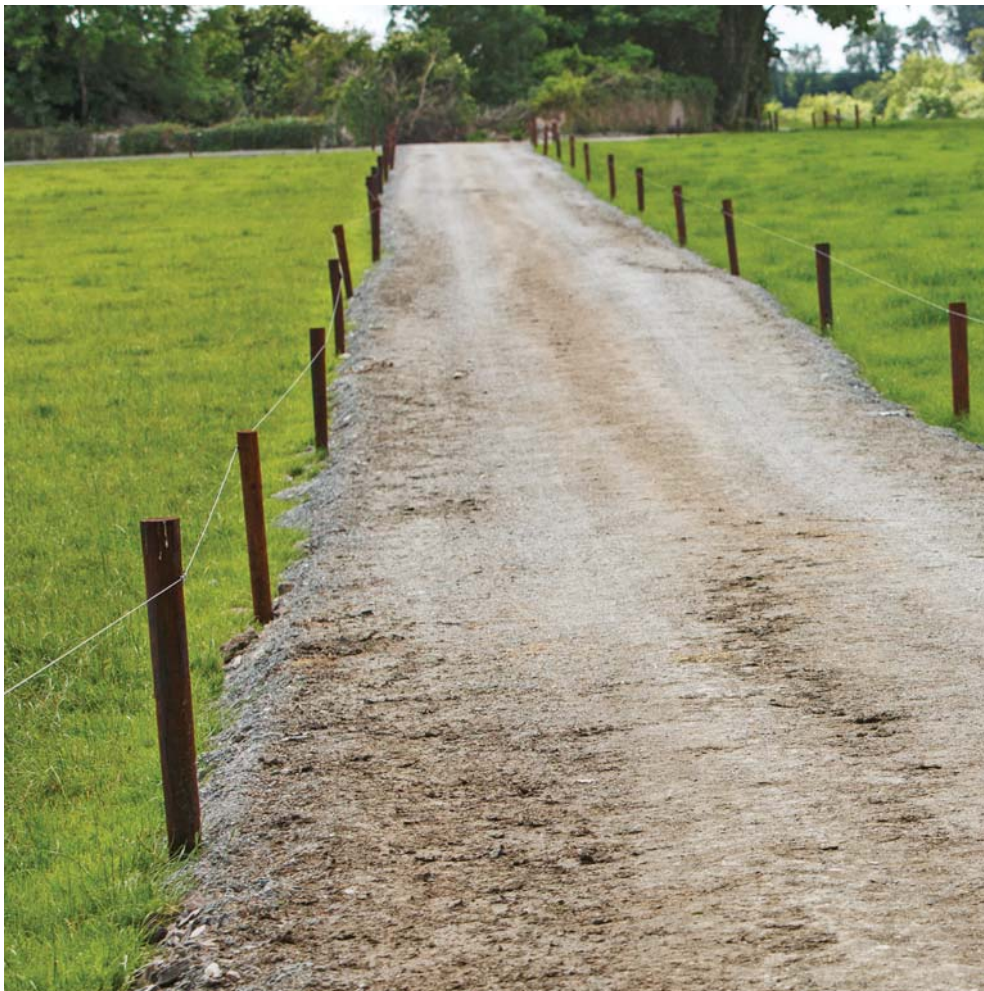
A business plan was prepared for the banks with the investment cost on the farm divided into two phases. The initial drawdown was to allow Robert to start.

The focus was to get the farm growing grass and to allow them to enter dairying with relatively small numbers. This allowed the farm to manage the last two years of the quota regime, enabled Robert to build his expertise in dairying gradually and maximised the use of the existing drystock sheds on farm for wintering facilities. This meant the farm would not be overburdened with debt in the first few years of expansion.

A 16-unit parlour was constructed beside the existing yard with room to extend to 24. Robert availed of TAMS grant aid on the milking parlour and bulk tank. While the site of the parlour was not central to the land (the precise centre of the farm is 270 metres away) it was placed beside existing services (electricity and water), it is central to the drier land and the centre of the farm is on a rock vein which would have increased costs for digging out tanks in the future.

All other investment in year one was spent on growing grass and improving access to grass. The farm was soil sampled and showed index one for both P and K and had a lime requirement. A fertilizer plan was put in place to address this issue.

Based on advice from his group, Robert tries to have one-acre reseeded for every cow he has on farm. This is a simple guide for how much he needs



Robert English.

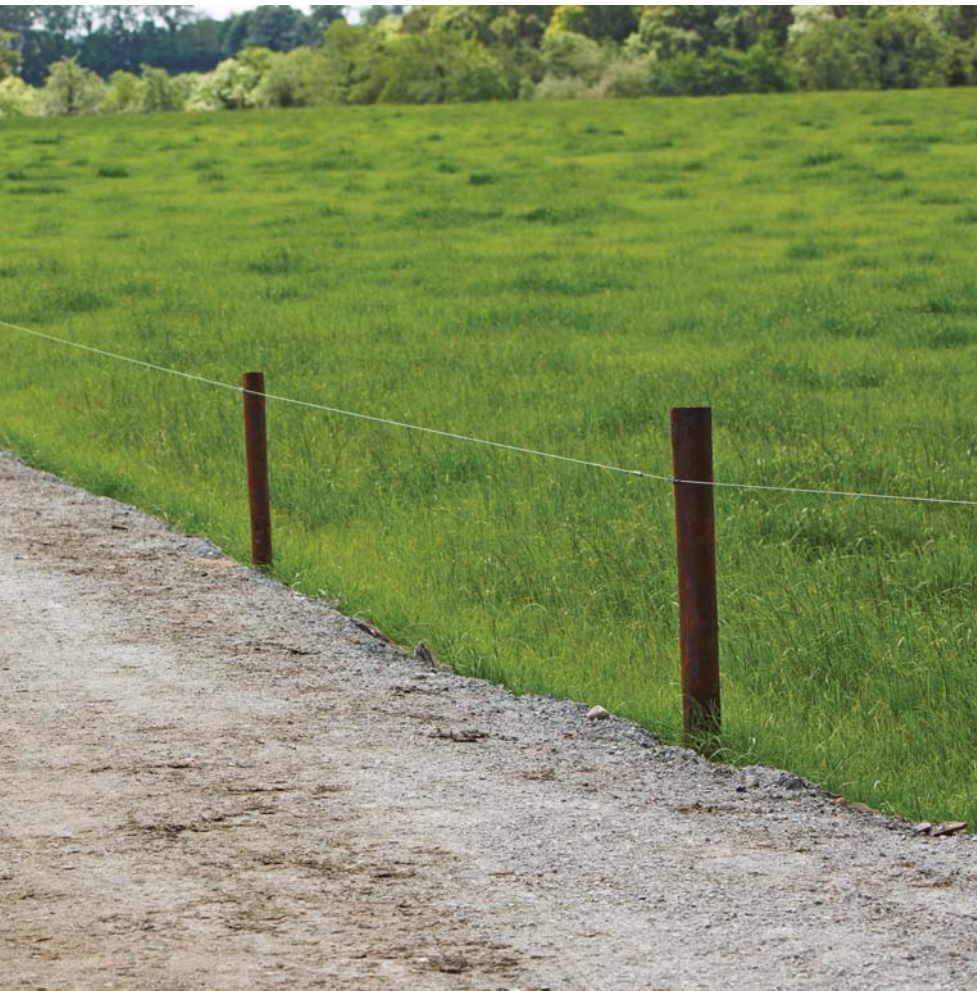
to do in any year.

A new road plan was put in place to link existing roads and improve access. No permanent paddocks were established. Each year, paddocks are made using temporary wire. This saved on initial investment costs and it also allows for flexibility as the herd expands.

Robert is keen to point out the need to have a good contingency budget. "Unforeseen things

crop up," he says. "For example, a new well had to be bored as the existing well did not have the supply required. This was not initially budgeted for, but was covered under the contingency budget."

When setting up the business plan, a milk price of 34c/l was used for 2014 and 28c/l thereafter. As they were a converting farm, the average costs per livestock unit from Westmeath were used to estimate potential costs. His milk output in year one was based on delivering 330kg MS/cow



The removal of milk quotas in 2015 provides a new opportunity for the Irish dairy industry. While today's dairy farmers are well educated and better travelled compared with previous generations the challenges which they will face will be greater.

Continuing development in technology and the volatility of world markets will pose new challenges and a greater need for planning, especially in the expansion phase. Poor planning of expansion can result in bad business decisions and cashflow issues.

With this in mind, Teagasc has launched the new Dairy Expansion Service, which provides the following:

- Grazing infrastructure design.
- Farmyard layout and design.
- Capital costing for expansion.
- Timeline of expansion.
- Six-year business plan.
- Cashflow projections.
- Ongoing assessment of the expansion plan.

Contact your local Teagasc advisor today or email Patrick Gowing at patrick.gowing@teagasc.ie

Table 1

Year	2014	2015	2016
Planned cow numbers	65	105	145
Actual	50	120	150
Planned kg MS/cow	333	348	364

Table 2

Year	2013	2014	2015	2016
Farm roadways (m)	249m	298m	570m	550m
Reseeding (ha)	14.38ha	8.2 ha	15 ha	16 ha

rising to 400kg by year six. Budgeting on overperforming cows in a business plan can put the plan under pressure. "If it works at the lower output, it will definitely work at the higher output," Robert says.

Sourcing stock

Robert used the sale of the beef and sheep to finance the purchase of in-calf heifers in autumn 2013. High genetic merit cows herds were identified. Fifty heifers were purchased from the minimum number of herds to reduce the infectious disease risk. In year one, the average EBI of the herd was €156 which was in the top 5% of herd for genetics within Lakeland Dairies who he supplies.

The plan aimed to increase cow numbers from 50 to 130 over three years. This meant that the existing

facilities would suffice until 2016. However, Robert got the opportunity to work off-farm in the second half of 2015. With help on farm from his parents, Robert went back to work and saved money to allow him purchase additional heifers to bring his plan forward by a year.

This meant that Robert was able to purchase an additional 70 in-calf heifers in the autumn of 2014 to milk 120 in 2015.

Phase two expansion

With the opportunity to increase cow numbers sooner than planned, the business plan was revised and resubmitted to the bank to allow for the capital expenditure on housing facilities. As the original plan had allowed for a double drawdown on funds, there was no issue with accessing the additional

money as it was highlighted to the bank from the outset.

The revised plan signposted the possibility to increase cow numbers faster and we could use Robert's own figures from his eProfit monitor to establish his cost base.

Robert plans to construct a concrete slurry lagoon and develop a cubicle accommodation and feeding area off the tank located beside the parlour. The slurry lagoon will have enough storage to cover him for future cow numbers where cubicles can be added as required.

Advice to other new entrants

Robert emphasises the importance of gaining experience on leading farms when starting out. He also believes in getting the right advice and "doing things right".

"It's an expensive job to convert and you have to make sure you are doing it right," he says. "Make sure you invest in areas that will return you money." He also feels that a properly thought-through and constructed business plan is essential for guiding you through the first years of expansion. "It has to work on the plan, Robert concludes. "If it doesn't pay there ask yourself – should you be doing it?"

Drying off: feed quality and

John Leahy runs a spring-calving dairy herd on a heavy soils farm in Upper Athea, Co Limerick. He is part of the Teagasc/Kerry monitor farm programme

Keith Fahy, Teagasc, Newcastlewest, Co Limerick

John Leahy is milking 95 cows at a stocking rate of 2.41 on the grazing platform. In late October, he condition-scored all cows and heifers. The results determined which animals needed to be dried off first and also identified the cows that would need supplementation with silage during the first weeks of the dry period.

There are a number of major factors to consider when managing the dry cow:

1. Calving date
2. Body condition score
3. Lactation number
4. Silage quality
5. Grass in diet
6. Somatic cell count

1. Calving date

The dry-off date will vary depending on the condition score of the cow and the length the farmer wants to keep cows dry (e.g. six, eight or 10 weeks prior to calving). "We start calving on 10 February, with 50% of the herd due to calve by the first week in March," says John. "With all cows dried off by mid-December, the majority of cows will be dry for at least 10 weeks."

2. Body condition score (BCS)

Having the cow in the correct BCS is critical when drying off is key as it may have a serious effect on production and the health status of the cow at calving. Cows with a condition score of 2.5 or less will have been dried off along with the first calvers by mid-November. These receive ad-lib pit silage (from 2014 pit) supplemented with 1kg to 2kg of ration for approx. five weeks or until optimum condition score has been met.

Farmers planning on a eight-week dry period must have cows in BCS of 3+ on the day of drying off as cows can only put on weight/condition in 18 of the 42 days dry.

Cows that are have a BCS less than three and are milked, on average to poor quality silage, are at risk of serious problems in spring, e.g. fertility issues at breeding, poor calf and colostrum quality and greater pressures on cows 'milking off their backs'. This may cause milk fever post-calving which can affect yield further on in the lactation. Feeding thin cows ration earlier in the dry period is much more beneficial than prolonging feeding in later lactation as this may have a negative effect on calf size, creating calving difficulties.

3. Lactation number

Lactation number should play a major role when deciding to dry off. First-lactation cows should be dried off first. Milking first-lactation cows later into the year can reduce BCS and future production. "We'll dry off our 22 first calvers by mid-November along with thinner cows," says John Leahy. "Mature cows that are in good condition will be dried off by 15 December."

4. Silage quality

Forage quality will determine if meals need to be fed and the most accurate way to do this is to test the quality of the silage and supplement poorer silages. It is vital that cows



do not lose condition during the dry period due to poor quality silage being fed. Losing condition may affect production in 2016.

John's 2015 silage sample results are shown in Table 1. John was disappointed with his silage DMD quality this year. "We had planned on making silage in May but weather did not permit and this forced cutting into June," says John. "This had a big effect on silage quality. Pit silage is at best average and we'll take that into account when supplementing." Cows being milked off silage should be fed silage of greater than 70% DMD.

5. Grass in the diet

The main objective is to prolong the grazing season and get the highest amount of grass as possible in the diet without affecting spring covers or the BCS of the animal. "I plan to milk until mid-December and to have cows grazing for as long as possible," says John. Due to the heavy nature of the farm, it is almost impossible to set a precise date as to when cows will be permanently housed. This may range from early to late November. Good quality baled silage is expected to be introduced around 20 November. John had 70% of the farm grazed by 1 November. Last year's closing average farm cover was 450kg/ha, but this year when the AFC hits 550kg dm/ha this year the farm will be closed off.

John Leahy's 2015 silage results

Silage type	Grass silage	Grass silage	Range
Date of cut	6 June 2015	20 July 2015	
Cut number	First cut	Second cut	
Silage system	Pit	Round bale	
Dry matter	21.6	26.6%	15-55
pH	4.3	4.3	3.5-5.0
Ammonia	18	16.0	7-15
Protein	8.6	11.8	7-16
ME	10	10.4	9-12
DMD	64%	66%	55-82
FIM intake	86	92	70-115

body condition are key



Key messages

When drying off this year, it is vital that farmers address the following:

- Body condition score.
- Silage quality.
- Calving date.
- Give priority to first lactation cows.
- Group cows according to condition score.

6. Somatic cell count

John has good milk quality (<150,000 SCC) but still plans to identify cows that had a higher than average cell count and cows and that were treated for mastitis.

“These cows will be dried off earlier than the final drying off group. This allows cows to recover from mastitis and should help improve their cell count for the following spring,” he says.

Conclusion

There are a number of farmers debating whether or not they will milk on later this year when compared with other years (due to the abolishment of quotas). This may increase production and generate a steady cashflow into the winter. However unless this is done correctly, it may prove to be a ‘penny wise pound foolish’ approach.

If farmers are planning to milk on into the autumn/winter, they must have cows in a BCS greater than three, when drying off with a eight-week dry period. If this target is not reached, there may be substantial negative effects in 2016. This could include health issues, metabolic disorders, calving difficulties, lower production and fertility issues. “Drying off is a key time which needs to be managed carefully,” concludes John.



0.5 of a BCS is approx. 25kg liveweight in a Holstein Friesian cow

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The Derrypatrick herd: Profit

Adam Woods

Animal & Grassland Research and Innovation Centre, Teagasc, Grange, Dunsany, Co Meath

The Derrypatrick farm is a suckler beef systems research farm established at Teagasc, Grange, Dunsany, Co Meath in 2009. The farm consists of 65ha in a single block with a good network of roadways servicing 79 grazing paddocks. Some areas of the farm are free-draining but much of the land is heavy and difficult to graze very early or late in the year.

Perennial ryegrass dominates much of the swards and 12ha (30 acres) were reseeded this summer with monocultures of Abergain, Glenveagh, Abergreen and Aberchoice sown at 35 kg/ha. In future 10% of the land area will be reseeded each year.

Soil fertility is medium with the most recent soil samples (taken in 2013) showing that 10% of the farm was Index 3 or higher for phosphorus (P) and 46% of the farm Index 3 or higher for potassium (K).

The pH of the Derrypatrick farm was 5.8 in 2013. These soil fertility issues have been addressed over the past two years and the farm is due to be soil sampled again during the winter of 2015.

High grass growth

The Derrypatrick system is based on high grass growth and high levels of utilisation.

Figure 1 summarises the grass growth for the farm for the year to the end of September. So far, the farm has grown an average of 12,992kg dry matter (DM), with 10,593kg DM/ha of this coming from grazed grass and 2,398 kg DM/ha from conserved grass silage.

Each of the 79 paddocks was grazed five times on average – this includes the silage fields. The most productive paddock on the Derrypatrick farm had grown 15.1t DM/ha by the end of September, while the most unproductive paddock had grown just 3.8t. This demonstrates the wide variance between paddocks on the same farm and next year's focus will be on upgrading lower yielding paddocks (towards the right of Figure 1) to ensure that they grow more grass through increasing soil fertility or reseeded.

Silage

One way of reducing the level of concentrates used in a beef system



is to make high-quality silage. Our first-cut silage at 78DMD will mean we will need to restrict suckler cows that come in over-conditioned.

The surplus bales will be fed at the beginning of the winter before pits are opened and they will then be fed to our under 16-month-old bulls to

reduce the amount of concentrates needed to finish them. These surplus bales have the advantage of ensuring quality is kept in the grazed swards during the grazing season and also they result in high-DMD silage which can be fed back to weanlings during winter months.

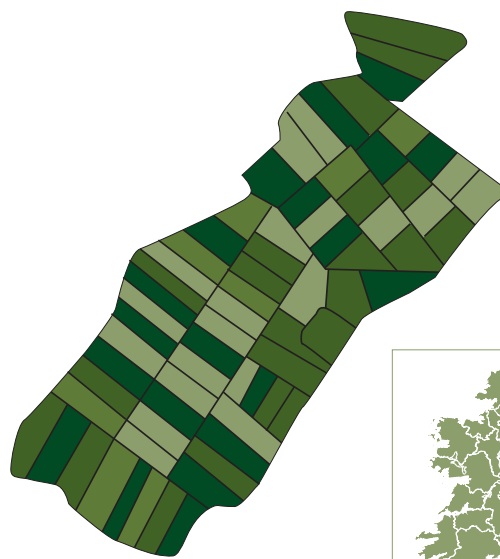
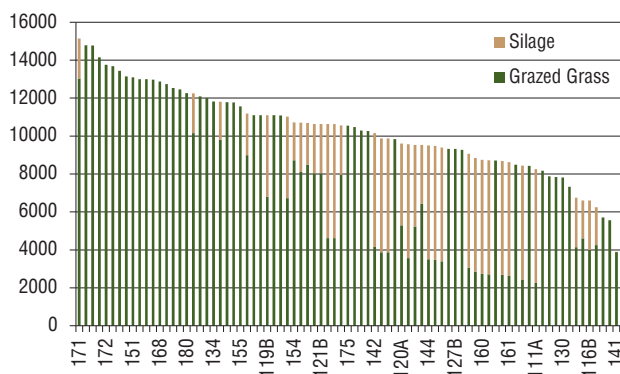
Table 1: Derrypatrick 2015 silage results

	First cut	Second cut	Surplus bales
Cutting date	3 June	3 August	15 June
Dry matter (%)	27.9	25.6	49.4
pH	3.6	3.9	4.7
Protein	11.8	11	11.8
DMD (%DM)	78	72	73

from grazed grass



Figure 1
Derrypatrick grass yields for each paddock up to 30 September 2015 – yield is in kg DM/ha



Financial performance

One of the objectives of the Derrypatrick herd is to demonstrate production systems which generate high levels of profitability. A target gross margin in excess of €1,000/ha was set at the initiation of the project in 2009. Two key principles for achieving the targets set for the herd are:

1. Output of beef per hectare must be high. This is achieved through high output per animal and a high stocking rate.
2. It is vital that this output is generated cost-effectively, which means that a high proportion of lifetime

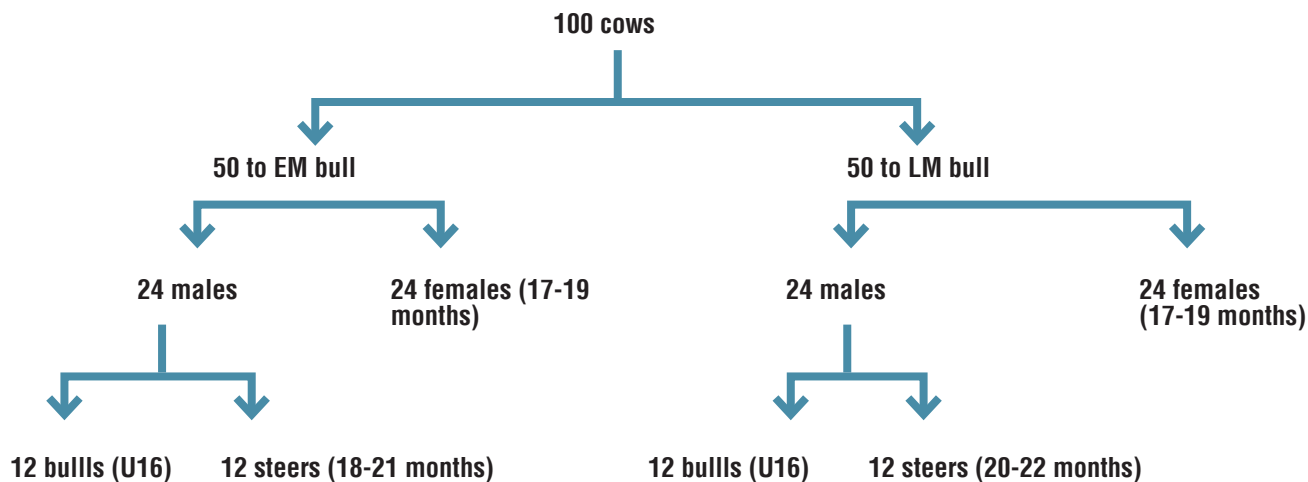
Members of the Teagasc Beef Stakeholder Group on a visit to the Derrypatrick herd.

daily gain is achieved from grazed grass. Currently it is estimated that, on average, grazed grass constitutes less than half of the total feed budget on Irish suckler calf-to-beef farms and total herbage utilised is less than 5t DM/ha. This is considerably lower than the targets set for the Derrypatrick herd, where grazed grass is estimated to account for ~65% of the total feed budget and herbage utilised is ~11t DM/ha. For bull and heifer progeny in the Derrypatrick herd, approximately 50% and 70%, respectively, of slaughter weight will be achieved from grazed grass.


Continued on p16

Figure 3: The farm system

Early maturing sire (EM) versus late-maturing sire (LM). Purchase half replacements from dairy herd and half from suckler herd



The farm system

In 2013, a decision was taken to change the breeding programme from the original cow breed-type comparison study to a study comparing early-versus late-maturing breed sires.

The replacement policy was also changed that year, with half of the replacements now being sourced from the dairy herd as Limousin X Holstein/Friesian while the other half are sourced from suckler herds as heifers that are ranked high on the Replacement Index – they are predominantly Limousin- and Simmental-crossbred heifers.

All heifers are served to either an easy-calving Aberdeen Angus or Limousin bull and all replacements calve at 24 months of age. Replacements are purchased at 8-12 months of age with none bred on the farm (in order to maximise the number of animals finished, thereby providing more carcass data for the breed comparison).

An objective for the Derrypatrick herd over the next four years is that all cows will be four- or five-star on the Replacement Index scale. In order for this to happen, we will need to purchase heifers in the region of €100-€120 to lift the herd average over the next few years

The calving period is from 18th February to 30th April and calving in 2016 will take place over an 11 week period (Table 2). The six week pregnancy rate in the Derrypatrick herd in 2015 was 82.5% with an overall pregnancy rate of 96% (two cows and two heifers were scanned as non-pregnant). Seventy-one mature cows and 26 maiden heifers will calve down in 2016.

Table 2: Replacement Index of Derrypatrick beef suckler herd

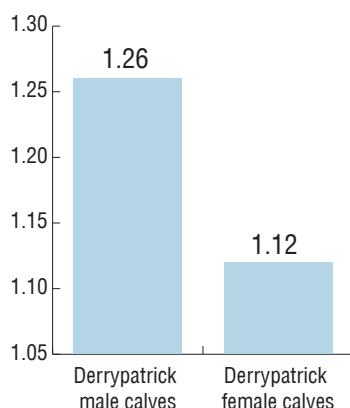
Star rating	n	Value (€)
*	n=13	€13.50
**	n=13	€44.60
***	n=11	€64.60
** **	n=14	€86.50
*****	n=19	€127.50
2016 replacements		€100.80
All cows		€73.60

Terminal sires used are Charolais, Aberdeen Angus and Limousin. The herd is divided evenly between early-maturing sires (Aberdeen Angus) and late-maturing sires (Charolais and Limousin).

All animals are brought to finish, with half (n=25) of the male progeny being finished as bulls under 16 months of age (13 late-maturing and 12 early-maturing). The remaining male calves are finished as steers at 18-22 months of age. Heifers are finished at 17-22 months, with about 75% of the heifers being slaughtered off grass in September/October.

Many of the early-maturing heifers will be slaughtered off grass without any supplementation, while the late-maturing heifers will receive some concentrates at grass six to eight weeks before slaughter. The typical carcass weights expected from this system are: under 16-month-old bulls 360kg to 420kg, heifers 250kg to 350 kg and steers 300kg to 400 kg.

Figure 4
Calf liveweight performance (kg/day) in the Derrypatrick herd



Cull cows

Most of the cull cows (n=13) were finished off grass, with cows getting concentrates from 9 September until slaughter on 29 September. Concentrates were fed to cows and calves to aid the weaning process. Six Aberdeen Angus heifers and four Aberdeen Angus steers were slaughtered directly off grass with no concentrates fed to them. Late-maturing heifers (n=25) have recently been split into two groups, with 15 heifers destined for slaughter off grass and the remainder to be housed for indoor finishing.



Table 3: Breeding and calving dates for the Derrypatrick herd in 2015/16

Cows	Start	End	Days	Weeks
Breeding	08/05/2015	20/07/2015	73	11
Calving	18/02/2016	30/04/2016	73	11
Heifers	Start	End	Days	Weeks
Breeding	14/05/2015	28/06/2015	45	7
Calving	27/02/2016	12/04/2016	45	7

Table 4: Derrypatrick sales performance for 2015

Animal type	Weight (kg)	Conformation	Fat	Carcase	Kill-out	€/kg	Value
Cull cows (20)	805	R=	4-	430	53.4%	3.79	1633
AA bulls (10)	665	R+	3=	380	57.2%	4.35	1655
CH bulls (13)	664	U-	3-	395	59.5%	4.41	1741
AA steers (7)	644	R=	3+	360	55.9%	4.17	1501
AA heifers (20)	569	R-	4-	309	54.2%	4.20	1296

AA=Aberdeen Angus; CH=Charolais

1. Achieve a gross margin in excess of €1500/ha and a net margin in excess of €1000/ha.
2. All paddocks on the Derrypatrick farm had Index 3 for P and K and a pH above 6.2.
3. Grow 15t grass DM/ha.
4. Achieve high utilisation and at least 250 days at grass.
5. Become one of the highest Replacement Index herds in the country.
6. Achieve the best possible breeding and fertility targets.
7. Produce carcasses according to meat industry specifications predominantly off grazed grass.
8. Incorporate a clover research trial on the Derrypatrick farm.
9. Incorporate a breeding comparison trial within the Derrypatrick herd.
10. Host every Knowledge Transfer (KT) discussion group in the country within the next five years.

All steers and heifers for finishing at grass were started on concentrates on 9 September and are being offered 5kg/head/day. The late-maturing heifers, which are predominantly Charolais-sired, currently weigh 563kg, while the late-maturing steers currently weigh 610 kg (30/09/2015). It is hoped that a high proportion of these late-maturing heifers will be slaughtered off grass by the end of October.

The projected gross and net margins for the Derrypatrick herd for 2015 are presented in Table 4. It is apparent that the margin achieved is largely due to the high level of output (24% greater than the top third of the Teagasc eProfit Monitor farms). The gross margin is the best measure of technical efficiency and is projected to

be close to €1,300/ha for the Derrypatrick herd in 2015.

When full costs are considered (including overheads and facilities costs) net margin is expected to exceed €600/ha.

Figure 4 summarises the calf performance on the Derrypatrick farm for 2015 to date. Calf performance targets are 1.25 kg/day for male calves and 1.1 kg/day for female calves so calf performance is on target up to the end of September 2015.

Half of the male calves were castrated at the end of September and weaning is almost complete. The aim will be to keep weanlings outdoors as long as possible with cows aiming to be housed on 1st November and weanlings to be housed on 1 December.

Table 5: 2015 predicted Derrypatrick profit analysis compared with the average and top-third of the 2014 eprofit monitor farms

	Derrypatrick estimate	Average eprofit monitor	Top 1/3 of eprofit monitor
Physical			
Farm size (ha)	65	44	48
Stocking rate (LU/ha)	2.7	1.7	2.2
Liveweight produced (kg/LU)	362	324	360
Liveweight produced (kg/ha)	977	561	775
Financial(€/ha)			
Gross output	€2277	€1242	€1831
Variable costs	€1004	€710	€865
Gross margin	€1273	€532	€966
Fixed costs	€652	€526	€652
Net profit excl. premia	€621	€6	€314



TIP How to learn more

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

Weekly farm notes are uploaded onto the website (<http://www.teagasc.ie/beef/derrypatrick-herd/>) so farmers can keep track of progress and management changes on the farm. The herd is also open to the public for pre-arranged farm tours and open days will be arranged on a regular basis. Anyone interested in visiting the herd should contact me at Teagasc, Grange, Co. Meath or adam.woods@teagasc.ie

Plan an effective ewe

Michael Gottstein and Ciaran Lynch
Teagasc Animal and Grassland
Research & Innovation Programme

Case study

An absolute certainty for all sheep farmers who plan to maintain their ewe flock is that they will need to replace sheep that become old/unproductive or die annually. Typically, this is in the order of one in four for lowland flocks and may be slightly higher in intensive systems or upland areas.

In most flocks, the replacement strategy will fall into one of three categories:

- Retaining ewe lambs born on farm.
- Purchasing replacement ewe lambs.
- Purchasing replacement hogget ewes.

Retaining homebred ewe lambs offers the obvious advantage of known disease status. It also offers the opportunity to fully exploit genetic improvement by using high genetic merit rams. To get maximum benefit from this approach, however, requires the flock owner to run maternal rams to produce these replacements and will result in a separate group of lambs not destined for sale.

Purchasing replacements as either ewe lambs or hoggets offers the advantage of not having to worry about this group of stock until they are purchased. There is no need to use maternal rams and all lambs produced on the farm are finished for slaughter or sold as stores. It can simplify management and reduce the number of grazing groups on the farm. However, unless there is a known link to the producer of these lambs, there will be very little information on the genetic merit of the stock and there is a significant risk of bringing disease into the flock.

Risk

The risk of purchasing animals carrying infectious disease or resistant parasites should not be underestimated as it can have serious financial consequences for the flock.

There are a number of sheep farmers and breeder groups who specialise in producing maternally sired ewe replacements for sale as either ewe lambs or hoggets. Establishing links with producers who have breeding objectives similar to your own, and where the flock health history is known, significantly reduces the risk of buying in disease or sheep that subsequently fail to deliver to expectations.

John Curley, Four Roads, Co Roscommon

John Curley has been participating in the BETTER sheep farm programme for the last six years.

As part of the programme, John has a clearly defined breeding policy which has revolved around a reciprocal cross of Suffolk and Belclare ewes where Suffolk-sired ewes are mated with Belclare rams and vice versa. This policy has resulted in his flock being able to consistently achieve key targets such as litter size of 1.9 and a weaning rate in excess of 1.6 lambs per ewe joined with the ram.

The aim of John's breeding policy is to produce ewes that consistently produce twins and are capable of rearing two lambs to a target weaning weight of 34kg at 14 weeks of age. By breeding replacements from within his flock, the only sheep being brought on to the farm are a small number of replacement rams. This significantly reduces the risk of bringing in disease. In the case of certain diseases, such as scrapie and enzootic abortion, the risk is eliminated altogether as these are not transmitted by male sheep.

Another advantage of having a clearly defined and successfully

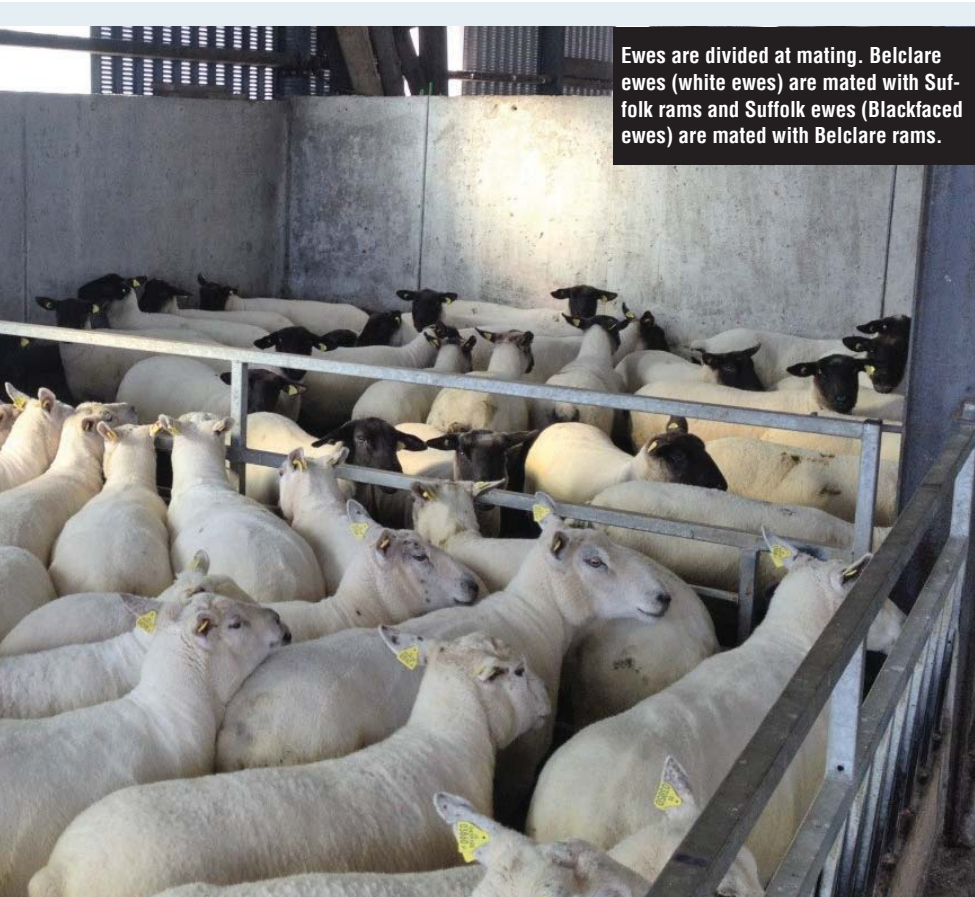


implemented breeding policy is that surplus ewe lambs can be sold off the farm for breeding at a premium price. In fact, many of the farmers participating in the BETTER farm programme have experienced

Table 1: Replacement costs

	Breeding ewe lamb	Purchase hogget	Dry hogget
Ewe lamb value(€)	94.5		90
Purchase value(€)		170	
Feed costs(€)	Grass costs: 47.28 Silage cost: 12.50		Grass cost: 29.12 Silage cost: 12.50
	Ewe supplementation (48kg): 12.96 Lamb supplementation (25kg): 6.75		
Veterinary costs(€)	10.80	12.60	7.70
Other costs(€)	6	2	4
Total costs(€)	190.79	184.60	143.32
Cull ewe value(€)	58	58	58
Lamb value	81		
Net replacement cost	€51.79	€126.60	€85.32
Annual replacement per ewe (23% replacement rate)	€11.91	€29.12	€19.62

replacement strategy



Ewes are divided at mating. Belclare ewes (white ewes) are mated with Suffolk rams and Suffolk ewes (Blackfaced ewes) are mated with Belclare rams.



John Curley.

significant demand for the surplus ewe lambs in their flocks. Part of the process of examining replacement policy on sheep farms involves looking at what is required from the replacement and how much it will cost.

Figures compiled by Shane McHugh and Ciaran Lynch show that replacement costs can vary from almost €12 to €29 per ewe in the flock, making this one of the most significant costs on a sheep farm. See Table 1.

Making the correct decision when it comes to selecting an appropriate replacement policy is important. Areas that should be considered are:

- Prolificacy: for lowland systems, the target should be to wean in excess of 1.6 lambs per ewe joined to the ram.
- Body size: big ewes (85kg +) have very good cull values when sold, but these are outweighed by them having a larger maintenance cost for the four or five years that they are maintained on the farm before being culled.
- Management attributes: easily lambled/handled and hardiness for

hill breeds, etc.

- Flock health: daughters of ewes/rams that are prone to lameness, prolapse, lambing difficulty and mastitis should not be retained.

Where replacements are not retained and the decision has been made to purchase them instead, a comprehensive biosecurity programme needs to be put in place to ensure that the risk of bringing new disease or resistant parasites on to the farm is minimised. Veterinary advice should be sought to develop this programme.

Mating ewe lambs in their first year can significantly reduce replacement costs (Table 1) arising from the extra output from these ewe lambs.

Research comparisons between mating and not mating ewe lambs has shown that ewe lambs that are mated as ewe lambs produce more lambs, wean heavier lambs in their second lactation and if they are managed properly, do not have a reduced litter size the following year.

Critical to the success of this enter-

prise is that ewe lambs are big enough when mated in the first place (a minimum of 60% of their mature weight). In practice, this means that Belclare cross ewe lambs should be at least 45kg whereas some of the terminal sired crosses need to be closer to 52kg.

Priority access

Lactating yearling ewes need to be given priority access to the best grass and should be supplemented with meal in the first five weeks of lactation if rearing twins.

It is important to remember that these yearling ewes will be expected to rear lambs and also grow their own bodies during the lactation which is a big ask.

For this reason, it is important to use an easy-lambing sire and also to keep the mating period reasonably short. Where it is not feasible to run yearling ewes and their lambs as a separate group, or where the liveweight of ewe lambs is less than 60% of their projected mature ewe weight, they should be run dry instead of being mated.

Brome: a 'sterile' but potent enemy

Sterile Brome control is a particular challenge in winter barley

Tim O'Donovan

Tillage specialist, Teagasc Crops, Environment and Land Use Programme.

Marianne Mulhall

Teagasc Tillage Advisor, Kilkenny

Sterile brome is native and widespread in Ireland. It's not hard to recognise as its familiar purple, drooping heads are seen towering above cereal crops and around hedges each June and July. It's an annual grass weed which means a plant must germinate from a seed every year. This is in contrast to scutch, which is a perennial and re-emerges from its roots which survive tenaciously from year to year.

UK research indicates that sterile brome seeds mainly germinate in the autumn, but Irish experience suggests that it has a longer germination pattern here, perhaps due to our milder winters. Sterile brome got its name from the fact that it sheds most of its seed onto the ground before harvest. These seeds can survive for up to three years, but brome doesn't read books so let's assume five!

One key point about sterile brome is that these seeds readily germinate if they are covered in a shallow (less than 1in) layer of soil. I have often noticed brome seeds germinating where chaff forms a mat behind the combine, highlighting the fact that shallow cultivation is all that's needed (just enough to block out the light). Once germinated, they can be ploughed deeply or sprayed off with glyphosate. In wheat and non-cereal break crops we have excellent brome herbicides such as Pacifica, Broadway Star, Aramo and Fusilade Max. However, in barley and oats, there are no chemical control options. So what can we do and how can growers like Jimmy Byrne (profiled here) do to minimise this problem getting onto farms and spreading?

1 Know the weed and how it grows: This sounds simple but, as the quote goes, "you need to know your enemies to beat them". With sterile brome it means understanding that the clock is ticking once the heads appear on the brome. You must get effective stubble cultivations done between harvest and drilling the following crop. This is a busy time and stubble cultivations are often not prioritised but it is the cheapest form of sterile brome control available and the only one for barley and oats. Also, if you have brome growing at bottoms of banks or hedges or around yards, cut the brome as soon as the heads appear in May/June. Brome seeds are viable and shed soon after heading.

2 Follow a zero-tolerance approach with seed: This is already the standard taken by the Department of Agriculture and the Irish Seed Trade Association regarding brome and other grass weeds such as wild oats, canary grass and black grass. Where seed is home-saved, you should never harvest it from weedy fields and ensure it is cleaned correctly. A representative seed sample can also be sent to DAFM, Backweston, to identify any weed species present.

3 Don't ignore small weed patches or low levels of brome: Brome may appear not to be increasing in wheat or spring crops (due to chemical control), but if you switch into winter barley, the problem can escalate, as many growers found in 2015.

4 Avoid spraying glyphosate onto the base of hedges: This sounds counter-intuitive, but once you remove vegetation, brome seeds can germinate. Brome won't germinate in your lawn or at the base of hedge in a grass field. Why? Because the ground is covered with plant material (no light). Removing it allows any brome seeds there to germinate. If you really want brome to flourish in hedges, spray glyphosate





Marianne Mulhall and Jimmy Byrne investigate brome germinating in crop stubbles. See next page for farmer profile.



on the base of the hedge in August/September and cut them tight afterwards – standard practice on many tillage fields.

5 Ensure harvest machinery is clean from brome: I said above that most brome is shed before harvest, but not all. The ones that don't shed hide out in the straw walkers, waiting to jump off as you move into a brome-free field. Another point here is to avoid pulling in bromes from the hedge base when cutting.

6 Plan your rotation carefully: Use spring crops and stale seedbeds to reduce the brome numbers over a few years. Use chemical options in wheat and non-cereal break crops to do the same. Try to avoid continuous winter barley.

7 Think about cultivations: Shallow but effective is the key for stubble cultivations. Growers tell me that match ploughing is the required standard to bury brome seeds six inches. As I said above, brome seeds don't read so bury them eight inches to be sure. Flinty or sandy spots, ins and outs and awkward spots may have to be hand-rogued until the seed depletes. If you min-till, consider match ploughing brome seeds down every five years, then min-till again the following crops. However, the min-till must not disturb the buried seeds, otherwise they will not die.



Farm profile Jimmy Byrne

Jimmy Byrne is farming approximately 80ha of tillage crops on the outskirts of Kilkenny city. His main crop each year is winter wheat but he drills winter barley, spring barley, spring beans and winter oilseed rape for seed for Seedtech in Waterford. Jimmy has been farming here for almost 40 years.

Some of his lands are made up of very light soils in which he sows continuous spring barley. Other parts of the farm consist of heavy, clay type soil, which is better suited to winter cropping.

Jimmy follows a five-year rotation of W. OSR, WW, WW, WB, and WB. The farm has been min-tilling for the last four years with a 3m Kuhn drill and according to Jimmy: "The use of min-till has made it easier to sow the tougher parts of the farm, there are not as many weed patches and I have more even crops since changing to a min till operation. The yields have definitely increased for winter wheat and winter barley, especially in the heavier fields."

Soil fertility is of great importance to Jimmy, he soil samples every four to five years and plans his fertiliser using a nutrient management plan drawn up using these soil results. With the high yields being achieved on the farm in the last few years, Jimmy realises the importance of replacing nutrient off-takes.

One of the main weed problems on the farm is sterile brome. Jimmy has found that the major problem areas are in the fields that have had several years of winter barley. This is mainly



Field four is on the left below and in the aerial shot has a ditch dissecting it.



Aerial photos of Jimmy's farm and the banks where brome is going to be controlled by cutting in May/June.

due to the fact that there is no good brome control permitted for winter barley. Where this problem is occurring and spring crops are next in the rotation Jimmy believes that: "Some allowances should be made in the

regulations to allow the brome to be controlled by spraying over the winter without having to establish the green cover before 1 December. This would give farmers a better chance at controlling the spread of sterile brome."

Brome management programme

The programme below is for one field (field four) on Jimmy's farm. It is a mixture of rotations and chemical options as well as reducing the brome around the hedges. This field has a high population of brome due to the winter barley in 2013-2015. As it was min-tilled, most of the brome is likely to be in the top few inches so the obvious control is to plough them down more than six inches and leave them there by min-tilling for at least the following three years.

	2013-2015	Autumn 2015 to Spring 2016 actions	2016	2017
Field four	W. barley	W. barley stubble	S. Beans	W. Wheat
Effect on Brome	Brome build-up over three years	Aim to reduce seeds before beans	Ploughing will bury brome seeds, beans have brome herbicide options	Min-till after ploughing in 2016 will keep brome buried, wheat has brome herbicide options
Cultivations	Min-till used each year	Light stubble cultivation to encourage brome germination after harvest	'Match plough' before drilling beans	Revert to min-till direct in bean stubble and following crops
Chemical options	No brome options	Glyphosate	Aramo or Fusilade Max	Pacifica Or Broadway Star
Hedgerow management	Hedges cut tight in Sept, glyphosate applied to crop pre-harvest.	None	Brome stretches to be cut manually in May/June. Avoid glyphosate drift	Brome stretches to be cut manually in May/June. Avoid glyphosate drift

TEAGASC MANUAL ON DRAINAGE - and Soil Management



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for Ireland's Farmers



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AVAILABLE AT TEAGASC OFFICES

tillage

Controlling the cost of machinery:

Buy? Borrow? Or bring in a contractor?

Dermot Forristal
Teagasc Crops, Environment and Land Use Programme, Oak Park, Carlow

Contractors are able to spread the cost of machinery over a lot of acres and using one may mean the difference between you making or losing money but the decision is not straightforward as the costs and benefits are tricky to calculate.

What to consider?

For most machinery operations, whether it is making silage or ploughing, cost is often regarded as the main criterion. However, timeliness, quality of work, comfort and labour implications must also be taken into account.

Machinery costs

Machinery costs include fuel and repairs/maintenance and so-called 'fixed' elements such as depreciation and interest. Repairs and maintenance costs are notoriously variable and depreciation requires an accurate estimate of a machine's future value. To enable shrewd decisions to be made, job costs – which include all elements of machinery costs including fuel and labour, and are expressed on

a per ha basis – must be calculated.

An example of a job cost for a ploughing operation is shown in the panel. The costs in this case are calculated using the Oak Park machinery cost programme*, which estimates machine repairs from the use level of the machine and depreciation from its age and use level.

Timeliness

How quickly a machine gets through its work will determine how timely the work will be (leaving weather aside). This can be critical for a tillage operation such as combining where delays can result in harvest losses and higher grain moisture.

On grassland farms, silage harvesting and fertiliser spreading operations among others need to be done on time. With a contractor, job scheduling will impact on timeliness on individual farms. Putting a value on timeliness is challenging.

A delayed cereal harvest on 50ha could result in 5% crop losses and extra grain drying charges. Together these costs could reach €100/ha or more. Similarly, a drop in silage digestibility due to delayed harvesting will generate extra concentrate costs.

Quality of work

We frequently disregard quality in machinery operations, particularly when contractors do the job, and only focus on timeliness and price. Work quality can directly affect profit. Broadcasting fertiliser accurately over a 12m to 24m bout width, for example, requires a good machine design, well-maintained spreading elements, good quality fertiliser and an operator who sets and operates the machine correctly.

Inaccurate and uneven spreading will hit yields long before the tell-tale signs of visible crop striping are seen.



But whether we own or contract-in fertiliser spreading, do we check whether the machine, operator and fertiliser are going to ensure a quality spreading operation, or do we just select on price?

There is a quality aspect to all machinery operations – seedbed quality with cultivators/drills; accuracy with sprayers and slurry spreaders; compaction prevention with all heavy machines.

Labour and comfort

Mechanisation replaces manual operations and machines can make the operator's task more comfortable. Labour cost savings can be made, and efficiency improved where labour is in short supply.

Cost estimates Tractor and plough

	Tractor	Plough
Annual use	600 hrs	130 ha
Life (yrs)	20	15
Depreciation (€)	2725	985
Repairs/ Maint (€)	2272	726
Interest (€)	2185	525
Total annual (€)	7375	2277
Per hour (€)	12.29	
Machine cost/ha (€)	20.01	22.77
Machine cost/ha (€)	42.78	
Fuel cost / ha (€)	15.64	
Labour cost /ha (€)	13.02	
Total cost/ha (€)	71.44	



Avoid the pitfalls

• **Inaccurate costings:**

As with any other input, the costs and benefits associated with machinery must be carefully calculated to allow good decision making.

• **Personal views:** Personal views about machinery use frequently dominate decision-making. An analytical approach will yield better decisions.

• **Taxation impacts:** Frequently, in years where incomes are good, machines are purchased to reduce tax liability; however, with current tax allowances, there is little to be gained. You wouldn't consider applying more fertiliser to avoid tax!

• **Poor planning:** The purchase of an individual machine often affects other machines; a bigger implement may necessitate a higher powered tractor which may not be justified. All farms should have a mechanisation plan; all purchases should fit into this plan.

capacity to the available work should result in satisfactory timeliness.

Sustainable contracting

While contracting generally provides a competitively priced machinery service, the viability of that service is occasionally threatened by severe price competition. Accurate costing information would ensure competitive and fair pricing and a sustainable business. More flexible pricing models are also needed. For example, if a farmer chooses to harvest high-quality early grass, then the price he pays should be greatly reduced as the work is off-peak and the yield low.

Other machine supply options

Having a very large farm or using a contractor is not the only way of achieving economies of scale in machinery use. Many farms already collaborate formally or informally in machinery partnerships, utilising the machinery and labour that they can supply cost-effectively.

On tillage farms, one farmer may utilise his tractor and his own labour to supply a ploughing service on his own and also on a collaborating neighbour's land.

His neighbour may then supply a tractor and one-pass cultivation/sowing unit. The key to these arrangements is to accurately cost jobs to ensure that all participants get a fair deal.

*Available on the Teagasc website.

Farmers will tend to view comfort in a very personal way; some valuing its benefits highly while others consider it pampering. What's most important is to calculate the impact of adopting a labour-saving or more comfortable machine option on production costs, before making a decision.

Ownership or contracting?

Where possible, the benefits should be valued to allow accurate analysis. Consider the following:

- **Scale:** Scale can have a huge impact on costs, particularly with modern high-capacity machines. Where the farm hasn't the size to justify a machine, using contractors can bring that economy of scale.
- **Labour and skills:** Labour is scarce

on many farms, either on a busy full-time farm or a part-time farm with no full-time labour. Contractors can be an effective source of labour for machinery operations and can provide skills also. Conversely, where a farmer has good skills in machinery operation, and particularly machine maintenance, then he may be able to exploit this by operating older machinery inexpensively and utilising available labour.

• **Timeliness:** While machine ownership can result in good timeliness for individual operations, this is only economical if there is sufficient scale to justify the machines in the first place. While contractors must use their machines across many farms, good scheduling and matching machine

Going the distance

Teagasc offers a Green Cert course in agriculture through distance learning to those who can't attend a college full-time. **James O'Donoghue**, Teagasc dairy advisor, Co Monaghan, surveyed graduates about their experience

The Teagasc Advanced Certificate in Agriculture Level 6 course (non-agricultural award holders) was designed to provide more comprehensive training than the 180-hour course it replaced. The course was developed in 2007 to meet the training requirements of full- and part-time farmers who have a Level 6 or higher qualification in any subject other than agriculture.

The course provides an opportunity to become a young trained farmer for those who wish to develop a farming career. Delivery of the course is through blended learning, which includes classroom tuition, discussion group meetings, skills practicals and assignments.

These courses are run largely by local Teagasc education officers with support from advisory colleagues in the areas of e-tutoring and discussion group facilitation. The e-tutors are typically Teagasc college teachers, education officers and advisers who have been trained in the use of this system.

Main findings

The major incentive attracting graduates of agricultural courses over the last number of years has been access to stamp duty exemption and stock relief. A key reason for selecting this particular online version of the ACA Level 6 was that students could hold a full time job while completing the course. Ninety percent of students on the course had an off-farm job.

The course consists of a blended learning approach and includes skills practicals, classroom teaching, discussion groups and the online Moodle

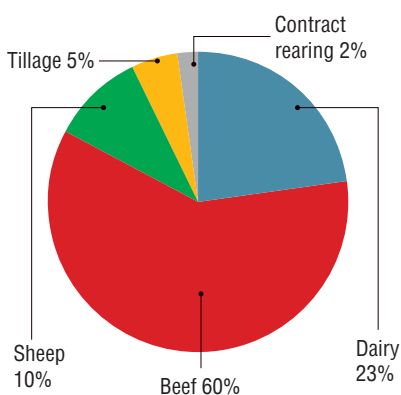
Table 1: Graduate response

	% of sample	No of respondents
GENDER		
Male	89%	193
Female	11%	24
AGE		
Mean age	28 years	217
EDUCATIONAL ATTAINMENT		
Level 6	26%	55
Level 7/8	57%	119
Level 9/10	16%	34
WHEN DO YOU PLAN TO START FARMING?		
Have already	30%	56
Within 1-3 years	35%	65
Within 3-5 years	15%	27
Within 5-7 years	10%	18
7 or more years	10%	18
Total	100%	184*

Table 2: Farm size and status of graduates

	% of sample	No of respondents	National Average
FARM SIZE (HA)			
0-20	23%	51	27%
21-50	40%	87	49%
51-100	24%	51	19%
100+	13%	29	5%
Average	46.3Ha		32.7Ha
STATUS			
Part-time	84%	161	71%
Full-time	16%	9	29%
Total	100%	170*	

Figure 1: Farm enterprises



platform. The study found that some 99% of students were satisfied that the practicals were delivered in a safe manner and the group size was appropriate. Grassland management was identified as the most important skill that they developed to bring back to their home farms by 35% of graduates.

Satisfaction levels with the internet-based Moodle platform was high.

Conclusions

- Motivation to enrol is driven by eligibility to qualify for schemes and incentives
- Graduates said they are satisfied that 'blended learning' teaching delivery is appropriate to agricultural education
- Students from different educational backgrounds reported broadly similar experiences of the course.
- Graduates behavioural and 'practice change' in relation to their home farms was positive after completing the course.

However, the students expressed greater satisfaction with other delivery methods such as discussion groups, skills practicals and classroom learning. However, results from the graduate survey illustrated that 61% of graduates were satisfied that the course content was easily found and viewed online. This is also backed up by 62% of graduates feeling satisfied that course assignments

I completed the Teagasc distance learning course in Navan/Grange from September 2013 to September 2014. What I found most useful about the course was being able to visit many successful dairy farms at various times of the year to see how different systems were working for them. There were also practical learning days for skills such as grass measuring and body condition scoring. The course suited me as I work full time as a furniture designer. I am still in the same job and I a new entrant to dairying since February 2015.

Fergal Rudden, Co Cavan
Furniture designer



Distance education includes some classroom sessions and in-field practicals, as well as web-based learning. It is ideally suited to those who wish to earn a Green Cert while holding a full-time job.

were easily downloaded from the site.

Over 83% of graduates were satisfied that discussion group visits allowed a great opportunity to benchmark their home farm to the Teagasc benchmark farms.

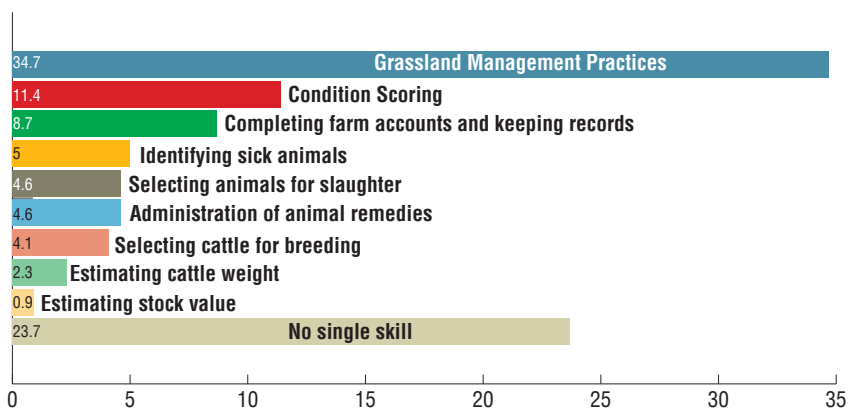
The study found that 69% of graduates agreed that their ability to solve problems on their farm had increased due to knowledge gained on the course. A change in attitude among students was found, as 83% of graduates agreed that they are now more conscious about health and safety on the home farm.

The results from management practices in the study found 61% of graduates continue to use the ICBF database, which aids farm management practices and transfers knowledge to graduates about their herd performance.

Setting targets

This study found that 39% of graduates are now more likely to set targets for their home farm. Results suggested that 31% of graduates are

Figure 2: Most important skill developed to use on home farm



now much more involved with their Teagasc agricultural adviser.

Across all enterprises, the study found that 41% of graduates wished to increase the stocking rate on the farm over the next five years.

Almost 60% of graduates from dairy farms planned to increase milk production on the farm within the

next five years. However, this may be more accredited to the removal of milk quotas.

- To find out more about this course, please contact your local Teagasc college or education centre, or visit www.teagasc.ie/training/courses/dist_ed_green_cert.asp

How to protect

Attention to ventilation is key if housed cattle are to thrive

James Keane
Beef specialist, Teagasc Animal and Grassland Research and Innovation programme

Tom Coll
Teagasc, B&T drystock advisor, Mohill

Last month, MSD Ireland asked Jamie Robertson, a ventilation expert from the University of Aberdeen, Scotland, to facilitate a discussion with a group of farmers and advisors on a farm visit in Co Westmeath. Jamie started by challenging farmers to identify the amount of money on their farms associated with animal deaths, lack of thrive, medicines and vet fees and then consider how much of this would have been better spent on building improvements to offset some of the problems.

Jamie is passionate about having proper ventilation in a building to maximise animal health and live-weight gain. He stated that problems in farm buildings are usually due to an imbalance in one or more of three separate factors – moisture, fresh air and air speed. See Table 1.

He explained that by correcting these three environmental factors in your sheds, you can remove airborne pathogens and other harmful bacteria. He said that targeting a reduction in moisture and providing 100% fresh air (without drafts) in sheds applies to all categories of stock to maximise liveweight gain no matter what system you are in.

He went on to explain to farmers that when animals are grouped in a shed, they produce heat. This heat rises and when it hits the roof, it can either be released through an outlet in the roof or, if no outlet is available, it will cool down and come back down over the animals again.

The air flowing back on to the animals will almost certainly carry harmful bugs and has been proven to cause ill-health and respiratory problems. As the heat from the animals rises, it is replaced by 100% fresh air. This is known as the “stack effect”. Jamie made the point that most farmers should check how well their sheds are ventilated when cattle are



Problems in farm buildings are usually due to an imbalance in one or more of three separate factors – moisture, fresh air and air speed

in them, on a calm day, with no wind outside.

Jamie pointed out that the shed has to work in all types of weather as animals will always expel heat and this warm, bug-filled air has to get away through an outlet to be replaced by fresh air. He made a very interesting point in relation to the stack effect and young calves. He said that “calves cannot produce enough energy/heat to drive the stack effect.” In every calf-rearing house, mechanical fans are needed to extract the air to the outlet.

Jamie explained that it is tempting to dismiss a building as “overstocked” and that this is the main contributor to animal health problems on farms.

A slope of at least 17 degrees and a good outlet are vital to allow heat generated by adult cattle to rise and disperse.

your farm assets



Table 1

Factor	Condition	Contribution	Symptoms
Moisture	Too much	<ul style="list-style-type: none"> • Supports microbial activity • Promotes bacterial growth (some species) • Absorbs energy • Acts as a transport medium • Increases slippery floors - stress 	<ul style="list-style-type: none"> • Dirty water lying • Dirty cattle • Damp floors in areas that could be dry • Water ingress • Leaking drinkers • Condensation • Staining of underside of roof • Animal health
Fresh air	Too little	<ul style="list-style-type: none"> • Lack of fresh air increases survival time of airborne pathogens • Lack of fresh air increases concentration of gaseous emissions. • Lack of fresh air can reduce oxygen concentrations 	<ul style="list-style-type: none"> • Smell – ammonia, dampness • Dark corners – no light no ventilation • Elevated air temperatures • Animal health
Air speed	Too much	<ul style="list-style-type: none"> • Too much: associated with excessive energy losses 	<ul style="list-style-type: none"> • Animals avoiding certain areas • Huddling • Hairy coat • High intake/ low production rates • Animal health
	Too little	<ul style="list-style-type: none"> • Too little: associated with lack of fresh air 	<ul style="list-style-type: none"> • Animals avoiding certain areas • Smell • Animal health

Lower critical temperature (LCT): the lowest temperature an animal can be exposed to before they change metabolically to help them cope with cold stress. Upper critical temperature (UCT): the highest temperature an animal can be exposed to before they change metabolically to help them cope with heat stress.

Table 2

Factor	Interaction/ from	Notes	Solutions
Moisture	Bugs	Respiratory pathogens. Mastitis: E.Coli, Strep. uberis	• Drainage. One in 60, or one in 20 below straw.
	Faeces/urine	25-45 l/day	• Drainage within pen, between pens, within building, outside.
	Respiration	Up to 10 l/day	• Manure management.
	Rainfall	At 6m ² /cow, 100 cow space has 600m ² of roof. 1000mm (39inches) rain per annum = 600 t/annum	• Straw management. • Air inlets and outlets. • Decent gutters and downpipes. • Considerate concrete.
Fresh air	Kills bugs	100% fresh air kills airborne bugs 10 times quicker than 50% fresh air	Air inlets and outlets
Air speed	Comfort zone	Four-week-old healthy calf LCT = 0°C.	Air inlets and outlets:
	LCT/UCT	0.2m to 0.5m/s	• Protection from wind to above animal height.
	Need for air movement	At 2m/s air speed, LCT of healthy four-week-old calf is +9°C.	• Greater use of perforated wall cladding.
	Wind chill	LCT of sick animal	• Elimination of draughts at animal height.
	Young animal needs	LCT of sick animal	
	High yielders	Massive heat loss needed.	

“This false logic is perpetuated if a problem diminishes when the number of stock in a building is reduced. In reality, this is an expensive solution as it ignores the physical causes of the original problem, be it poor drainage, poor ventilation or a lack of control of air speed.”

He went on to explain that for every environmental factor affecting the building that a solution can be found. These solutions are summarised in Table 2: “100% fresh air kills airborne bugs 10 times quicker than 50% fresh air.” Jamie explained that having correct air inlets and outlets on farm buildings is paramount in providing a healthy environment for livestock to thrive. He said every farmer should

carry out the following simple assessment of his farm buildings.

- Assess the roof first. No outlets means a guaranteed contribution to problems.
- Area of opening (outlet) in roof.
 - Ballpark outlet areas at the ridge: 0.04m² per calf and 0.1m² per adult. Seldom less than 200mm wide open ridge for adult and growing cattle.
 - Depends primarily on slope of roof. A flat roof is bad: a slope of at least 17 degrees is good.
- Area of inlet: at least twice or, preferably, four times the area of outlet.
- Design of inlet:
 - Always look to eliminate draughts at animal height.
 - Large openings do not control

air speed, they increase them. Large openings that may create stress at animal level should be replaced with space boarding, Yorkshire boarding or weaved mesh-type products (wind break) to control air speed.

• Inlet and outlet areas are best as a series of diffuse openings along the ridge and walls; less risk of stagnant areas within the building.

Jamie clearly made an impact with his straight-talking and visible passion for animal health to the many farmers present, with one farmer saying: “I have to go home now and let off some hot air.”

» Continued on next page



Tom Coll and Mickey Nicholls.

Case study

Michael (Mickey) Nicholls farms a suckler to weanling enterprise near Mohill, Co Leitrim. Pneumonia in weanlings after housing in October and in young spring-born calves prior to turnout has been a major ongoing problem on the farm. Respiratory disease of cattle leads to increased veterinary costs and reduced animal performance.

Mickey identified that the slatted house was the main contributing factor to the disease outbreaks and decided to take steps to alleviate the problem. The existing slatted shed originally consisted of a five-bay single shed, which was converted in 1988 to a five-bay double shed with a central passage and cubicles at the back of the slatted area on eight of the 10 bays. The main deficiencies identified in the shed were:

- Eave height of 2.3m with a 10-degree

Table 3: Original shed v converted shed

	Original shed	Converted shed
Eave height	2.3m	3.3m
Ridge height	4m	5.7m
Roof slope	10 degrees	15 degrees
Inlet area	9m ²	25m ²
Outlet area	5.6m ²	13.5m ²
Airspace	1,036m ²	1,658m ²

slope in the roof.

- Inadequate inlet with walls built to top of stanchion.
- Inadequate airspace per animal housed.
- Inadequate outlet.
- Evidence of poor airflow, stuffy smell, cobwebs, dust and dirt on the roof and end sheeting.

All roof sheeting was removed, numbered and reused on the building. The eave height and ridge heights in-

creased by 1m and 1.7m, respectively, resulting in the roof pitch changing from a 10-degree to a 15-degree slope.

The inlet now consists of 1.3m of Yorkshire boarding. Boards are 100mm in width with 75mm openings and 50mm between the outer and inner boarding. This resulted in an increase in inlet area from 9m² in the original shed to 25m² after conversion.

The outlet ridge in the roof has also been widened from 250mm in the original shed to 600mm, changing the outlet area from 5.6m² to 13.5m².

The overall shed conversion increased airspace by 160% from 1,036m² to 1,658m².

Mickey is confident that the changes in shed design will improve air movement within the shed, resulting in the removal of airborne pathogens and a significant reduction in future respiratory disease outbreaks.

There has been a major trend in recent years of tractor crush deaths in the farmyard.



Winter farm safety advice

In the past, winter saw a dip in farm accidents as field activity dropped from summer highs, but in 2014, 17% of fatal accidents occurred in November and December, so safety is a year-round issue



Revised safety standards for agricultural vehicles take effect from 1 January 2016

John McNamara
Health and Safety Officer

There has been a major trend in recent years of tractor crush deaths in the farmyard. A number of these have occurred when foddering livestock. Collapse of polythene wrapped bales or a tractor rolling forward to crush a person are among the causes. It is vital to ensure a machine's handbrake is securely applied and that you avoid danger zones such as adjacent to raised loaders holding bales, for example.

The HSA recently issued an information sheet on working safely with bales, available at www.hsa.ie.

Electrical installations

Winter is a good time to have farm electrical installations checked by a competent electrician.

Ensure that residual current devices (RCD) are in working order. This is done by safely tripping and resetting the test button.

As the component parts are mechanical, test them at least twice a year.

The RCD device provides protection where mobile electrical appliances receive an electrical supply from a socket outlet. An RCD detects a fault where electricity leaks from the circuit causing an electrocution threat and switches off the power. The device trips at 30 milliamps and within 40 milliseconds.



Continued on page 32

» From page 31

Testing is required to ensure that the switching mechanism in the RCD is working properly.

Further information on safety with farm electrics is available at www.esb.ie/esbnetworks/en/downloads/ESB_Farm_Safety.pdf.

Farmyard lighting

In a recent HSA study, farmers considered that better lighting of farmyards could improve safety. Pay particular attention to lighting levels of commonly used walkways and farm buildings. Replace blown bulbs and clean the polycarbonate covers of fluorescent lighting – this can increase lighting by up to 50%.

Care is needed when accessing lighting for maintenance. The best approach is to use a safety platform with edge protection. If using a ladder, it should be sound and be secured at both the base and a height.

Lighting can also improve farm security levels.

Fire safety

- Check for any areas where a person could get trapped in the event of a fire and eliminate the hazard.
- Check that hay and straw is stored separately from other buildings, particularly those housing fuels, agrochemicals and machinery.
- Store flammable material separately from livestock buildings, as a fire spreads very rapidly and evacuation could be hazardous.
- Hay or straw should not be in contact with electrical components or lighting, as heat from these could cause ignition.
- If a fire occurs, evacuate persons to a safe area as quickly as possible and call 112 or 999 without delay.

Prevent fire in the home

Fire prevention in the home should also be given consideration as winter approaches. Check that smoke alarms are installed and working, escape routes are unobstructed and that fire-fighting equipment, including fire extinguishers and fire blankets, are serviced.

Further information on fire prevention is available at www.fireireland.ie.

“ In a recent HSA study, farmers considered that better lighting of farmyards could improve safety



TAMS aids a wide range of farm safety measures, including sheep-handling facilities.

Targeted Agricultural Modernisation Schemes (TAMS)

All Department of Agriculture, Food and the Marine (DAFM) TAMS schemes are open for application. Applications can be made up to the end of 2020. These aid a wide range of farm safety measures including:

- Both fixed and mobile cattle and sheep-handling facilities.
- Safety rails on silo walls.
- Replacement of hinged doors / sheet gates with sliding or roller doors.
- Retrofitting of roof lights with safety cages.
- Electrical rewiring of existing farm buildings.
- Installation of yard lights (metal halide or LCD).
- Protective fences of slurry store, slurry agitation for external agitation tanks, tank extension to provide external agitation, simple aeration systems.
- Replacement of slats.

Farmers should examine how they can best avail of TAMS to make farms safer.

To claim a TAMS grant, it is mandatory that all applicants will have completed within the last five years prior to the submission of their claim for payment the half-day farm safety code of practice or the FETAC Level 6 advanced certificate in agriculture (Green Cert).

Your claim for payment will not be processed until evidence of completion of the course is provided. Teagasc is currently taking bookings of half-day farm safety courses at all offices.

Be winter ready

The officer of emergency planning has produced a booklet entitled Be Winter-Ready, which includes advice tailored specifically for farmers. The booklet is available at <http://winter-ready.ie>.

Revised standards for agricultural vehicles

Justin Martin
Vehicle Standards Engineer,
Road Safety Authority

Revised safety standards for agricultural vehicles take effect from 1 January 2016. They are being introduced following a comprehensive review undertaken by the Road Safety Authority (RSA) relating to the use of agricultural vehicles on public roads.

Currently there are special provisions in road traffic regulations for vehicles which are primarily designed for working on farms, but which occasionally use a public road.

These regulations have been in place for over 50 years, during which time agricultural vehicles have become bigger, faster and more powerful. Their use has been expanded to include a wide variety of tasks outside the scope of the current regulations. They are also used much more frequently on public roads today than in the past.

However, they are not currently required to comply with minimum safety standards in a number of key areas, such as braking, lighting and visibility, weights, dimensions and coupling, as well as plating and speed rating.

For example, agricultural trailers often do not have appropriate tyres, suspension or braking systems fitted, nor are they equipped with braking systems which are designed to operate at the maximum speed at which the tractor towing them is capable of travelling.

This poses a serious road safety risk and is leading to situations where agricultural tractor and trailer combinations using public roads are often under-braked, resulting in premature brake wear or failure, including the possibility of jack-knifing.

Therefore, it is vital that agricultural vehicles, especially those capable of operating at speeds over 40km/h, are fitted with safer and more efficient braking systems.

Following a comprehensive review of current legislation, policy and practice relating to the use of agricultural vehicles, including public consultations and discussions with agricultural and industry stakeholders, the RSA submitted recom-



Jeff Harvey

Pictured at the launch of the RSA videos at the 2015 National Ploughing Championship were (from left) Denise Barry, director of standards and enforcement; Anna May McHugh, managing director, National Ploughing Association and Justin Martin, RSA vehicle standards engineer.

mendations to the minister which resulted in revised standards being introduced. These were signed by the minister in June 2014 and are effective from 1 January next.

The changes have been framed to deliver road safety benefits at the least possible cost to owners of agricultural vehicles.

It is expected that the majority of agricultural tractors will be able to comply with the new requirements with minimal investment. However, due to the wide variation in current construction standards, some trailers already in service will need more extensive remedial work to achieve compliance.

With this in mind, a progressive range of measures are being introduced whereby farmers and contractors wishing to operate their vehicles at higher weights and speeds will have to comply with more onerous requirements.

In summary

- More powerful braking systems will be required for agricultural vehicles operating at speeds greater than 40km/h. Most of the correctly maintained tractors which have come into use in the past 30 years already meet these requirements.
- Agricultural vehicles will need to be equipped with appropriate lighting systems, flashing amber beacons and reflective markings.
- Trailers operating at weights over 19t and 22.5t for tandem and triaxle trailers respectively, or at speeds

exceeding 40km/h, will require fitting of a weights and dimensions plate and a speed disc.

- New national weight limits are being introduced. These will enable tractor and trailer combinations which are unplated to continue in use at limits which are safe for such vehicles, ie combinations of agricultural tractors and trailers where either of them is unplated will have their maximum towable mass capped at three times the tractor's unladen weight. Plated tractors and trailer combinations will benefit from being able to operate at higher weight limits of up to 24t and 34t for tandem and triaxle agricultural trailers respectively that meet certain additional requirements in relation to tyres, suspension systems and steering axles.

- Self-propelled equipment exceeding 3.5 metres in width will require an escort vehicle carrying wide load signage when travelling on public roads.

Further information on the new standards is available on www.rsa.ie. A booklet explaining the changes has also been prepared and can be downloaded from the agricultural vehicles section of the website. Hard copies are available from the orders online section.

A suite of videos (made in conjunction with the Farm Tractor & Machinery Trade Association) which bring to life the contents of the booklet has been prepared. These were launched at the 2015 National Ploughing Championships and can be viewed at www.youtube.com/RSAIreland

GLAS: There's money in the margins

Catherine Keena

Countryside Management Specialist,
Teagasc Crops Environment
and Land Use Programme

The agri-environment scheme, GLAS, offers dairy and tillage farms a return of over €1,170/ha on their least productive land. Entering field margins into the scheme will have limited, if any, effect on farm output and €25,000 from GLAS over the next five years is likely to be a great return on effort and investment.

Dairy farmers

Many dairy farmers have watercourses. Fencing all the watercourses on a farm at a distance of 1.5 metres from the top of the bank earns €1.50 per metre per year for five years. This is a payment rate of €10,000/ha of land taken out of production. And cows can still graze under the wire.

Every 1,000 metres of watercourses will get €1,500 each year for five years. If the farmer has fields on both sides of the watercourse, the payment is doubled to €3,000 for fencing both banks. There is no maximum payment for this option, other than the overall scheme limit of €5,000.

Permanent stakes and wire must be used but there is no specification other than it must be fit for purpose for the animals on the farm. For dairy cows, a single-strand electric fence is

acceptable. Unlike the previous agri-environment scheme, AEOS, payment received in GLAS does not depend on the price paid for the fencing and, indeed, the fencing may already be in place.

Where watercourses are identified as vulnerable water areas on the GLAS online planning system, this gives the farmer priority access to GLAS with Tier 2a status. He must fence all watercourses in this case. This can only be known once the FRS advisor accesses the computer for each specific farmer. If not identified as vulnerable water areas farmers can still undertake this action, but will not get priority access.

Dairy farmers with a stocking rate over 140 kg of nitrogen per hectare have priority access into GLAS as Tier 1b applicants, provided they undertake low-emission slurry spreading or grow one hectare of wild bird cover.

Low-emission slurry spreading

In this GLAS action, all of the slurry applied on the farm, whether home-produced or imported, must be spread with a low-emission method. These are band spreading, injection systems and trailing shoe. The payment is €1.20 per cubic metre per year for five years.

An annual slurry declaration must be completed with documentary evidence to confirm the spreading method used and the volumes applied.



This may be a calculation of slurry produced, imported and spread, or a receipt from a contractor.

Low-emission slurry spreading improves the recovery of slurry nutrients, reduces phosphorus run-off, offers a wider window of opportunity to apply slurry, reduces tainting of the grazing sward and generates less odour.

Wild bird cover

This involves growing a crop such as a mix of oats and linseed and leaving it unharvested to provide seed for birds during the winter – like a giant bird table. The crop must remain in situ until 15 March, after which it is replanted by 31 May.

Oat seed is eaten by birds such as the yellowhammer; the smaller linseed is preferred by finches, skylark and the linnet.

Tillage farmers

What crop delivers €1,170 per hectare? The answer is GLAS arable margins – in the least productive part of the farm: three, four or six metres from the boundary. Where the margin is established along a watercourse, an additional two metres unsown (with an arable crop), which is required un-

Fencing watercourses

Louth dairy farmer Eamonn McEntegart, Knockbridge, who has undertaken to fence watercourses in GLAS with FRS advisor Tony Brennan and Teagasc advisor John Lawlor. John Lalor recommends to all his dairy farmer clients to consider GLAS. FRS advisor Tony, who is drawing up the GLAS plans for Teagasc, stresses how important it is for Teagasc clients to contact their local office now with the deadline for GLAS Tranche 2 approaching in December.





The Moss Carder bumblebee can use arable margins, improve pollination and increase biodiversity on tillage farms.

Table 1: Arable grass margins

Width metre	€/linear metre	€/hectare of land under margin	Linear metres of margin to make a hectare	Maximum linear metres
3	0.35	1,170	3,333	7,000
4	0.50	1,250	2,500	5,000
6	0.70	1,170	1,666	3,500

der the Basic Payment Scheme, must be in place between the watercourse and the GLAS margin.

GLAS arable margins are established by sowing a grass seed mix containing at least 60% cocksfoot or timothy, or a combination of these, at the standard rate of 25kg to 30kg/ha.

Grass seed labels and receipts must be retained for the duration of the GLAS contract. The margins are retained for the five years with no soil cultivation once established. The margin must be mulched, mown or grazed at least once a year between 16 August and the end of February. Off-takes can be removed. Fertiliser or lime cannot be applied to the margin. Pesticides cannot be applied either except for the spot treatment of noxious or invasive weeds.

Many tillage farmers did not like the compulsory tillage margins on every boundary in REPS, but these

GLAS arable margins are completely different. In REPS, margins of 1.5 metres were abandoned with natural regeneration and were too narrow to manage separately and hence became problem areas, prone to weeds.

Flexible choices

The best part of this GLAS action is the flexibility. Farmers can choose to undertake an arable margin on one or all sides of a field and on one or all fields. You can choose different widths of margins in different locations. The same margin width must be undertaken on a full side of a field. Therefore, farmers can choose headlands which are difficult for crop production. Margins are not digitised separately from the field for Basic Payment Scheme purposes. GLAS payment for arable margins is on a linear basis. The correct width must be present on field inspection.

Priority actions for tillage

Tillage farmers with over 30ha of tillage crops in 2015 have priority access into GLAS with Tier 1b status, provided they undertake at least 10ha of catch crops or 10ha of minimum tillage. Tillage farmers under 30ha can undertake catch crops, minimum tillage or low-emission slurry spreading in order to get priority access as Tier 2b applicants.

The minimum volume of slurry to be applied per year is 50cm³ and this can be all imported.

Payment for catch crops in GLAS is €155/ha, unless they are also used for equivalence or ecological focus areas when the GLAS payment is reduced to €128/ha.

Catch crops must be sown by 15 September each year and retained until 1 December. An integral mixture of two species is sown. The minimum tillage payment in GLAS is €40/ha per year.

There are over 20 GLAS actions from which to choose. GLAS is now open for Tranche 2.

Contact your Teagasc office immediately if you want to discuss your options with an advisor. This consultation is free and necessary before you commit to a GLAS plan being drawn up.

Strength in diversity

Tom Houlihan
Forestry Development Officer, Teagasc Crops Environment and Land Use Programme, Tralee

Within the Afforestation Grant and Premium Scheme, landowners can avail of a range of 12 GPC options including productive conifers, broadleaf species and native woodland, as well as agroforestry and forestry for fibre. Teagasc research is supporting these forestry diversification possibilities.

Current forest composition

Figure 1 presents overall species composition in Irish forests, captured by the Forest Service National Inventory, 2012. Sitka spruce continues to be the predominant species (52%) and this figure is close to 60% for grant-aided private forestry only. Almost 26% of the forest estate contains broadleaf trees species. A relatively low 9.2% comprises diverse conifers – Norway spruce, Hybrid larch, Scots pine and Douglas fir.

GPC options

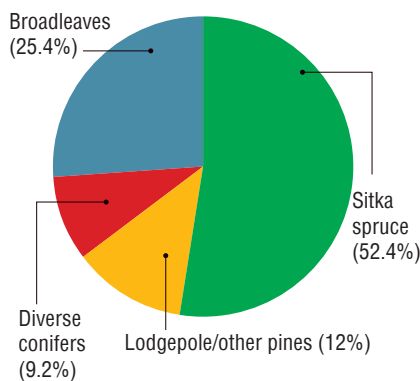
Sitka spruce is one of the mainstay species and is likely to continue to be. It has a wide native range and excellent growth particularly on moist, relatively fertile soils under conditions of high atmospheric humidity. It is the species of choice for landowners looking at a relatively short rotation and well managed and productive crops deliver a strong return on investment. Sitka is planted as the main species in combination with at least 10% diverse species as GPC 3.

Other species may also merit consideration, particularly given the increased range of soils and sites available for planting in recent years.

A strong case can be made for widening the species composition of forests, either through more diverse species and/or appropriate mixtures. This would diversify our future timber product range while enhancing the ecological value of forests.

Diversification may also significantly increase forest resilience to potential threats such as climate change or new pest or disease outbreaks. The

Figure 1: Irish forestry - composition by general species groups (%)



Source: Forest Service National Forest Inventory 2012

relatively recent and serious occurrence of *Phytophthora ramorum* on Japanese larch, resulting in this tree species's withdrawal from current planting, is an example.

The GPCs available under the new forestry programme allow for a range of options to be considered. Douglas fir is an example of a diverse conifer species (GPC 5) that can produce valuable timber suitable for a range of end uses. Like any species, the key to its success is the selection of appropriate planting sites. It is best suited to deep, well drained soils with at least moderate fertility. It is unsuited to heavy, exposed, peaty or alkaline soils. Deer damage is also a significant issue. Other diverse species such as Norway spruce and Scots pine are options on appropriate sites.

Since its introduction on a pilot basis in 2015, there has been a developing interest in agroforestry. GPC 11 supports the establishment of silvopastoral agroforestry, combining forestry and pasture. It allows farmers to farm conventionally while growing a timber crop in the same field (plate one).

Broadleaf trees established at a

wider spacing and managed for high quality can potentially be produced with grazing or fodder production between rows of trees. This option offers continued access to the land, income from agricultural production, improved drainage, shelter, high-quality timber and a range of environmental benefits.

Full details of the range of GPC options and associated funding are available on: <http://www.teagasc.ie/forestry/grants/index.asp>

Other conifers

Richard Walsh, a Teagasc Walsh Fellow PhD student, is currently involved in a review of minor conifer species. The limited species choice is a concerning factor and this has been emphasised in recent years, with effects of climate change and biotic threat risk. Under the guidance of Teagasc researcher Dr Niall Farrelly, Richard is examining species with the potential to provide an added role to plantation forestry and to widen species selection options.

Richard's work is placing emphasis on screening of candidate species with potential under Irish conditions,



Plate two agroforestry. INSET: Plate two Pacific Silver Fir is one of many species for screening.



Short rotation forestry species

Teagasc Walsh Fellow PhD student Susan Foreman is investigating the effect of planting density on the physiological responses and growth of potential short-rotation forestry species in Ireland. This research will study the optimum growing density and rotation length for short rotation forestry for use in the biomass industry.

This work is part of the overall collaborative ShortFor Project, which is exploring the potential of short rotation forestry in Ireland to meet renewable energy demands. It incorporates a multi-disciplinary team from UCD, Trinity College, University of Limerick and Waterford Institute of Technology.

including productivity on a range of sites, a capacity to produce high-quality timber, but also with resilience to the threats outlined.

Candidate conifer species to be screened include Coastal redwood and Pacific silver fir (plate two). Suitable species can provide potential in mixed plantations and/or to extend the ecological range of Sitka spruce. They also deliver functions in forests, such as shade tolerance, which can be advantageous in mixed unevenly aged forest plantations or in continuous cover forestry.

Birch and alder improvement

Teagasc has been conducting research into birch and alder improvement for some years. Recently, the use of birch and alder has increased in the forest planting programme. Seed propagation from the Teagasc tree improvement programme is now being utilised in commercial nursery production with improved birch likely to be available for planting in the 2016/2017 season. Improved birch is now also eligible for planting as a commercial timber crop (GPC 8). As well as working on birch improve-

ment, Teagasc researcher Oliver Sheridan and colleagues are progressing towards the objective of facilitating the availability of improved alder planting stock.

Broadleaf mixtures

The Teagasc Broadleaf Silvicultural Research Programme has incorporated a range of research objectives, including the establishment of optimum broadleaf mixtures.

Teagasc researcher Dr Ian Short and colleagues are investigating the effect of alternative configurations of broadleaf crops and shelter mixtures, which can also diversify our forest resource. Examples of trial configurations include oak and birch in banded mixtures and oak established in shelterwells (small groups in a matrix with shelter providing species).

Broadleaf trees (genetic resources)

Most of the planting material of broadleaves being afforested comes from wild-collected seed which is driving the need for higher genetic quality. Teagasc aims to make genetically

improved planting stock available for nurseries to multiply and landowners to use in new plantations.

A Teagasc programme, driven by Dr Gerry Douglas, operates in collaboration with the Future Trees Trust to identify highly selected, as well as trees in mature stands of several species (eg sycamore and oak). These are being propagated and used as parent trees to generate improved trees. The first seed-producing orchards of species such as sycamore are being established in 2016.

A further project is focused on securing a set of individual ash trees which may show resistance to ash dieback (Chalara). Such resistant trees are being identified by screening individual trees under conditions of high disease pressure. The resistant trees may then be utilised directly through vegetative propagation. The technology for vegetative propagation of ash has been developed and can be potentially scaled up for mass production of Chalara-resistant trees in the future. This work is being carried out by Teagasc Walsh Fellow Gemma Worswick.

Along the Botanic Garden path to a satisfying career

John Mulhern, principal at the Teagasc College in the National Botanic Gardens, writes about the horticulture courses offered by Teagasc

The Teagasc College of Amenity Horticulture runs courses at Level 5, 6 and 7 for students who wish to progress into the industry of horticulture.

Our Level 5 programme covers the sciences that underpin all aspects of horticulture including soils, plant ID, plant propagation, landscape construction and plant protection. This course lasts 32 weeks, including four weeks of industry placement.

Our Level 6 programme allows students to specialise in more industry-focused streams including nursery stock, sports turf, food production, and landscape design. This course also lasts 32 weeks and includes 16 weeks of industry placement.

For students who wish to study at a higher level, we offer a Level 7 degree with our partner, Waterford Institute of Technology. This is a three-year degree course which covers the basic sciences of horticulture along with specific elective choices that can be followed across second and third year.

“ The Teagasc College of Amenity Horticulture runs courses at Level 5, 6 and 7 for students who wish to progress into the industry of horticulture

These include landscape design, nursery stock production, sports turf and market gardening. In the final year, there is an emphasis on the business of horticulture including marketing, people management, small business management and a research project that the student can choose in a specific area of horticulture.



The National Botanic Gardens, Glasnevin.

Part-time courses

The modules or individual subjects at Level 5 and 6 can also be done as part-time standalone component awards.

This year, we are offering 35 of these awards to people who are working in different horticultural sectors.

Essentially, a student who may be working in the horticultural sector can drop in to a specific timetabled slot to do a module and drop out again and return to their job.

Plant ID and plant propagation are the two subjects that we started with in Level 5 this year, but we intend to broaden this to other subjects next year. At Level 6, we are offering the core modules in each of the four main horticultural areas: sports turf science and maintenance, nursery stock production, landscaping and food production.

Teagasc Green Cert

The last few months have seen a significant increase in the demand for places in Teagasc colleges and centres to do Green Cert courses. Some students from farming backgrounds may also have a keen interest in horticulture.

A student who has an interest in food crops or other areas of horticulture can pursue the Level 6 Advanced Certificate in Horticulture and gain their Green Cert through this route.

This option is certainly worth considering for those who might be within a commutable radius of the Teagasc College in the National Botanic Gardens.

A student can also consider that this option could be done part-time by building modules over a period of time to accumulate the major award, which is the Green Cert.

Industry involvement with the college

Over the coming year, we intend to look at how we can get the horticultural industry to sponsor students that are progressing through the college in an apprentice-type format.

The industry needs dedicated and committed students coming through colleges that they can merge into their business. By having academic training alongside practical training, we aim to give suitable students the best opportunity to gain a foothold in the business of horticulture.

We aim to have our degree students connected with suitable companies over the next year that will endeavour to support them financially in return for a structured training programme within their industry.

For more information on this route or any of the above, contact the college principal directly.

Email John.mulhern@teagasc.ie or phone 087-9613860.



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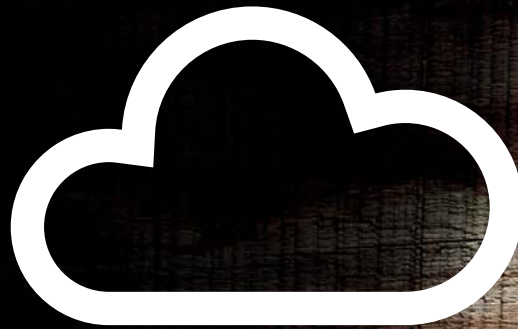
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