TEAGASC

January - February 2020 | Volume 31 | Number 1

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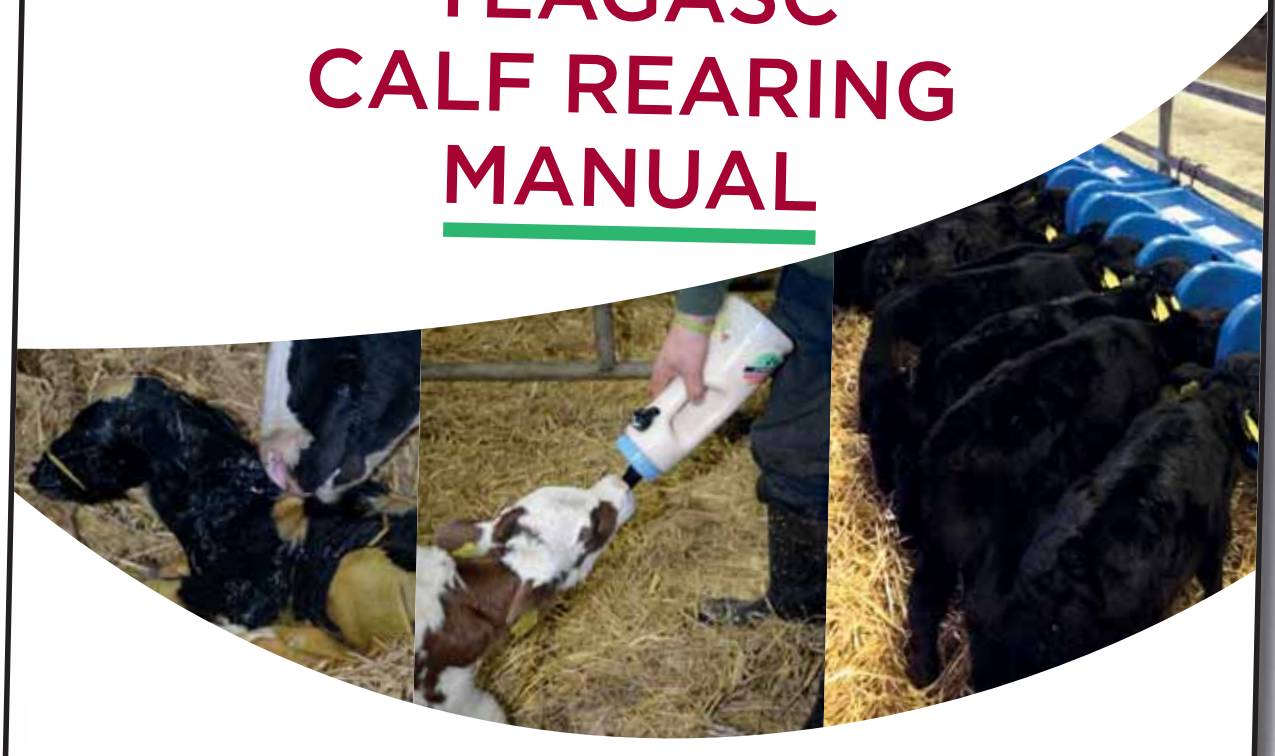
TEAGASC CALF REARING MANUAL



Best Practice from Birth to Three Months

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Agriculture and Food Development Authority

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

Editor: Mark Moore
Sub-editors: Regina Horan and Mary Ryan
Cover design: Design at DBA
Imaging: Philip Doyle and Jerome Dunne
Printing: Boylan Print Group, Drogheda, Co Louth

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Cover | Trevor Carnegie, Shintaro Naganuma, Gwen Meredith, Rosenallis, Co Laois and Teagasc dairy advisor Ellen Standish (see commentary.)

COMMENT

Mark Moore
Editor,
Today's Farm

Good news from Japan

Shintaro Naganuma, a dairy farmer and CEO of Bake, a popular cheese tart store in Japan, recently visited Ireland to view robotic milking machines in grazing systems. The majority of Japanese dairy farmers operate indoor dairying systems. Shintaro plans a Holstein herd with grass rather than a concentrate-based diet, partly for cost reasons, but also as grass-fed milk is seen as superior.

Irish food exports to Japan (mostly dairy and pork) have grown from €25m in 2008; to almost €115m in 2018. In June 2019, Bord Bia opened an office in Tokyo to build on the Japan EU Economic Partnership Agreement (JEEPA), in force since last February.

Shintaro said many farmers are leaving dairying in Japan and local production is not meeting growing demand. Irish farmers can help with that.

Cuairteoir a raibh fáilte roimhe.

Is minic a chloisimid ag an tráth seo den bhliain faoi shaoithe a tháinig ón oirthear. D'fhéadfá a rá gur saoi ón oirthear é Shintaro Naganuma chomh maith. Báicéir agus gnóthadóir atá ann agus tá sé ag éirí go hiontach maith lena ghnólacht Bake. Tháinig sé chun na hÉireann i mí na Samhna agus thug cuairt ar fheirm dhéiríochta Gwen Meredith i Ros Fhionnghlaise, Co Laoise, in éineacht le Patrick Gowing agus Ellen Standish, beirt chomhairleoirí de chuid Teagasc.

Tá seantaithí ag Gwen ar bhlitheoirí róbait a fheidhmiú agus tháinig Shintaro, a rinne a chuid staidéir sa Nua-Shéalainn, chuig an tír le ceann a fheiceáil faoi lán seoil ar scála a bheadh oiriúnach dá fheirm féin. Rogha inmhianaithe is ea iad mar nach bhfuil an fhoireann acu chun an obair a dhéanamh sa tSeapáin.

Out and about

NATIONAL SHEEP CONFERENCE

Kerry
- Date: Tuesday, 28 January 2020
- Event Time: TBC
- Venue: Great Southern Hotel, Killarney, Kerry.

Kilkenny
- Date: 30 January 2020
- Event Time: TBC
- Venue: Springhill Court Hotel, Kilkenny City, Kilkenny.

SPRING TILLAGE SEMINARS

20 January 2020
- Event Time: 8:00pm
- Venue: Riverside Park Hotel, Enniscorthy, Wexford.

21 January 2020
- Event Time: 7:30
- Venue: Clonard Court Hotel, Athy, Kildare.

22 January 2020
- Event Time: 8:00pm
- Venue: Teagasc Office, Navan, Meath.

22 January 2020
- Event Time: 7:30pm.
- Venue: Munster Arms, Bandon, Cork.

23 January 2020
- Event Time: 7:30pm.
- Venue: Mount Wolsey Hotel, Tullow, Carlow.

27 January 2020
- Event Time: 7:30pm.
- Venue: Ballyroe Heights Hotel, Tralee, Kerry.

NATIONAL TILLAGE CONFERENCE

29 January 2020
- Event Time: 9am.
- Venue: Lyrath Convention Centre, Kilkenny.

'Minimizing risk, promoting sustainability'
While the Tillage Sector is the lowest contributor of GHG emissions in Irish agriculture, the sector faces significant risks posed by the loss of important chemistries for pest/pathogen control and the need to further enhance sustainable practises.

AGENDA	
9:00	Registration
9:45	Opening Address
SESSION ONE: Managing resistance Chaired by: Ewen Mullins, Teagasc	
10:00	How IPM is critical for managing pyrethroid resistance in aphids - Michael Gaffney, Teagasc
10:20	Occurrence of grassweeds and their impact Ronan Byrne, Teagasc
10:40	Managing cereal diseases with loss of CTL Steven Kildea, Teagasc
SESSION TWO: Environmental sustainability Chaired by: Siobhan Walsh, AgriLand	
11:05	Environmental sustainability of the Tillage Sector - Soils, GHG, carbon Karl Richards, Teagasc
11:20	Oilseed rape systems: impact on crop, GHG emissions and soil biology Dermot Forristal, Teagasc
11:35	The story of catch crops in Denmark Nanna Hellum Kristensen, SEGES, Denmark
12:05	Cover crops: an Irish perspective Richie Hackett, Teagasc
12:20	Introduction to 'Crop Report 2020 – Agronomic Strategies; tailored for your business' Michael Hennessy, Teagasc
12:30	
(1:30)	Lunch
	Crop Report 2020 - demonstration workshop

*Apologies if your copy of Today's Farm has arrived after an event has already taken place

In response, the 2020 Tillage Conference will provide up to date outputs from research investigating the management of fungal and viral cereal diseases plus the importance of genetics in breeding more nutrient efficient/stress resilient varieties.

The role of cover crops will be objectively discussed against the demands of future sustainability goals as will the rotational options heading into spring 2020.

Meanwhile, a specific workshop will see the launch of the next generation Teagasc Crop Report which will allow users to personalise the online platform to provide rapid access to agronomist strategies, the latest research and collated ag-chemical product information.

TEAGASC FORESTRY CLINICS

Teagasc will run a nationwide series of forestry advisory clinics from January 20-31, promoting the establishment and management of forestry as a sustainable and rewarding land use on Irish farms. These one-to-one clinics will be held in Teagasc offices around the country on specific dates, where a consultation with an experienced forestry advisor can be arranged by appointment.

Carlow:
Oak Park R93 XE12 Friday, January 24 059-918 3555 Frances McHugh.

Cavan:
Ballyhaise H12 E392 Tuesday, January 21 049-433 8300 Kevin O'Connell.

Clare:
Ennis V95 R889 Wednesday, January 22 065-682 8676 Michael Somers.

Cork:
Mallow P51 NF82 Tuesday, January 21 022-21 936 John Casey.

Cork:
Skibbereen P81 AR23 Thursday, January 23 028-21 888 John Casey.

Donegal:
Ballybofey F93 R853 Tuesday, January 28 074-913 1189 Steven Meyen.

Dublin:
Kinsealy D17 K231 Wednesday, January 22 01-845 9026 Frances McHugh.

Galway:
Ballinasloe H53 HX21 Tuesday, January 28 090-964 2456 Noel Kennedy.

Kerry:
Tralee V92 V0HT Thursday, January 30 066-712 5077 Jonathan Spazzi.

Kildare:
Naas W91 HP38 Wednesday, January 29 045-879 203 Liam Kelly.

Kilkenny:
Kilkenny R95 RX30 Monday, January 27 056-772 1153 Michael Somers.

Laois:
Portlaoise R32 CF21 Monday, January 27 057-862 1326 Liam Kelly.

Leitrim:
Mohill N41 W580 Thursday, January 30 071-963 1076 Steven Meyen.

Limerick:
Newcastlewest V42 DY03 Tuesday, January 21 069-61 444 Jonathan Spazzi.

Longford:
Longford N39 T180 Wednesday, January 22 043-334 1021 Liam Kelly.

Louth:
Dundalk A91 PVW4 Thursday, January 30 042-933 2263 Kevin O'Connell

Mayo:
Claremorris F12 Y0T4 Thursday, January 23 094-937 1360 Noel Kennedy.

Meath:
Navan C15 NR79 Tuesday, January 28 046-902 1792 Kevin O'Connell.

Monaghan:
Monaghan H18 Y563 Thursday, January 23 047-81 188 Kevin O'Connell.

Offaly:
Tullamore R35 TP60 Tuesday, January 21 057-932 1405 Liam Kelly.

Roscommon:
Castlerea F45 NW99 Tuesday, January 21 094-962 0160 Noel Kennedy.

Sligo:
Ballymote F56 A585 Wednesday, January 29 071-918 3369 Steven Meyen.

Tipperary:
Thurles E41 AK40 Monday, January 20 0504-21 777 Michael Somers.

Waterford:
Dungarvan X35 PF60 Tuesday, January 28 058-41 211 John Casey.

Westmeath:
Mullingar N91 PK10 Friday, January 24 044-934 0721 Liam Kelly.

Wexford:
Enniscorthy Y21 ED27 Tuesday, January 21 053-923 9210 Frances McHugh.

Wicklow:
Tinahely Y14 AN20 Thursday, January 23 0402-38 171 Frances McHugh.

SESSION THREE: Research snapshots	
2:00	Outputs from VICCI – The Virtual Irish Centre for Crop Improvement Dan Milbourne, Teagasc Applying novel breeding approaches to tackle cereal diseases Adnan Riaz, Teagasc The challenge of grass weeds: Co-developing solutions for Ireland - Vijay Bhaskar, Teagasc Soil sustainability (Speaker TBC)
SESSION FOUR: Opportunities and challenges ahead Chaired by: Stephen Robb, Farmers Journal	
2:40	Looking ahead, costs and returns - Shay Phelan, Teagasc
3:00	Enhancing the agronomy and management of beans - Sheila Alves, Teagasc
3:15	Panel discussion Rob Coleman, Tillage Farmer - Castlemagner, Co. Cork Dermot Forristal, Teagasc John Crowley, Tillage Farmer - Ferns, Co. Wexford Teagasc Tillage Advisor (TBC)
3:50	Close of Conference

All are welcome to attend | IASIS Points Available

Admission:

- Teagasc Clients: €55 (Lunch included) / €35 (Lunch not included).
- Non Client: €75 (Lunch included) / €55 (Lunch not included).

Part-time employment on dairy farms – making it work for both parties

Eamonn O'Flaherty,
Teagasc Walsh Fellow

Joe Patton,
Teagasc Animal and Grassland Research and Innovation Programme.

The average dairy herd has grown from 45 cows in 2014 to just over 80 in 2019. Still modest when compared with the UK, New Zealand, Australia and the Netherlands, but nonetheless, an additional 6,500 new full-time equivalent staff will be needed to work on our dairy farms over the next 10 years.

More trained full-time farm managers are certainly needed, but there is also a significant amount of work that could be completed by competent part-time staff. Given their skills, background and proximity, drystock farmers might wish to take on this work.

We recently interviewed a number of drystock farmers about this topic and got some interesting answers.

What is preventing drystock farmers taking up work on dairy farms?

Four areas kept coming up in answer to this question: wages, long hours and working conditions, other employment opportunities and the age of the drystock farmer.

Wages

- "The first reason is money. Who wants to work for minimum wage? Milking cows for two or three hours flat out is a hard enough job that requires a level of skill. You can work in a shop putting cans on shelves, that's a lot easier."
- "In some places, you go in to do the milking and that's what you're getting paid for. Then, all of a sudden, he wants you to feed calves or do other jobs. But you're not paid to do it."
- "I've no issue working some weekend hours, but it needs to be reflected in the wages."

> In some places, you go in to do the milking and that's what you're getting paid for. Then, all of a sudden, he wants you to feed calves or do other jobs. But you're not paid to do it

What changes should dairy farmers make to encourage part-time farmers to take up employment?

A number of principal themes were identified including:

- Attitude and expectations.
- Time management.
- Facilities.

On hours and working conditions

- "I see jobs advertised where dairy farmers want lads for calving during February or March. Who is going to turn up for a month's work and have nothing then after?"
- "If you're on a building site, there are more employees, so there is a more even spread of the workload and a bit of craic. On a dairy farm, it may just be the farmer and the employee, which can be a bit intimidating for the employee."
- "There is a farmer up the road and he's offering lads small money to milk 350 cows in a 24-unit parlour. That's double the recommended rate."

On other employment opportunities

- "My job in the factory is permanent. I know my hours every week and it's as simple as that."
- "Around here there is plenty of work. Easier work, with better hours and you wouldn't be worked as hard. I have a young lad here in college and any day off he's at the buildings or landscaping."
- "A lot of drystock lads go away and serve their time in an apprenticeship, because they won't survive on farming alone. I think this eliminates a lot of part-time farmers. They have a good work skill. It would take a lot to convince them to work on a dairy farm six days a week."

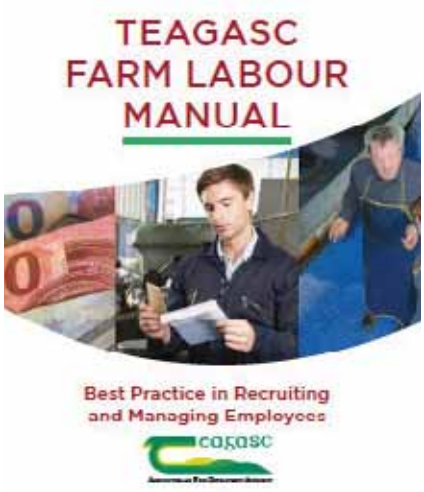
On the age of drystock farmers

- "It's a young man's game working on a dairy farm. Dairy farmers are always running and racing."
- "I suppose I wouldn't mind feeding the calves in spring or herding stock. But the dairy men will want you milking and calving, which wouldn't suit older lads."
- "If I was 30 years younger I'd be milking cows. There is no money in dry cattle."

On dairy farmers' attitudes and expectations

- "Some dairy farmers have an attitude that would turn you off working with them. They won't want to hear this, but it's the truth! Nobody owes them a labour solution."

Regular effective communication is at the core of staff management.



The Teagasc Farm Labour Manual is available from Teagasc offices.

•"Often dairy farmers have never worked for anyone else and they don't understand what it's like to be an employee. They need to understand rosters, training and job descriptions and put these in place. It happens in other workplaces, so why not on dairy farms?"
•"There are plenty of people who might be happy to do certain jobs like fertilizer, others who might prefer a few milkings a week or whatever. But a lot of dairy farmers want somebody who can do everything on day 1. They have to be more flexible with people"

On time management

•"Clear hours of work, and getting paid for those hours, is number one. I understand there are busy times in the year, but if, on most days, employees were gone before 6pm, then more drystock lads might look at it."
•"If dairy farmers are serious about having people working, the work has to be offered around the calendar, not just for a few crazy weeks in spring."

On facilities

•"If you want people to milk for you on a regular basis, you need good facilities, it's as simple as that. It is much easier to get relief milkers for eight rows of cows than for 15."
•"As a part time farmer, I enjoy working with stock. If the housing and handling facilities are good then work like dosing and calf rearing is enjoyable. I have enough drudgery at home without volunteering for it in someone else's place."
•"Having a canteen, changing room and toilet facility is not too much to ask."
•"Dairy farms are busy places, so well-maintained yards and machinery are vital. I have a couple of young lads mad into farming, but there are some local farmers I wouldn't let them take part time jobs with, it's just too risky."

Elements of success

The main themes identified were quite consistent across drystock farmers, regardless of age, location and whether or not they had previous experience on dairy farms. It is important that such issues are addressed by prospective employers; results from this project will be used to help develop better guidelines in this regard. We also interviewed some people (both dairy and drystock farmers) who have been involved in successful long-standing work arrangements. Some key elements of success they outlined were. The objective here was to highlight the characteristics of that make these a success for both parties. Some key elements mentioned were:

Employee observations

•"People say the hours are long, but in another way, a good dairy farm is great for getting part-time work. I would do about four or five milkings a week which is a good extra income stream. It's better than working in a bar until all hours on the weekend."
•"As farmers, we might think such-and-such locally is a good farmer, but they might not be great to work for. The range among dairy farmers is huge and working for a good operator makes all the difference for the worker."
• "I took a job on a dairy farm to cut out commuting and give me more time at home. Four days a week leaving time to also run the home farm. That's what I asked for and the dairy farmer works around it with extra relief work."

Employers' observations

•"New workers don't have to know everything, but a big thing is that they bring a willingness to listen and learn. It is then up to me to train them correctly. We are all busy, but don't expect too much from the start."
• "Staff turnover is a fact of life, but if people are leaving because of bad management, then it's doubly bad. Do the basics well, like having a fixed quitting time, roster days well in advance, have a good work plan set out and, above all, pay on time.
•"If a good person is eager to learn new skills on the job, then try to provide opportunities of interest to them."
•"Reliability is everything in employees, but being fair and reasonable is a must for us as employers. If someone is making a good honest effort but you are on their case for the sake of it, that isn't going to last."

Making Colostrum Count

We all know that colostrum is nature's way of protecting and nourishing calves during their first hours and days. A management plan will ensure that the calf, and you, get the maximum benefit

Emer Kennedy,
Teagasc, Animal and Grassland Research and Innovation Programme, Moorepark, Fermoy, Co Cork

Colostrum (biestings) is the milk produced at the first milking post-calving (second milking onwards is transition milk) and contains a host of vital immunological and nutritional substances that protect the health of the newborn calf. The most important of these are the immunoglobulins (antibodies), which help defend the newborn calf against bacteria and viruses it will almost certainly encounter as soon as it is born.

Immunoglobulins can be transferred from the human mother to her child while in the womb. Unfortunately, this is not the case for calves. The structure of the bovine placenta does not allow the transfer of immunoglobulins from the mother to the calf through the placenta while the calf is in the womb.

So, unlike a human baby, a calf is born with no circulating immunoglobulins, and depends almost entirely on colostrum to provide it with immunological protection. Getting enough immunoglobulins from colostrum immediately after birth is the single most important factor in ensuring the health and productivity of the calf.

Of course, high standards of hygiene are necessary when collecting, feeding and storing colostrum. Recent results from a Teagasc Moorepark survey of 48 commercial farms showed that the implements with the greatest quantity of bacteria present were stomach tubes and bottles with teats.

If equipment used to feed calves their colostrum feed is contaminated with bacteria, the calf is automatically put at an immediate disadvantage.

As colostrum management is so critical to ensuring the health and wellbeing of a calf, it is a good idea to develop a Standard Operating Procedure (SOP) or a work plan for colostrum management. This can then be printed and placed on a notice board in the calf shed, so everyone knows exactly what to do when a calf is born.

The following are examples of what might be included and the reasons why these practices are mandatory.

• Ensure colostrum is only collected

Figure 1

Testing Colostrum quality

from healthy cows i.e. Johnes-free animals. Identify all high-risk cows by using leg bands, or an alternative, to ensure their colostrum is not collected.

• Thoroughly clean all containers being used for colostrum collection and storage – this includes collection buckets and storage cartons.

• The best practice is to milk the cow immediately after calving and feed her calf 3l of colostrum straight away. This is not practical on all farms, so there follows an alternative solution, of which all points must be followed to minimise the risk of failure of passive transfer.

• Milk freshly-calved cows at next milking. Be aware that colostrum quality can be reduced if cows have been sucked and if time from calving to milking is greater than nine hours.

• Test colostrum quality with a Brix refractometer (see Figure 1).

• Typically, there is large variation in colostrum quality within a herd. Previous research completed at Moorepark showed that approximately 20% of a herd may have colostrum of poor quality i.e. insufficient antibodies for the calf. Some of the factors that can influence colostrum quality are as follows:

• **Lactation number** – Older cows tend to have higher quality colostrum, although the majority of heifers tested in experiments were above the cut-off. Testing colostrum with a Brix refractometer is the only way to identify quality.

• **Time from calving** – Colostrum quality decreases as the interval between calving and the collection of colostrum increases. Milk cows as soon as possible after calving

• **Month of calving** – Later calving cows tend to have lower quality colostrum. Freeze a supply of colostrum (it will last for a year in the freezer) to overcome such issues. It's useful to have some available for the start of the following calving season. Do not import colostrum from neighbouring farms.

• Only colostrum with a Brix value greater than 22% should be used to feed the calf their first feed, as 22% is equivalent to 50 mg/ml, which is the threshold that determines if there is sufficient antibodies to ensure calves acquire immunity passively.

• If it is below 22%, use an alternative source e.g. another freshly calved cow. The poor quality colostrum can be used as a second feed for the calf.

• Once its quality has been determined, colostrum above 22% should be stored in a fridge immediately to prevent bacterial growth. It is then readily available when cows calve.

• All cartons should be labelled with cow number and time and date of collection. Alternatively colostrum can be stored in a freezer where, as said, it will last for up to a year. Take great care when defrosting frozen colostrum; thaw it in water at 38°C.

• Colostrum needs to be stored within three hours of milking, as bacterial growth increases after this time. A high bacterial growth inhibits the absorption of antibodies by the calf.

• Colostrum stored in a fridge for more than 48-hours should not be used but thrown out.

• Colostrum should NOT be pooled. New results from Teagasc Moorepark shows that antibody absorption is reduced when colostrum is pooled, compared to feeding colostrum from one single cow - even though the quality of colostrum offered to both groups of calves was similar.

• All colostrum should be fed warm, as this increases the absorption of antibodies.

• Heat colostrum by placing it in a bucket of body temperature water. Do not use boiling water, microwaves etc., as high temperatures denature the antibodies.

• Feed all calves within two hours of birth. Absorption of antibodies from colostrum is maximised when fed within two hours of birth.

• After two hours, the calves ability to absorb antibodies rapidly decreases and after 24 hours the calf can no longer absorb antibodies.

• Feed all calves 3l of colostrum. This is for a standard calf weighing approx. 35kg at birth (8.5% of birth bodyweight). Volume can be adjusted by feeding 8.5% of calf birth bodyweight (if birth weight is known).

• Feed using a bottle and teat. If the calf does not drink or will not drink all of the colostrum, use a stomach tube.

• You can't assume a calf will receive enough colostrum, even if it's if sucking the cow. Artificial feeding will help promote better health in the calves.

•Hygiene, hygiene, hygiene! Clean all feeding equipment and collection containers thoroughly after use.

Dairying challenges in Ireland and Japan

Japanese farmer and businessman Shintaro Naganuma came to Ireland to learn about milking robots on pasture-based systems. Here's what Teagasc advisers Patrick Gowing and Ellen Standish told him

Ellen Standish,
Teagasc dairy advisor, Portlaoise.

Traditionally, dairy had very little place in the Japanese diet. However in recent years, consumption of milk, butter and cheese has become more and more common. The domestic dairy sector has not been able to keep up with the rising demand, partly because the number of dairy farms has been in decline for several decades. The resulting fall in production has led to Japan becoming the third largest importer of dairy products in the world.

Shintaro Naganuma, CEO of popular bakery brand Bake and major user of milk in the Hokkaido region of northern Japan, decided to buy a farm and produce milk. Interestingly, land prices (€5,000/ha to €20,000/ha depending on location) are actually lower than in Ireland.

"Most Japanese cows live largely indoors in barns yielding approximately 8,000 litres/head and consume a high-concentrate diet, based on imports of expensive grain. Due to these high costs, farmers need all of the approximately 90c per litre (at 3.5% fat) they receive from processors.

"I want my cows (pure Holsteins) to be calving in spring, grazing and eating a largely grass-based diet," says Shintaro.

Dairy farm workers are increasingly hard to find in Japan. Hence Shintaro's interest in milking robots on grass-based systems.

"It's interesting that dairy farmers the world over face similar problems," says Gwen Meredith, Rosenallis, Co Laois who, together with her husband, is milking 200 dairy cows with three Lely robots. The couple have been operating a robot-based system for the past six years and hosted a meeting between Shintaro Naganuma and Patrick Gowing.

"It's encouraging to know that farming innovators like Shintaro and Japanese consumers and processors see value in grass-based systems," concludes Patrick.

Top: Trevor Carnegie, Shintaro Naganuma, Gwen Meredith, and Ellen Standish discuss grass management. Inset: Shintaro Naganuma's cows are pure Holstein.
Above: Shintaro Naganuma with Patrick Gowing.
Above right: Shintaro presented Trevor and Gwen with a box of his bakery's cookies.

Five things to consider before installing a robot milker

Patrick Gowing
Teagasc Dairy Expansion Service.

The sales of robotic milkers have increased dramatically over the last five years, aided by favourable grants under TAMS, but also the labour saving the system offers. It's a significant decision for any farmer to make when deciding if a robotic unit will suit their farm. Here are five things you should consider when looking at robotic milking:

1 **Labour saving:** One-third of the total work on a conventional dairy farm is associated with the milking process. This equates to an average of three hours/day over the year in the milking parlour. Recent trials at Teagasc Moorepark have shown that robotic milking reduced the milking process to 40 minutes/day.

However the trials showed that there was increased time associated with grazing management when using robotic milking. So when considering robotic milking, remember the system will save time, but will only save time on the milking process.

2 **Yard design:** The robot box has a small footprint and can easily be installed into sheds. However, as with any milking system, consideration needs to be given to the movement of cows in and out of the robot milker, the area available to draft cows and the slurry management around the robotic system, in particular where the grazing gates are installed.

3 **Grazing:** Robotic grazing farmers operate an AB (every 12 hours allocation) or an ABC (every eight hours) grazing system. The principles of grazing management are the same as a conventional dairy farm – spring rotation planner, summer wedge and the autumn budget.

In an ABC system, the farm is divided into three sections, with cows getting new grass every eight hours. This requires three new allocations of grass per day. As you are utilising your farm, additional grazing infrastructure may be required to develop an ABC grazing platform.

4 **Economics:** Robot milking machines are expensive and usually require additional borrowings to change the system. A business plan for the robots should be completed, which shows the increased costs (increased repayments, higher service costs and ESB costs) on your business to see if it is viable.

In some cases, farmers have changed their system to accommodate the robotic milking. Remember, a robot is only a way of milking your cows. How you operate your farm will determine the profitability of your business, not how you milk your cows.

5 **Future expansion:** Robots are limited in the number of cows they can milk; typically 70-75 cows. In a conventional dairy farm, as the herd grows, you can milk extra cows through your parlour by increasing the number of rows you milk. In a robotic scenario, an additional unit will need to be purchased to milk the extra cows. This can make expansion in a robotic system capital intensive.

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Storing cattle for a summer finish

Alan Dillon
Beef specialist, Teagasc Animal and Grassland Research and Innovation Programme.

Following what can only be described as a disastrous winter finishing campaign in 2019, which at the time of writing looks to be creeping into 2020, some farmers are now considering storing cattle over the winter and finishing them off grass in the early to mid-summer period. Are they right to do so?

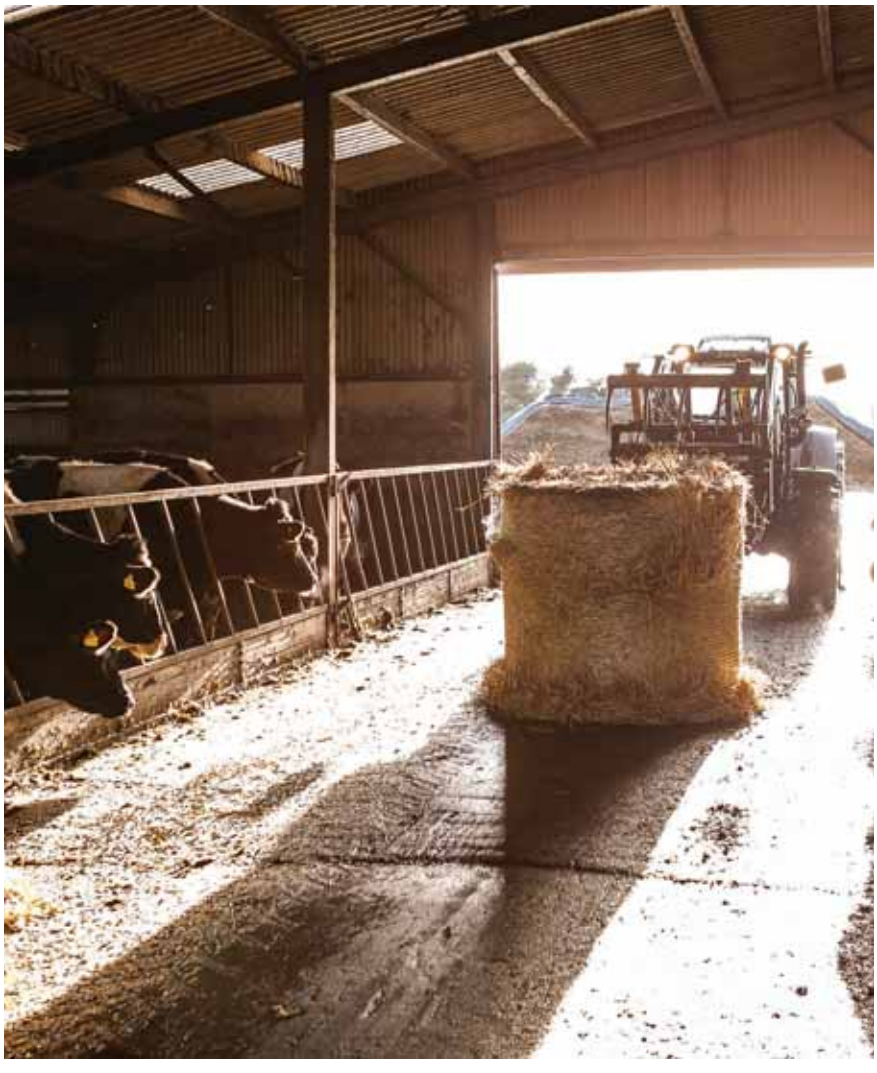
In recent years, the period from late April to early July has offered the highest price point of the year for beef animals. Couple this with the prospect of cheap weight gain off grass from early spring until finish, which eliminates a large proportion of the winter concentrate bill.

This combination of higher price and reduced costs means margins can be significantly increased.

Storing cattle over winter for a summer finish

Advantages	Disadvantages
Lower, or zero, meal bill over winter.	Extra silage consumed during winter period. Very high quality silage required to eliminate meal costs.
Higher level of grass utilisation.	Meal feeding at grass, if needed, can be difficult.
Typically higher beef price at sale time.	Longer 'wait time' for cash.
Allows time for market to correct itself.	Early turnout to grass must be achieved to allow early summer kill.

One of the main advantages of moving to a summer kill is that in recent years, beef prices have been higher in early summer than in spring or autumn. The cheap weight gain from grass and a potentially higher carcase weight on a slightly older animal means returns on cattle slaughtered could be higher than killing in spring.



Store bullocks may be wintered on silage only, but farmers must ensure a consistent silage quality of at least 72% DMD to achieve 0.5kg of liveweight gain per day. If silage quality is at a more typical level of 67% DMD, then around 2kg of concentrates will be required to maintain performance in the shed.

Farmers should be aware that silage intake will increase if meal is removed from the diet. It is also important not to overestimate the quality of the silage and end up with stock gaining little or no weight, or even losing weight over the winter.

Early turnout is a must if cheap liveweight gain from grass is to be achieved. Farmers should be targeting at least an early March turnout to have cattle adjusted to grass and achieving high levels of gain in April, May and June when grass growth and quality is at its peak.

Depending on what breed of animal is being targeted for finish, some meal may be required at grass to ensure a fat score of 3. While some early maturing breeds may finish off grass alone by early summer, late maturing or Friesian breeds may require a small amount of ration to ensure adequate fat cover and that carcasses meet all processor specifications.

Figures from the last five years show a 15 cent/kg gain in price on average when slaughtering on July 1 versus March 1, and a 25 cent/kg gain compared with September 1.

Table 2 compares likely profitability changes from postponing slaughtering from March to later in the year. While price fluctuations up or down can never be guaranteed in an individual year, the five-year trend shows that prices typically peak in May and June, before falling off as autumn approaches.

Assumptions and conclusion.

Assumptions are that once stock are turned out, steers will gain 0.9kg per day on average from turnout day to slaughter on July 1 and a further 0.8 kg per day as grass quality declines from July to September. While individual farmers with a keen eye for grassland management may achieve significantly higher levels of daily gain, for the purpose of this exercise, we will assume more realistic, moderate levels of gain.

Some level of meal feeding may be needed for the three to four weeks prior to slaughter and a cost of €30/head has been assumed for this.

The killout percentage has been assumed to remain the same across all stock killed.

From looking at Table 1, it can be seen that if the same level of price differential between spring, summer and autumn were to persist, then the increased potential margin for a July kill over March is €151/head or €100/head in September.

Table 1: Beef prices 2015-2019 (€/kg 03 Steer). Source: Bord Bia

Year	March 1	May 1	July 1	Sept 1
2019	3.50	3.56	3.49	3.24
2018	3.70	3.85	3.87	3.63
2017	3.56	3.81	3.83	3.56
2016	3.65	3.71	3.77	3.59
2015	3.84	3.90	4.00	3.73
Average	3.65	3.77	3.80	3.55

Table 2: Cost comparison of slaughtering in March, July, September

	March slaughter	July slaughter	September slaughter
Housing weight (1st Nov) kg O grade steer	550	550	550
Main Variable costs to turnout			
Meal input winter €	175	0	0
Silage cost winter €	90	150	150
Vet/Dose	10	10	10
Main Variable costs post turnout			
Grass cost €	0	80	125
Meal at grass €	0	30	30
Dose/vet at grass €	0	15	15
Total cost €	275	285	330
Weight at slaughter kg (50% KO)	340	364	388
Avg. value at slaughter €	1,222	1,383	1,377
Possible extra margin over March finish	0	151	100

Summary

While margins in beef are always tight, farmers who have excelled at summer finishing have reaped the benefits of a typically higher summer price, along with cheaper weight gain from grass until slaughter. Although there are no guarantees about prices being higher in the summer of any given year, historically this has been the case. Farmers who may consider changing their system from a spring to a summer kill must take into account the loss of cashflow from the spring period, coupled with possible obligations in the BEAM scheme to reduce bovine organic nitrogen by 5% in the 2020/2021 period.

Production targets for dairy calf-to-beef systems

Paul Crosson and Nicky Byrne
Teagasc, Animal and Grassland Research and Innovation Centre, Grange, Dunsany, Co Meath.

There will be approximately one million calves available for beef production born on spring-calving dairy farms over coming months. Although calves will derive from a large number of breeds, the majority will be early maturing beef crossbreeds and Friesians (bulls). Calf-to-steer beef systems incorporating these breeds are our focus.

Physical performance targets

A key target is to wean at a liveweight of approximately 90kg (see Table 1). Performance during the first grazing season is 0.8 to 0.9 kg/d. Supplementation is typically provided in the early part of the grazing season, or for longer where grass supply or quality is limiting.

Target gain during the first winter is 0.7kg/d. This ensures adequate skeletal and frame development, while also facilitating optimal compensatory growth during the second grazing season. This is often a period when liveweight performance falls below target. High quality grass silage (DMD of 72% or greater) and supplementation with 1.5kg meal per day is needed to achieve target performance.

Liveweight performance of 1 kg/d throughout the second grazing season should be attainable without meal supplementation, resulting in a liveweight of 500kg at housing. A proportion of these early maturing animals will be suitable for slaughter at the end of the second grazing season, particularly earlier-born animals and/or where meal supplementation during the latter part of the grazing season is provided. Although these animals will be lighter at slaughter, the cost of the indoor finishing period will be avoided.

Target liveweight performance during the finishing period is 0.9 to 1.0 kg/d. This results in a slaughter weight of 585kg and a carcase weight of 300kg. Friesian steers are typically 40kg to 50kg liveweight heavier at slaughter, with a 20kg to 25kg carcase weight advantage.

Direct production costs

Approximate costs for early maturing crossbreds total €573 per head. Friesian breed types have a somewhat higher feed demand and will incur 5% to 10% higher costs. Feed-related costs (predominantly meal) account for up to 85% of direct costs.

The total cost of the calf rearing phase, from purchase at three weeks of age until turnout to pasture, is €125/head. Milk replacer and meal account for over 70% of total costs for the period. The growing phase includes three periods;

- Turnout as weaned calves through the first grazing season.
- The first winter.
- The second grazing season.

The total combined cost for these periods is approximately €241 per head, again, predominantly made up of feed-related costs.

The finishing period is the most costly, largely due to the need for higher levels of meal feeding to attain a commercially acceptable level of finish (predominantly fat score). In Table 1, it is assumed that steers are slaughtered at around 23 months of age, which results in a slaughter date of January to March.

Later-born animals will usually have a later slaughter date and a longer indoor feeding period, resulting in higher total costs. Likewise, Friesian steers typically require an additional four to six weeks to reach adequate fat cover for slaughter, resulting in higher finishing costs.

Overhead costs

Overhead costs are incurred regardless of whether or not any cattle are purchased. Buildings and machinery generate capital and maintenance costs, even if you have no cattle. Of course, maintenance costs do increase with cattle numbers.

These costs vary greatly from farm-to-farm and are the greatest source of variation in production costs. Take animal housing. Not only do the construction costs of animal housing vary significantly depending on the specification of the build and the level of grant-aid received, the cost per head in a given year will depend on the age of the building and the number of animals housed in that year.

For the current analysis, overhead costs are taken from the Teagasc eProfit Monitor and are therefore assumed to be €237 per animal unit. Thus, total costs including overheads and an allowance for working capital costs are approximately €845 per head for early maturing beef crossbred steers, and €908 per head for Friesian steers.

The final cost to consider is the calf purchase price. The average price of early maturing bull calves sold though livestock marts in the last three years is approximately €160/head. We can assume that Friesian bull calves are substantially less (ca. €60/head) thus, total costs per head is €1,005 for early maturing systems and €968 for Friesian systems.

Carcase output and margin

A high proportion of early maturing crossbred steers produce carcases with a conformation score of O= or greater and a fat score of 3+ or greater. Given that the quality payment scheme (QPS) operates off of a base of R=, a reduction of 18c/kg from the prevailing beef price will apply. However, a 20c/kg QA (Quality Assurance) bonus will apply and so the net price is 2c/kg above the prevailing beef price. Using the three-year average base price of €3.77/kg, the system described here results in a carcase value of €1,137 per head for early maturing crossbreds, leaving a net margin of €132 per head; any breed bonuses are extra.

Friesian genotype carcases will typically produce carcases with slightly poorer conformation (O-) and will therefore, receive a lower price based on the QPS (-24c/kg), but will also be eligible for a QA bonus of 12c/kg. So, the net price will be 12c/kg lower than the prevailing base price. Again, using a base beef price of €3.77/kg, the target Friesian system results in a carcase value of €1,168 per head, leaving a net margin of €200 per head.

Table 1: Approximate liveweight targets for early maturing crossbred calves from three weeks of age through to slaughter at the end of the second winter

Description	Value	Comment
First grazing season		
Turnout weight	90 kg	
Liveweight gain	0.8 kg/d	Typically 0.05 kg/d higher for Friesian steers
Housing weight	220 kg	Friesian steers 10 to 15 kg heavier
First winter		
Liveweight gain	0.7 kg/d	Target of 0.6 to 0.8 kg/d
Turnout weight	290 kg	Friesian steers 10 to 15 kg heavier
Second grazing season		
Liveweight gain	1.0 kg/d	
Housing weight	500 kg	Friesian steers 10 to 15 kg heavier
Finishing phase		
Liveweight gain	0.9 kg/d	Typically 0.05 to 0.1 kg/d higher for Friesian steers
Slaughter weight	585 kg	Approximately 630 kg for Friesian steers
Carcase weight	300 kg	Approximately 320 kg for Friesian steers

Table 2: Approximate costs of rearing an early maturing crossbred calf from purchase at 21 days of age through to slaughter at the end of the second winter

	€/head	Comment
Rearing phase		
Milk replacer	54	
Meal	35	
Straw and hay	10	
Vaccination	17	IBR, pneumonia, clostridia and coccidiosis.
Other	9	Dehorning, transport, vet, mortality and electrolyte.
Total	125	
Growing phase		
Grazing	88	Costs will be slightly higher for Friesian steers.
Grass silage	46	Costs will be slightly higher for Friesian steers.
Meal	68	
Vet and meds	39	Including mortality and TB test cost.
Total	241	
Finishing phase		
Silage	54	Costs will be slightly higher for Friesian steers.
Meal	119	Assumed 5 kg/d for 100 days. Friesian steers will typically require a longer feeding period.
Vet and meds	4	
Transport and levies	30	
Total	207	
Total direct costs	573	Costs typically 5% to 10% higher for Friesian steers.

Conclusion

The net margins presented represent a return to management, labour and land resources employed. Clearly, there is a very wide range in performance potential within each of the breeds and breed-types, and the range of calving dates has considerable influence on the liveweight targets at various points in the production cycle.

Research at Teagasc Grange is comparing the performance of progeny from both Angus and Friesian sires used on the dairy herd that are divergent in breeding values for carcase traits. Current indications are that the targets outlined above remain valid and that there are opportunities to further reduce production costs by incorporating a greater proportion of grazed grass into the total lifetime feed budget.

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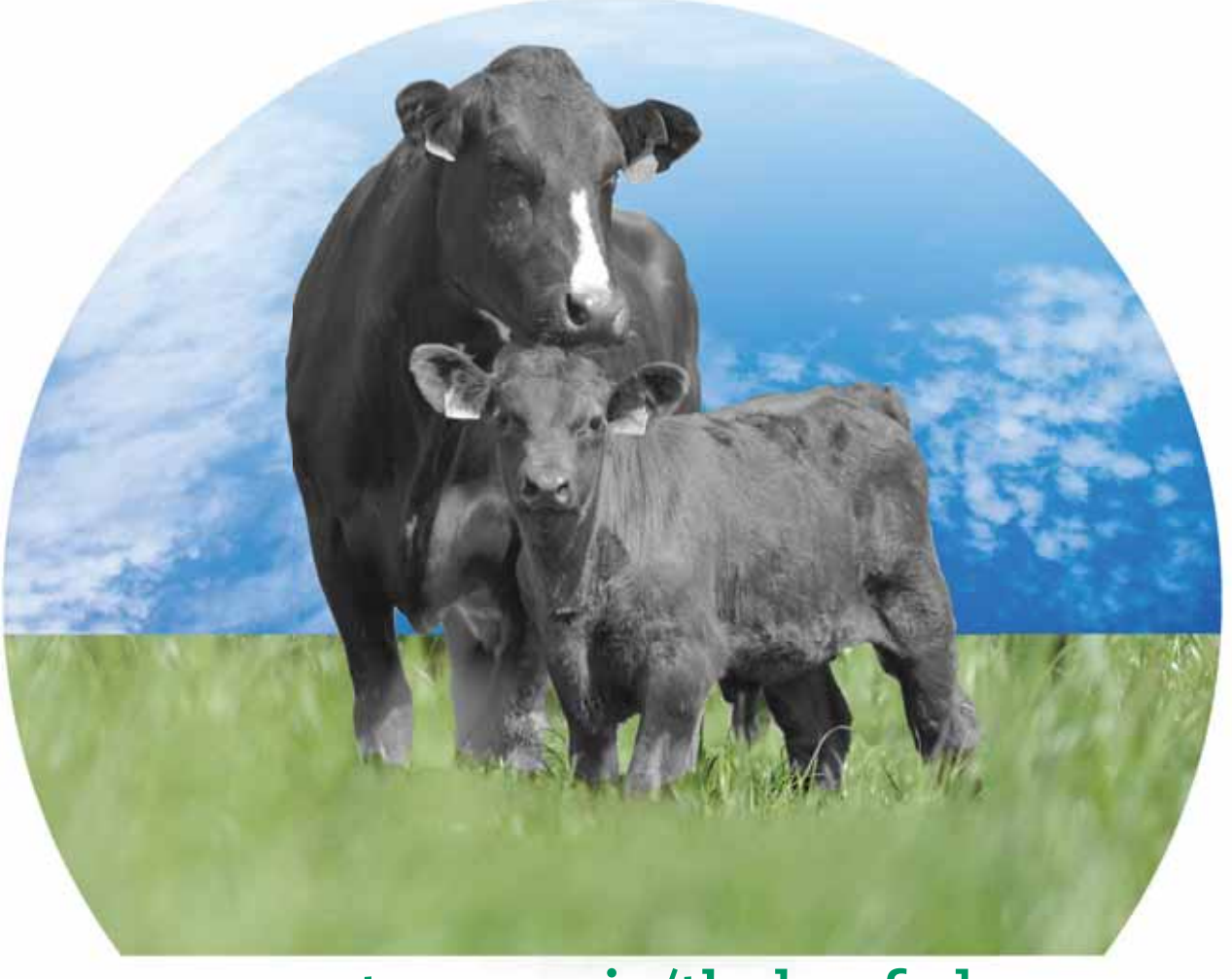

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James Doran, Glenn and Thomas Rafter.

Producing lambs: you can't beat a big number

The number of lambs reared per ewe has a huge impact on profitability, as this Wexford farm proves

James Doran,
Teagasc advisor, Enniscorthy, Wexford

Thomas and Glenn Rafter farm in Shroughmore, just outside the village of Ballindaggin in Co Wexford. The farm is a mixed sheep and tillage operation, consisting of approximately 57ha, with 35ha of grassland allocated to the sheep enterprise and the remaining tillage area generally allocated to spring cereal production.

Over the last four to five years, Thomas and Glenn have perfected the art of artificially rearing surplus lambs.

"The system was developed and tweaked over the years based on necessity, due to the very high lambing percentages on the farm," says Thomas. Prolificacy and maternal breeding have been a huge part of their breeding strategy over the years.

In spring 2019, 209 ewes gave birth to 484 lambs, 2.32 lambs per ewe, a phenomenal lambing rate.

"Ewes start lambing from mid-February," adds Glenn.

"The plan is then to get as many surplus lambs as possible reared on the farm, either by cross-fostering onto a ewe, or using artificial feeding."

Thomas and Glenn aim to have every ewe leaving the shed with two lambs.

"Every ewe should have two lambs and I get a great kick from converting one lamb into two lambs," says Thomas.

When cross fostering, the men use three methods on the farm.

- **Wet fostering** – As a ewe scanned with one lamb starts to lamb, a ewe with three lambs will have one taken from her, typically the biggest lamb. The lamb will have its legs temporarily tied and is placed in a shallow container soaked in warm water.
- The lamb is placed underneath the ewe as she lambs with the lambing fluids from the single lamb, all falling on top of the foster lamb. The ewe believes that she has two lambs and in the vast majority of cases, this method works well.
- **Fostering unit** – If the ewe fails to

bond with the fostered lamb through the wet fostering method, she will be placed into a fostering unit for two to three days, where the ewe doesn't know what lambs are suckling her. Again, after three days, this method proved successful in the vast majority of cases.

• **Bucket on head** – Failing the first two options, the potential fostered lamb is approaching a week old in most cases and is determined to suckle. By cutting a hole in the base of a bucket and placing it over the ewe's head, she can only see straight ahead, leaving the two lambs to suckle at each side as she grazes in the field.

The other, and very successful, option the farm operates is the fully indoor system of artificial rearing, which Glenn takes charge of.

"Two 25l 'Ewe to Lamb' feeders are used to rear the lambs," he says.

"The system reared 50 lambs last spring due to a high level of management. Twenty lambs per feeder is probably a more realistic figure."

The surplus lambs are fed each morning and receive ad-lib milk replacer for up to 35 days, while also having access to an 18% lamb ration from one week old and fresh straw as roughage. The temperature of the milk replacer is reduced as the lambs get older.

"The 'Ewe to Lamb' feeder facilitates this and lambs are fed cold milk from approximately three weeks," says Glenn.

Once the lambs are eating more than 250g of ration/hd/day, or at day 35 ,whichever comes first, they are weaned fully off milk. Glenn and Thomas see weaning at day 35 as a major part of the system's success, as it removes the most expensive element of the artificial rearing and doesn't seem to affect the lambs' thrive thereafter.

As with cross fostering, the best lambs are selected off the treble ewes, problem double ewes etc. to give them and the system every chance of success. Smaller birth weight lambs are left with the ewe and returned to grass. Generally, it's ram lambs that are selected for the artificial rearing and they are much quicker to convert the lamb ration to carcase when it comes to that stage.

"Once the lambs are trained onto the feeder they have no problem with using the feeders ad-lib afterwards," says Glenn.

"As it's an ad-lib system, even with the larger numbers there is never any bullying at the feeder, as they have 24 hour access. There is a margin in this system for good lambs, but it can be an expensive system for bad lambs. Selecting lambs is a key part of it."

In spring 2019, of the 50 lambs that Glenn and Thomas reared artificially, 46 of them were ram lambs. Mortality with the system in 2019 was 0.

Thomas and Glenn's top five tips for artificial rearing of surplus lambs

- Aim to wean from milk replacer at 35 days.
- Select the 'biggest' lamb rather than the 'smallest' lamb.
- Ram lambs generally work best.
- Allow ad-lib access to lamb ration and fresh straw.
- Aim to have each lamb consuming 250g ration/ha at weaning.

Margins

As with all systems, the margin can vary from year to year based on the cost of inputs, lamb price at sale etc. However, Thomas and Glenn target a very healthy €40 per lamb which is being achieved.

"Weaning lambs at 35 days old means that typically, each lamb will consume just under a half a bag of milk replacer," says Thomas. Lamb ration is the second biggest cost, with a small cost allocation to veterinary also. As the lambs are born from mid-February onwards, a lot of the lambs will be sold in late May, which in most years can also help to insulate against a lamb price drop.

Table 1: 2019 costs

Milk Replacer	€34	(€70 per 25kg bag)
Lamb ration	€31	(300 per tonne)
Veterinaty	€2	
Mortality	€0	
Total Costs	€67	

According to Glenn, average lamb price received in 2019 was €111/hd, leaving a margin of €44 per head.

After all their hard work, Thomas and Glenn ended up with 423 lambs reared from 209 ewes last spring (including the lambs reared artificially), an effective weaning rate of 2.02 lambs per ewe. A truly super performance!

"It really does come down to rearing a good number of lambs per ewe," concludes Glenn.

Outdoor lambing viable in Mayo

We talked to two part time sheep farmers, who are lambing outdoors and achieving good results. Low costs of entry to the system make it attractive. Attention to detail and adequate infrastructure and shelter are the keys to success

Liam Quinn
Teagasc Walsh Fellow, Westport
John Noonan
Teagasc Business and Technology Drystock Advisor, Westport

Liam Quinn, John Noonan and John Davitt.

Name	John Davit.
Location	Castlebar, Co Mayo.
Farm Size	26ha.
Soil Type	Free draining/ peat.
System	Mid-season.
Lambing Date	Starts 17 March.

John Davitt

Originally a suckler farmer, John felt the system was unsustainable and a major investment in infrastructure was needed, which would mean years of debt. He chose to start sheep farming with an emphasis on low management and good output.

System

John works full time off-farm and now keeps a flock of 110 mixed-cross ewes. Easy-care sheep play an increasingly important role in John's system.

"The breed sheds its wool naturally, so there's no shearing needed," he says.

"Paddocks are closed from early October. Lambing starts around the 17 March, when we are sure to have grass on the farm."

Although fertiliser input is low at one bag/ac on the grazing ground, a low stocking rate has resulted in John being faced with excess grass during the summer months. As a participant in the current GLAS environmental scheme, John emphasizes the benefit of not topping until the 15 July.

"It works well in regenerating seeds. I am not a big lover of perennial rye grass, but multispecies swards are an area I will be looking into in the future," says John.

"Come November or December, the fields will be grazed. Any white butt will be eaten, leaving good grass for freshly lambed ewes in the spring."

From December, the sheep are supplemented with silage and mineral buckets. John believes that the sheep grazing outdoors have contributed to an increase in soil organic matter, through better recycling of nutrients.

Ewes are fed concentrates for six weeks pre-lambing. All lambing takes place outdoors.

"I don't feed meal after lambing because this tends to cause mis-mothering," John says. This highlights the simplicity of the system.

"A small lean-to shed is used to look after twin-bearing ewes when weather is poor, but most sheep don't see the shed."

The flock has a 20% replacement rate. All replacements are bought from one source, for bio-security reasons. Cull ewes are sold at the local mart and John has implemented a strict culling policy that works in line with good record keeping at lambing.

Lambs

Drafting of lambs begins from mid-July, with the aim of getting lambs finished off grass as quickly as possible. This is achieved by dosing lambs every six weeks with Cobalt B12 and regular treatment for worms. Ewes and their lambs are moved through paddocks every five to six days, helping to maintain good thrive in the lambs. The aim is to graze each paddock for three days every three weeks, following Teagasc research in Athenry. Ewes are treated for worms

just after lambing to help combat spring rise.

John is a member of the Mayo-Blackface producer group, selling 150-160 lambs through the group each year. Ram lambs are separated from the ewe lambs in August and grazed separately. Lambs are condition scored and weighed regularly throughout the summer and then drafted accordingly.

The drafting results of Johns lambs are impressive, with 30% of the lambs sold by September 1 and 70% of the lambs sold by September 30, with an average carcase weight of 20.56kg. Conformation was 78% U grade and 22% R grade.

Infrastructure

Small paddocks, good fencing and sheep penning are needed to manage the flock. Ewes are meal trained for ease of management. There is a high level of shelter available from the hedgerows and trees that border the paddocks. John intends to increase his use of hedgerows to divide paddocks in the future.

Soil fertility is also closely monitored on the farm.

"Although fertiliser input is low, we regularly apply lime," John says.

This is important in keeping nutrients readily available to the grazing sheep. John directs most of his fertiliser to the silage fields. The aim is to have these fields at optimum index for phosphorus and potassium to get good quality silage in a six week growing period.

Name	Tom Gill.
Location	Westport, Co Mayo.
Farm Size	23ha.
Soil Type	Heavy/poor draining.
System	Mid-season.
Lambing Date	Start 9 April.

Tom Gill

Tom is a carpenter by trade and operates a part-time sheep enterprise. Like John Davitt, he got out of sucklers. "The ground was just unsuitable for heavy cows," he says.

System

Tom says his sheep mainly consist of Cheviot crosses.

"I cross the Cheviots with a Blue Leicester ram for improved prolificacy and milk, who are then crossed with Texel rams. These crosses give me the type of lamb I want."

Lambing starts on the 9 April.

"On this farm, we lamb for grass. I usually get fertiliser out with the quad around the 17 of March, so I can be sure of grass by April," says Tom. He also notes that "grass ate in February on this farm can be very slow to come again given the nature of the soil."

Tom Gill and Liam Quinn.

"I scan the ewes in the second week of February and separate ewes carrying singles and twins and feed based on this."

Last year, Tom was happy with his outcome: four sets of triplet lambs and a 50:50 ratio of single and twin lambs.

Paddocks around the house are closed early in the year, as this is where ewes are brought to lamb in April. All lambing takes place outdoors and management is important at this time.

"It's rare you would have losses at that time of year," Tom says, whose mortality rate is low at 9-10%. Regarding lambing difficulty, Tom notes that "big single lambs not noticed in time can be troublesome."

"Sheep are checked in the morning and at night-time only during lambing. As ewe's lamb, the ewes that have singles are kept in separate groups to ewes with twins."

Emphasis is on having good grass for freshly lambed ewes and so there is no feeding of concentrates after lambing.

"Any ewes that cause problems are tagged with a red tag as soon as they cause the problem," says Tom.

"Ewes are dosed just after lambing and lambs are dosed at six weeks. From then on faecal sampling is done on the farm."

Lambs

Tom gets one, if not two, drafts of lambs straight off the ewes, as these are the most profitable stock sold annually. Drafting begins from the end of August. Lambs are fed concentrates from mid-September when grass quality deteriorates.

Tom is currently in the process of converting a cattle-slatted shed for finishing lambs using timber slats. With over 70% of lambs sold finished by end of November, Tom expects to have the final 54 lambs fit for slaughter early in the New Year.

Tom has a lambing rate of 1.4 lambs per ewe weaned, all of which are killed through the Mayo Blackface Producer Group, selling on average 150 lambs per year and targeting a carcase weight of 20kg.

Infrastructure

When asked about labour management Tom says that he wants "to be making things easier not harder."

"Shelter and grass are two things you must have for this type of system. The quad and trailer are used at lambing time, but are also very important given the land type."

Tom places great emphasis on having good penning and fencing for lambing outdoors. He describes how having rams meal-trained is very important in maintaining condition during the breeding season.

"A good dog also plays an important role in labour management," he says.

As a regular competitor in international dog trials Tom has a wealth of experience in training sheep dogs.

Lambing Outdoors Summary

- Low capital cost to set up.
- Lower labour requirement.
- Need for good shelter/dry shed if weather is poor, otherwise there's arisk of big losses of young lambs.
- Good infrastructure necessary - paddocks /penning.
- High level of management needed for certain periods.
- Good quality silage essential to reduce meal feeding.

Preventing prolapse in pregnant ewes

Michael Gottstein,
Head of Sheep Knowledge Transfer, Teagasc Animal and Grassland Research and Innovation Programme.

Vaginal prolapse, the most common form of prolapse, usually occurs during the last month of pregnancy. The aim should be to try and keep the incidence to less than one ewe affected per hundred. It is not uncommon to see much higher incidences, so let's take a look at the management factors which predispose ewes to the condition.

Nutrition

In late pregnancy, ewes increase the speed and efficiency with which they ingest food. This enables them to eat more, as their nutritional requirements increase when their lambs are growing fast. Factors which slow down digestion or cause digestive upsets can predispose pregnant ewes to vaginal prolapse. Factors that can influence this include:

- Long periods where sheep do not have access to feed.
- Sudden changes to the ewe's diet.
- Availability of concentrates. When feeding concentrates, start at max 200g per head per day and build up gradually.
- Once concentrate feed level exceeds ½ kg per head per day, split the feed into two equal feeds at least eight hours apart.
- Sudden changes in concentrate ingredients. Introduce new ingredients/concentrates gradually.
- Access to feed. Ensure all animals have good access to forage and concentrate feed.

Housing

As pregnancy progresses, ewes get bigger, and so too does their requirement for space. The recommended trough space allowances are often not met on sheep farms. For terminal breeds (Suffolk, Texel, Charollais etc.), sheep need 0.6m (or 2ft) of trough space per ewe. This equates to eight sheep per standard bay. For maternal breeds, the requirement is for 0.5m or 1' 8" of trough space, allowing nine ewes per standard bay.

Providing extra trough space by adding in walkthrough feeders or placing additional feed troughs around the pen will make feeding concentrates a little more labour intensive, but will pay dividends by reducing pressure on heavily pregnant ewes. Remember when calculating trough space to allow extra space at each corner. There is approximately 0.6m trough space lost at each corner where sheep are feeding at barriers placed at 90° angles.

Lying space is also something that needs to be considered. Mature ewes need between 1.2m² and 1.4m², depending on their size in straw-bedded houses.

Exercise

Exercise is also thought to be a contributory factor that predisposes ewes to prolapse. Too much is bad and so is too little. In particular, avoid feeding heavily pregnant sheep on steep slopes or in large fields, where they will gallop to the troughs at feeding time.

Health, genetics and other Issues

Health issues such as prolonged lying down due to lameness, sub-clinical hypocalcaemia and acidosis are also cited as risk factors. Treating underlying conditions in addition to identifying and removing lame or shy feeders (for preferential treatment) from pens where there is a lot of competition for feed space will help reduce the risk of these sheep suffering vaginal prolapse.

Once a ewe suffers a vaginal prolapse, she is very likely to prolapse again in future years. So it is not a good idea to retain ewes that have prolapsed in the breeding flock. Ewe lambs should not be retained from ewes which have prolapsed, as there may be a genetic link.

Take care when tail docking potential ewe replacements. Ensure that you leave enough of the tail to fully cover the anus and vulva of the lamb. Very short tail docking is also cited as a predisposing factor in vaginal prolapse.

> The aim should be to try and keep the incidence to less than one ewe affected per hundred

Replacement of prolapse

Speed and good levels of hygiene are critical when it comes to replacing vaginal prolapse. The length of time between the prolapse and the intervention to replace it will directly af-

fect the degree of contamination (e.g. faeces, bedding material, soil etc.) and any potential damage to the vaginal tissue.

Significant delays can result in the vaginal wall becoming swollen and friable, which greatly increases the risk of tears or rupture during replacement. In severe cases, veterinary assistance may be required to administer an epidural to prevent forcing and allow for the replacement. Prior to replacement, the prolapse should be thoroughly cleaned and, under veterinary advice, pain relief and antibiotics administered.

Mild cases can be simply re-inserted and retained using plastic retaining spoons, or using a rope or ready made harness. Where a ewe is continually forcing stitching, an epidural and pain relief will be required. This is a job for a veterinary surgeon.

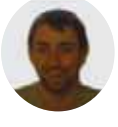
Summary

If the number of vaginal prolapses exceeds 1% (one ewe in every 100) in your flock, you need to look at management factors which may be predisposing your flock to prolapse. The following is a useful checklist:

- **Trough space allowance –** Allow 60cm for terminal-sired ewes, 50cm for maternal breeds. There should be free space at the trough during feeding.
- **Lying space –** Allow 1.2m^2 – 1.4m^2 per lowland ewe.
- **Meal feeding –** Introduce gradually and feed twice per day once the level of concentrate feed exceeds 1/2kg per head per day.
- Cull sheep that prolapse and where possible, do not keep replacement females from ewes that prolapse.
- When tail docking replacement ewe lambs, ensure that you leave enough tail to cover the anus and vulva.
- Avoid feeding heavily pregnant ewes on steep ground or in large fields.
- Treat any health issues such as lameness and hypocalcaemia as soon as they are detected, to prevent ewes being compromised nutritionally.
- Uterine prolapse post-lambing should not be viewed as the same condition. It occurs much less frequently (0.1% - one in 1,000 lambings) and unlike vaginal prolapse, the sheep in question are unlikely to prolapse the following year and should not necessarily be culled.

Finishing hill lambs outdoors

Frank Campion,
Teagasc Animal and Grassland Research and Innovation Programme, Athenry.



The hill sheep sector plays a key role in the economic health of rural economies and the maintenance of the natural landscape in many of Ireland's most rural and scenic areas. However, the sector is restrained by comparatively low levels of lamb output and weak markets for hill lambs. Selling lambs as stores is currently the main outlet for hill producers to sell lambs and relies on the confidence of lamb buyers that their systems can finish these types of lambs profitably.

Recent work carried out in Teagasc by Michael Diskin and Noel Claffey has shown that hill-bred lambs respond to improved nutrition post-weaning when offered high concentrate diets. This work also highlighted the potential to maximize carcase gain from grazed grass, prior to lambs being finished indoors. Clear blueprints and targets for finishing lambs arose from this work and are used frequently by farmers and lamb buyers when considering finishing hill-bred store lambs (Table 1).

Further work is required on the performance of hill-bred lambs using pasture swards and how the performance of these swards and the animals grazing them compares to using forage crops. The use of forage crops for finishing lambs is an attractive option for producers and lamb finishers in certain areas of the country, but information about the performance of lambs on these crops is limited.

With this in mind, a new research project has begun in Teagasc Athenry, to quantify the differences in crop yield potential and carrying capacity from a selection of forages when used in store lamb finishing systems and how these compare to finishing lambs on grazed grass or indoors on ad-lib concentrates.

Treatments

In August 2019 purebred Scottish Blackface and crossbred Scottish Blackface entire and castrate male lambs were purchased and assigned to one of six treatments:

- Lambs housed indoors and offered ad-lib concentrates.
- Lambs grazed in-situ on permanent pasture swards.
- Lambs grazed in-situ on newly re-seeded pasture swards.
- Lambs grazed in-situ on forage rape.
- Lambs grazed in-situ on kale.
- Lambs grazed in-situ on hybrid brassica.

Table 1. Suggested minimum drafting weights for male lambs finished on an all-concentrate diet.

Breed	Gender	Target carcase weight (kg)	Expected KO%	Min drafting weight (kg)
SB	Wether	18	45	38
SB	Ram	20	43	43
TXSB	Wether	21	47	42
TXSB	Ram	23	46	47

Each treatment was allocated 66 lambs based on liveweight (ranging from 2kg to 39kg liveweight), sex (entire male or castrate) and breed. Lambs remained on grass swards outdoors until the experiment began at the end of October. At the time of writing, the first year of the experiment is still ongoing, so results are limited. Regular performance assessments are taking place, including the collection of lamb liveweights, condition scores, dag scores and lameness records, alongside the collection of carcase data including carcase weights and muscle and fat scores.

Swards

The swards for the re-seeded pasture, kale, forage rape and hybrid brassica treatments were all sown on July 12. The land was cultivated using a disc harrow and then power harrowed. A two-way mix of Abergain and Aberchoice were used for the grass sward and picked based on the Teagasc Pasture Profit Index. The varieties of kale, forage rape, redstart are listed in Table 2, alongside some of the performance figures for the forage crops this year.

While not fully analyzed yet, crop yields for the kale, forage rape and hybrid brassica are disappointing and the reasons for this are still being investigated. The method of sowing, high levels of rainfall during August and September and a major issue with weeds following establishment are all contributory factors.

Pre-grazing heights for the grass treatments to-date are averaging 9cm and are being grazed to 3.5cm-4cm. Wet weather has made grazing out the re-seeded pastures difficult at times, with temporary fences being used to try maximize utilization, while reducing ground damage. Lambs are being strip grazed through the forage crops with a new area given every two days.

The area being allocated is based on the crop yield, utilization and the predicted lamb intake. Lambs have continuous access to straw as a supplementary forage source and also to ensure there is sufficient forage in the diet to maintain rumen function. This is the start of a long-term study and it will take a couple of years for a clear message to emerge as to how the use of forage crops for finishing hill-bred store lambs compares to the other systems out there.

Table 2: Initial analysis of forage crop yields and utilisation of crops grazed as December 6

	Variety	Fresh Yield (Kg)	DM %	DM Yield (Kg)	Utilised %
Kale	Maris Kestrel	9.5	14.1	1.4	80
Forage Rape	Stego	13.8	14.2	2	83
Hybrid Brassica	Redstart	14.8	13.7	2	76

TAMS II can help improve your animal handling facilities

Good animal handling facilities are not a 'nice-to-have', they are vital for the safe and efficient management of animals, be sure to avail of TAMSII if you need to upgrade

Tim Hyde, Environment Specialist, Teagasc Crops Environment and Land Use Programme,
Tom Fallon, Farm Buildings Specialist, Teagasc Rural Economy Development Programme.

Good cattle handling facilities protect your health and safety. They are also crucial for efficiency when managing animals for veterinary tests, routine treatments and tasks such as AI. Where slurry tanks are being agitated in slatted cattle houses, especially in early spring, it is important that animals are moved out and held in a suitable place. Animal enclosures can be used to hold animals temporarily during this process. In short, good facilities are a must and as a result they are supported under TAMS II.

New sheds can avail of ancillary concrete for the shed and the unroofed enclosure. If you are not applying for a new shed under TAMS II, then you are limited to availing of just the unroofed enclosure, walls, barriers gates, race and skulling/back gates.

Under TAMS II, the eligible area of an animal enclosure is limited to a maximum of 2m^2 per bovine on the holding. So, on a farm with 60 animals, TAMS II will grant aid at least 120m^2 of an enclosure at 40 or 60%.

To qualify for grant aid, you will need planning permission or a declaration of exemption for Unroofed Animal Enclosures from the county council. Grant aid for a stand alone cattle crush/race in existing buildings or the replacement of an existing crush does not require planning permission.

Grant aid for a stand alone cattle crush/race in existing buildings or the replacement of an existing crush does not require planning permission.

Planning Permission

Animal enclosures are listed as Class 8 building structures and are in the same class as silage pits, unroofed cubicles, milking parlours and collecting yards. Planning permission is required for these structures.

A building/structure is exempt from planning if the floor area of the structure and ancillary effluent storage does not exceed 200m^2. The conditions for this exemption require the total floor area of all Class 8 structures within the same farmyard complex or within 100m of that complex to not exceed 300m^2.

Other conditions state that the proposed structure shall not be situated within 10m of any public road and 100m from any house or public building, save with the consent of the owner or person in charge.

The conversion of an existing clean yard to a cattle handling facility alters the building class of the structure and will therefore require planning permission (unless exempt as outlined above).

Soiled Water/Effluent Control

The minimum specification for cattle crush, race and enclosure is outlined in the DAFM specification S137. In cases where the enclosure and race are not cleaned following each use, drainage channels are necessary to divert effluent and soiled water to a storage facility.

The tank must be at least able to hold the effluent from one day's use from the cattle handling facility. A clean water diversion system must be installed for runoff after the enclosure has been cleaned and not in use.

Unroofed Cattle Enclosure Costs

The provision of a cattle handling facility to a four-bay double tank slatted house would measure 120m² to accommodate 60 finishing cattle. This provides a 2m² allowance for all housed animals. A layout of such a facility is outlined in Figure 2.

The estimated cost not exceeding the DAFM costing of the enclosure is outlined as follows;

Cattle Enclosure, Crush and Race	DAFM Costs	
Concrete floor in enclosure	120sqm	€2,950
Wall	15m	€1,760
Barriers	17m	€1,250
Gate	6m	€400
Race	10m	€900
Skulling and Back gate (one of each)		€450
Total Costs		€7,750

These costs would equate to a TAMS II grant of ca. €3,000 at the 40% rate. The adjacent slurry tanks provide storage for soiled water/effluent.

In this scenario, the cost of the four-bay slatted shed, including slatted tank, roofed feed passage and ancillary concrete is estimated at €63,000. The addition of the handling facilities would be roughly 10% of the total costs of both structures.

Summary

In planning farmyard facilities, the inclusion of an animal enclosure, crush, race and escape routes are important elements that should be considered. The facility can be grant aided under TAMS II Animal Welfare, Safety and Nutrient Storage Scheme. Such a facility will help to improve labour efficiency and health and safety in terms of animal restraint and slurry agitation.

Figure 1.

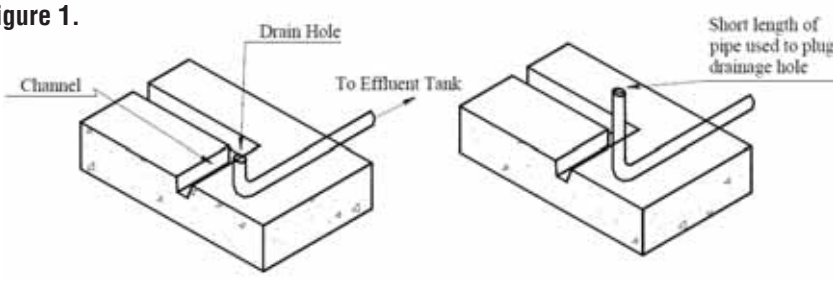
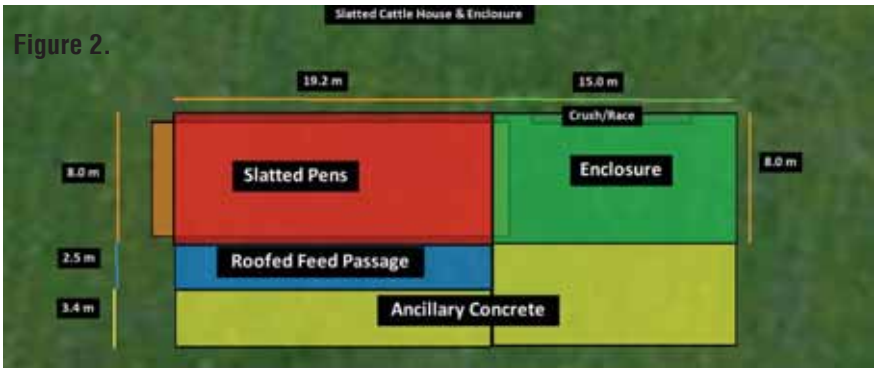


Figure 2.



Farmyard Layout Plan, Slatted Cattle House and Unroofed Enclosure

All farmers can apply for a standalone meal bin under TAMS II

Dairy, beef, sheep, pig and poultry producers can now apply for meal bins. Meal bins are in Class 9 for planning permission purposes. Planning permission is not required if the following conditions are met:

- Installing the meal bin does not put the aggregate buildings in this Class over 900m².
- The bin must be pre-painted.
- The bin, if over 8m in height, cannot be within 10m of a public road and within 100m of a dwelling, school, church etc.
- The method of calculation of the reference cost of a meal bin are is available at https://www.agriculture.gov.ie/farmerschemespayments/tams/
- The cost of a meal bin on a new base is calculated by its capacity in cubic metres and if a new base is required.The meal bin shall be completed in accordance with S.110. The new base has to be constructed using 'S.100 (Mix B)' concrete. For example, if the proposed meal bin capacity is 8m³, to get the cost of the meal bin multiply 8 x 68.51 and then add 1,900. This gives a reference cost of €2,448 for the meal bin and if a new base is required, it gives a reference cost of €2,748. The rate includes the meal bin, concrete pad and installation.
- As a rough guide, to calculate the volume for a given tonnage, multiply the tonnage by 1.39 to get the required volume m³. The actual required volume for a given tonnage will depend upon what is being stored in the meal bin. Ensure when getting a quote on meal bins to ask for the m³ capacity of the bin as well as the tonnage figure.

Table 1: The options allowed under TAMSII

Investment	Sub investment	Planning permission	Detailed drawings	Farm yard sketch	Nitrates relevant	Own labour permitted	Card A notice of commencement of pouring concrete	Serial number required
Meal bin								
	Meal bin on new base	No	No	Yes	No	Yes	No	No
	Meal bin on existing base	No	No	Yes	No	Yes	No	No
	Split meal bin on new base	No	No	Yes	No	Yes	No	No
	Split meal bin on existing base	No	No	Yes	No	Yes	No	No

Environment: What's on the radar?

A recent Teagasc conference on biodiversity, water quality and reducing Greenhouse Gas emissions offered insights into how these crucial issues will affect farmers in the near future

Andy Boland,
Environment specialist, Teagasc Crops, Environment and Land Use Programme.

The conference focused on the challenges facing the Agri-Food industry to deliver on the environmental outcomes that are being asked of it. The Government's Climate Action Plan requires a redesign of the Common Agricultural Policy and its Rural Development Programme. The review of the provisions of the Nitrates Directive, the Derogation and the implementation of measures to achieve emissions reductions were all discussed in detail.

Dr Karl Richards, Head of Environment, Soils and Land-Use Research Department in Teagasc, told delegates that the Climate Action Plan sets out the targets for agriculture.

"Reduce emissions by 10 to 15% by 2030, deliver carbon sequestration, and support diversification including bio-based products and bioenergy."

This Climate Action Plan contains many of the measures identified in the Teagasc Marginal Abatement Cost Curve (MACC), which assesses the abatement potential of a range of mitigation measures, as well as their associated costs and benefits on both greenhouse gas (GHG) and ammonia emissions for the period 2020-2030.

A total of 14 cost-beneficial, cost-neutral and cost-effective mitigation measures were identified in the Teagasc MACC for reducing agricultural emissions (methane and nitrous oxide). These measures were estimated to reduce emissions by 1.85Mt (million tonnes) of carbon dioxide equivalents per year (CO_2-e yr-1) between 2021 and 2030. The largest contributors to the abatement are using protected urea, improving dairy EBI and using low-emission slurry spreading.

In addition, the MACC identified that carbon sequestration from afforestation and management of high organic soils could potentially remove another 2.97Mt CO_2-e yr-1 from 2021-2030, reaching a maximum of 3.25Mt CO_2-e yr-1 by 2030. The cultivation of biofuel/bioenergy crops and anaerobic digestion has the potential to account for a further reported reduction of 1.37Mt CO_2-e yr-1 by 2030, mainly associated with the displacement of fossil fuel use.

The key message from Dr Richards was that we know the potential for mitigation, but now we have a limited time to encourage farmers to adopt the actions and deliver mitigation. Early actions result in greater Greenhouse gas reductions.

The challenges around water qual-

Low-emission slurry spreading in action.

ity were outlined by Bernard Harris from the Department of Agriculture, Food and the Marine (DAFM). He described how recent Environmental Protection Agency (EPA) monitoring has indicated that water quality has begun to decline again, after a period of stability.

He pointed out that Nitrogen (N) use on Irish farms has increased in recent years and this is a key factor, which needs to be tackled by farmers through improving nitrogen efficiency. The derogation and Nitrates Action Plan reviews will focus heavily on N efficiency, fertilizer formulation and stock density.

An update on the Agricultural Sustainability Support and Advisory Programme (ASSAP) was outlined. It is a free, voluntary and confidential advisory service providing advice to farmers on reducing nutrient and sediment loss from farms to waters.

Noel Meehan, ASSAP Programme Manager, said that the service is available to farmers located in 190 Priority Areas for Action (PAA). These are catchments identified throughout the country where water quality is under pressure. Advisors will visit farms, assess existing practices and offer advice on preventing nutrient and sediment loss to waters, with a view to improving overall PAA water quality.

Mary Barrett from the Local Authority Waters Programme spoke about communicating more effectively with the farming community and developing good empathy skills, with emphasis on convincing farmers of the value of water resources and persuading them to adapt long-term behaviours appropriate to protecting water quality, while maintaining

> There is ample room for both agriculture and biodiversity to develop side by side, if effectively managed space is left for nature

a financially sustainable farming system.

The increasing importance and concern for biodiversity was outlined by Teagasc Countryside Management Specialist, Catherine Keena, who detailed the evolution of global policy since the 1990s.

"There is ample room for both agriculture and biodiversity to develop side by side, if effectively managed space is left for nature,' she said.

Catherine also gave details of a Biodiversity Management Practice Index (BMPI), proposed for application on dairy farms, which would inform biodiversity management practice, enabling the positioning of intensively-managed farms by their biodiversity management practice status.

There are four broad characteristics of farms which provide readily accessible indicators, namely the farmed landscape structure, hedgerows, field margins and watercourses. Constituents of the Biodiversity Management Practice Index include average field size, hedgerow height, new sapling trees in hedgerows, uncultivated field margin, unsprayed field margin, fenced watercourses, watercourse margin of 1.5m or more, and absence of drinking access to watercourses.

Sean Kelly from National Parks and Wildlife Service (NPWS) highlighted the status of our bird populations. He indicated that while there have been improvements for a number of species, there are a lot of species that remain under threat.

Waterford dairy farmer and vet Gillian O'Sullivan gave an excellent farmer's perspective on farm regulations and dairy farming. She explained that farmers carry a significant administrative workload from animal registration, herd registers, NMP plan, Bord Bia audits, DAFM Inspections etc., with the amount of time spent on administration ever increasing.

"Recent changes in policy direction towards greater regulation framed by the Climate Action Plan are positive from an environmental perspective, but will have a huge impact at farm level," she said.

"It will be difficult for primary producers to continually bear the brunt of regulation, as it is adding to costs at farm level in terms of time, expenditure, paperwork and stress. Farmers are taking a battering from the media, consumers, vegans, animal welfare and environmental groups, and they need to be supported rather than pressured further."

"There will have to be an unprecedented level of dialogue between a very broad number of partners in the sector to deliver on emission targets, biodiversity and water quality," Pat Murphy, Head of the Teagasc Environment Knowledge Transfer Department concluded.

"The industry collectively must use all the tools available to deliver the improvements required. It is essential that there be clarity for farmers and as much simplification of what they are being asked to do as possible."

From dairying to breeding elite show jumpers

Dr Alan M Hurley
Equine specialist, Teagasc Rural Economy Development

In 2004, Gerry Marron from Corduff, Co. Monaghan switched from dairy farming to breeding elite show jumpers. Gerry's wife Mary, a teacher at Lisdoonan national school and his three sons Eamon, Cillian and Diarmuid are all actively involved in the business.

Gerry first started breeding horses over 30 years ago. "I always kept two broodmares and purchased the odd foal along with running the dairy business." The progeny from these mares were sold as foals or three-year-olds.

"If I had a real nice horse I would keep and produce it with international rider Dermott Lennon, a real gentleman who I have worked with for 25 years."

One of Gerry's foundation mares was Hallo Beag by Hallo.

"I bought her because of her pedigree as she was well related to Kilbaha (ISH) that Capt. John Ledingham used to ride. Today, most of my own breeding is from that line through her daughters and grand-daughters who are really starting to make an impact on the show jumping circuit," Gerry recalls.

Officially founded in 2009, Kinmar Stud is only now seeing the fruits of hard work. Kinmar Quality Hero, Kinmar Agalux, Absolutely Kinmar Z, Attoucha Hero Z, Alana Hero Z and the stallions Akarad Hero Z and Ganesh Hero Z were all bred there.

In 2019, Gerry's homebred Kinmar Quality Hero (O.B.O.S. Quality 004 X Moujik De Sohan) was selected to represent the Irish Sport Horse Studbook at the FEI/WBFSH World Breeding Jumping Championships for Young Horses at Lanaken, Belgium, in September.

Kinmar Quality Hero was ridden by Damian Griffin and reached the six-year-old final, a major achievement given that there were 712 of the best young horses in the world at Lanaken competing from 36 different studbooks from 45 different nations.

How it started

"My father milked cows all his life and that was my plan too," says Gerry who milked cows for over 10 years and had a milk quota of 40,000 gallons and 50 cows. He built a new parlour, drained land, and reseeded paddocks with advice from Teagasc advisors Michael O'Dowd and Sean O'Sullivan.

"The dairy business was profitable and I liked milking but I wanted to do something which he loved." His passion was for working with horses. "I got a brainwave to start a horse livery business in 2003, and after some deliberation, I decided to make a go of it. There was great demand and I attracted both Irish and international clients".

In 2004, with the livery business going well, Gerry left dairying; selling his milk quota. "At the time it was a huge risk but I was willing to take it purely for the love of working with horses." Gerry converted much of the dairy into housing for young stock, built stables and an outdoor arena.

Partnership

The business model changed when Gerry met Luc Henry in 2011. Luc is one of the best-known breeders in Belgium and has bred numerous 1.60m international show jumping horses. "I met Luc through Dermott Lennon as Luc wanted to start sending recipient mares from his embryo transfer programme to Ireland to be foaled.

"Luc loved the green grass and the fact horses were outdoors most of the year. Dermott gave Luc my number and ultimately we became business partners and great friends." Gerry decided to quit all other livery and focus solely on his partnership with Luc.

Gerry had 10 mares himself, and each year Luc would send 10 recipient mares carrying embryos. Once the mares had reared their foals they were returned to Belgium. "Foals stayed here as foals / yearlings / two year olds etc. all different ages, when Luc had a customer they would go.

Gerry Marron (left) and Alan Hurley are pictured with Kinmar Quality Hero the horse that reached the 6 year old final at the FEI/WBFSH World Breeding Jumping Championships for Young Horses at Lanaken, in September 2019.

"Luc taught me about better breeding and how to make improvements. When he first arrived he said you will breed Olympic horses here in 10 years and have people coming to buy horses."

Today, Irish and international clients visit Kinmar stud to buy high end horses. Gerry says the stallion Ganesh Hero Z is likely to be his Olympic horse.

"He is a real modern blood stallion from one of the best dam lines in the Europe," says Gerry.

In August 2019, the dam of Ganesh Hero Z produced the €40K embryo that topped the Flanders Embryo Auction in Dublin.

In addition to working with rider Dermott Lennon, Gerry also works with Damian Griffin who produces a lot of his stock.

"Damian Griffin was given the task to ride and produce Ganesh Hero Z and that's how we got in touch. We get on really well and we have been working closely for three years now."

Grassland management

"As when dairy farming, I soil test all paddocks every few years to make sure the soil is balanced in terms of nutrients; fertiliser and lime are then applied as required. Good quality grass is crucial for milk production, equally so for horses. Gerry finishes a few beef cattle every year solely to maintain grass quality.

"In spring time if grass beats me I give it to a zero grazing neighbour who takes out the extra paddocks. In return he spreads slurry to fertilise the land. All the land is paddocked which makes it much easier to manage."

Breeding

The majority of the better horses come from good bloodlines. Usually, the major factor lacking in breeding is the strength of the dam line. When breeding for a particular discipline you must have a clearly defined breeding goal. The knowledge gained through Luc has encouraged Gerry to make major genetic improvements to his own stock and breed high class horses including Magician Hero, Kinmar Quality Hero and Kinmar Agalux.

What qualities do you look for in a potential elite show jumper?

"First you need to look at the overall model. Key characteristics include conformation, scope and technical ability over a fence. Ride-ability and the brain needed to reach the top are also crucial, but difficult to find. You can estimate the potential of young horses as they show their ability nearly straight away," says Gerry.

How do you pick a stallion to suit your mare?

"Look at her faults objectively, and select a stallion to complement her. You have to be super critical of your own stock and have realistic progeny expectations given pedigree and performance. Eliminate poor stock as they are only costing you money. Get a second opinion.

"I would advise breeders to attend foal sales, young horse classes such as at Lanaken and the RDS to watch for any progressive sires and to see how stallions are stamping their stock. Stallion shows are also very important. Such events are also a source of feedback from other breeders."

If you were starting again, would you change anything?

"I would consult the best breeder, one who is breeding good horses consistently. Knowledge is the key; I would have saved lots of time if I had met Luc earlier and improved my breeding sooner.

"You have to be always learning and making improvements."

Is there an opportunity for others to offer contract rearing of horses?

"Definitely, I could have done more international contract rearing only that I got more involved in the breeding side and didn't have the space. The financial returns are very good for full board grass livery (usually €35-40/week or €2,000/year).

"People in Europe, particularly Belgium and Holland, will send animals over. You do, however, need horsemanship skills.

Social media, particularly Facebook and YouTube, are proving to be an excellent promotional and sales tool for the business." Michael Doherty keeps me updated on the latest results internationally."

Gerry has steadily grown his followers to almost 1,000 which has widened his customer base. His big dream is to breed an Olympic horse. Given the success Gerry has achieved to date, it won't be long until he fulfils that dream.

Using eProfit Monitor to make cropping decisions this spring

Assess your crops now if you had rough weather conditions during planting

Ciaran Collins, tillage specialist, Teagasc Crops Environment and Land use Programme, **Elaine Clifford**, Teagasc tillage advisor, Midleton

Autumn 2019 was one to forget for tillage farmers. Wet conditions resulted in a 50% fall in winter cereal plantings compared with autumn 2018. The consequences didn't end with the reduced area, because many of the crops were sown into less than ideal seedbeds, resulting in poor establishment and slug damage.

A survey of winter cereal growers by Teagasc advisors last autumn indicated that only half of the previous year's winter cereal area was planted by early November. There is a wide variation across the country, with up to 80% planted in parts of the south to less than 30% in parts of the north-east.

The default cropping option in such situations has been spring barley, but all options should be considered. Long-term benefits of rotational crops like beans should also be examined, but pay attention to local markets. Before spring cropping plans are made, carefully assess your winter crops.

Winter crop assessment

A good look at your crop stands will establish the management required this spring and, in some cases, whether a crop needs to be replanted. The key crop assessment tool is plant count. For winter wheat and barley, the ideal target is to have 250-300

Elaine Clifford.

Continued on p33

plants after the winter, (higher end for barley). Hybrid barley can produce a high yield from 175-200 plants.

Wheat can compensate for plant counts, with as low as 100 plants/m² generating full yield, provided the plants are evenly distributed. Winter barley yield potential is compromised once plant count drops below 250 plants/m².

Managing winter wheat and winter barley crops with low plant populations

•**Nitrogen:** Crops with low plant counts (wheat < 150 plants/m² or barley < 200 plants/m²) should get the first split of nitrogen as soon as growth commences. This should be followed by the main nitrogen split at growth stage 30-31. To reduce nitrogen losses, divide the first split on these thin crops. Nitrogen demand is low at this time of year, so feed thin crops little and often.

•**Canopy structure:** K2/Chlormequat (CCC) may help promotion and survival of tillers, but the response is not always clear. Apply 1.0l/ha CCC 750g/l at tillering, ideally after nitrogen application and during a period of growth.

•**Remove the competition**: Take the first opportunity to complete weed control to remove competing weeds.

•**Crop nutrition:** Ensure that crop nutrition is corrected based on recent soil test results, especially Phosphate (P), Potassium (K) and Manganese (Mn).

Spring sowing of winter wheat varieties

All winter wheat varieties are safe to sow until mid-February, but only faster developing varieties are suitable for late February. Do not sow in March. Establishment percentage can be as low as 65%, so seed rates need to be increased to compensate. Target establishment of 300 seeds could mean seed rates of 235kg/ha (15 st/ac) or higher, depending on Thousand Grain Weight.

Teagasc research carried out in the 2000s showed that yields of winter varieties are similar to spring wheat when sown up to mid-February, but drop off thereafter. Some growers in the south of the country have achieved better yields from winter wheat, but winter varieties sown in the spring will have a later harvest date.

Any crop sown after December 31 is regarded as a spring crop for Basic Payment Scheme (BPS) purposes, regardless of variety.

TIP

- To measure plant stands, use a 0.2m² hoop.
- Construct a 0.2m² hoop by connecting/looping 158cm of stiff wire or 12mm 'Wavin' pipe.
- To get the numbers per m², count the plants inside the hoop and multiply the number by five.
- To assess plant populations, walk the entire field in a W pattern, taking random samples.
- Average all samples to give an overall plant stand for the field.
- Take note of areas where populations are lower or higher than the average, as these areas may require specific management.

Table 1: Speed of development of winter wheat varieties (Source DAFM)

Speed of Development		
Fast	**Medium**	**Slow**
Cellule	JB Diego	KWS Conros
	Bennington	Costello
	Torp	
	Graham	

Spring cropping decisions

Profit monitors (ePM) from your farm are invaluable when attempting to predict the likely outcome of cropping decisions. Elaine Clifford, a tillage advisor based in Midleton, has completed over 50 eProfit monitors per annum for her clients from 2016-2018 and is using this information to advise farmers on the most profitable crops for their farms.

Based on the ePM results 2016-2018 (Table 2), winter wheat and winter barley have been the most profitable crops during this period, so the reduced area of winter cereals for the 2020 harvest could lead to a loss of income for tillage farmers in East Cork.

Alternatives

While spring feed barley is usually the default crop for growers, there are increased opportunities to grow malting barley this season, with attractive forward prices available for a proportion of the crop.

The average profitability from spring malting barley between 2016 and 2018 is marginally less than feed barley. This is due to the fact that where a crop of barley was grown as malting barley in the ePM, all the returns are entered under this category, regardless of whether it was sold as malt or feed. Rejections will reduce output and consequently the net margin. Initial results from the 2019 ePM indicate a reversal in this trend, due to the low level of rejections.

Spring beans have the lowest margin over the three years, where the drought in 2018 had a major impact, with many crops struggling to achieve 2.5t/ha. It's noteworthy from the ePM analysis that the most profitable growers are those with break crops like beans in the rotation. The break crop facilitates more profitable crops like winter wheat, so a multi-year perspective is needed. In addition, remember that the protein payment is available for 2020.

Table 2: Cork East average ePM yield and net profit 2016-2018

	Winter Wheat	Winter Barley	Spring Malting Barley	Spring Feed Barley	Spring Oats	Spring Wheat	Spring Beans
Av. yield t/ha	10.65	9.12	7.61	7.47	7.45	7.9	5.5
*Net Profit €/ha	973	760	629	651	607	562	457

*Note: for crop comparisons net profit excludes land rent and BPS but includes protein payment for beans.

Teagasc alumni groups

These groups are proving popular with graduates who enjoy the networking opportunities, camaraderie, and technical support they offer to young adults early in their careers

Patrick Browne, Aoife Healy, Peter Doolan, Teagasc advisors in Donegal, Cork West and Laois.

Keith Burchill, Aoife Healy and Michael Lordan.

The Donegal alumni group with Peter Browne to the right.

It's Friday evening at the Teagasc office in Letterkenny and a group of young women and men are engrossed in reviving a lifesize plastic dummy from a heart attack.

"The group chose this topic as the focus for this meeting," says Caroline O'Hara. "First aid can be vital on a farm and while we have a bit of craic, we take it seriously."

Caroline and the other members of the group are all alumni of Teagasc Green Cert courses.

"Donegal alone is graduating 100 – 130 part–time and distance learning course students a year and the same for Sligo/Leitrim," says Teagasc advisor and facilitator of the group, Patrick Browne.

"The idea of students forming a group to maintain the momentum and exhilaration of completing a course is often mentioned during graduation ceremonies. But I noticed that this rarely came to fruition and I set about finding out why, as part of a Teagasc national initiative called The Green Cert Graduate programme."

"The programme was initiated by Teagasc to provide a service for young trained farmers, who have recently completed their agricultural education, to network with other graduates and avail of a knowledge transfer facility," says Dermot McCarthy, head of the Teagasc Advisory Service.

Right across the country, Teagasc staff are running alumni groups under the programme, but how these groups are formed can vary greatly.

In Donegal, Patrick Browne contacted alumni and found that students were naturally sceptical about joining a group without knowing what was in it for them.

"What I did was I got them together for a grassland/silage meeting out at one of the graduated students' farm, where we talked about silage quality, fertiliser requirements and fertility. They enjoyed the meeting and could see the benefits of joining a group of like-minded young people. Since then, we have had a Drainage Event in Kilcar, First Aid Tonight and a vet is organised to meet the group in January."

Unlike typical discussion groups, which centre on a geographic location or enterprise with members from a

proving to be popular

relatively small area, alumni discussion groups can draw members from further away.

"We have visited members' farms all over the county, from Convoy – Ballybofey – Donegal – Bundoran – Ballyshannon, all the way to Glencolmcille, often with different enterprises and systems on the farms," says Patrick.

As well as a programme of technical meetings, the Donegal group plan to attend the Scottish Highland Show together and visit a lowland/hill sheep farm or suckler/beef or finishing unit on their travels.

At the opposite end of the country in west Cork, it was a group of three local farmers who had the idea to encourage a discussion group among existing dairy students in Clonakilty College.

"The farmers wanted to 'give something back' by encouraging the students," says Teagasc advisor Aoife Healy, who currently facilitates an alumni group that is essentially a continuation of the in-college group with a link to Carbery Macra.

"It's great to be in a discussion group when all the learning is fresh in your head and you're also farming and surrounded by colleagues of a similar age to yourself," says Keith Burchill, a member of the group. "And if it's full of people you were together with in college, everyone knows everyone from the start."

Michael Lordan completed the Teagasc Level 6, Dairy Herd Management course at the same time as Keith.

"We had a really great group when we were in Clonakilty and we wanted to continue it after we graduated. We were all enthusiastic and willing to travel long distances to go to some of the meetings, but it still needed someone like Aoife to pull it together."

According to Aoife, an advisor at the Skibbereen office, participating in a group consisting of former student colleagues can be more attractive than joining an existing discussion group.

"You're naturally going to be a bit intimidated if, as a recent college graduate, you're joining a group of highly experienced and established dairy farmers.

"In November 2018, the Green Cert Graduate programme was introduced in the Teagasc Laois/Kildare/Louth/Meath Dublin Region," says Teagasc advisor Peter Doolan.

"There are currently two groups meeting - one based from the Navan Teagasc office and the other from Naas Teagasc office.

Peter Doolan with the alumni group based on the Teagasc office in Naas.

"In the Kildare/Laois alumni group, there are approximately 30 graduates from a variety of backgrounds and farming enterprises, including drystock, dairy, tillage, equine and horticulture, who meet to share their varying interests through themed meetings and events.

"Local Teagasc advisors initially made contact with all recent graduates in the region individually, to introduce themselves and the service and arrange a complementary on-farm visit. From this initial contact, graduates on the cusp of taking over the family farm, were identified and encouraged to participate in the programme.

"For many students, the Green Cert is the first step in the farm succession plan, however as the tricky part of taking over the farm comes next, continuing support is important at this stage."

The meetings alternate between indoor sessions and on-farm tours. In an introductory session, the graduates were able to highlight topics that they found interesting or relevant to their current situations. Therefore, the first evening meeting discussed issues such as entitlements, land leasing and land use options for new farmers. Outdoor sessions proved very popular.

"In July, the group visited the award-winning farm of beef farmer Ronan Kavanagh from Mountrath, and discussed farming sustainably into the future. The most recent night-time event took the graduates to the farm of a new dairy entrant, who is running a highly automated operation and works off-farm.

"Graduates to date are engaging well in the programme and equally, the local advisors have enjoyed the opportunity to give foresight and advice at this early stage of a farmer's career."

Teagasc Distance Education Green Cert Course

- Teagasc Agricultural Colleges and Regional Education Centres are now taking applications for the Distance Education Green Cert course for non-agricultural award holders.
- This course meets the training requirements of graduates from other non-agricultural award programmes who are interested in farming and who will inherit a farm over the coming years. The course duration is 15-20 months and applicants must be the holder of a Level 6 or higher major award in a non-agricultural discipline. Interested applicants can apply online at www.teagasc.ie.
- Kildalton Agriculture College will commence this course in late February 2020.

forestry

Laying down strong roots for the future

This young Cork dairy farmer is enjoying the Farm Forestry module at the Salesian College in Pallaskenry

Richard Walsh, Tom Houlihan, Michael Somers
Forestry advisors in the Teagasc Crops, Environment and Land Use programme

"Gaining knowledge of our farming enterprises, including the potential of farm forestry, has been a great experience," says Stephen Jones, who comes from a dairy farm near Kanturk in north Co Cork and is currently undertaking the Certificate in Agriculture at the Salesian Agricultural College in Pallaskenry. The Teagasc Education Department and the Salesian Agricultural College are partners in the delivery of agricultural education, training and knowledge transfer.

Stephen's keen interest in optimising management of the family farm comes across very clearly. Together with his father, Colman, he currently farms over 100ha, milking 90 dairy cows on a platform of over 40ha on the main farm holding. The farm also carries 30 weanlings on out-farms, as well as a thriving forestry enterprise of various ages on 34ha of land, which is considered marginal for other agricultural enterprises.

"At present, preparations are gearing up for a busy calving season and we have plans to sustainably increase the dairy herd to over 100 units in the near future," he says.

"Our family have always had a strong interest in the environment, having participated in REPS and subsequent agri-environmental schemes."

Stephen says he has learned much from his father over the years and his current involvement with the Certificate in Agriculture course is embellishing this knowledge. Within the Principles of Agriculture module, all students receive a practical overview of the forestry option and its many benefits. In addition, Stephen has undertaken a five credit farm forestry module, which provides a more detailed insight into forest establishment and management.

"Our farm forest, which comprises productive conifer along with a mix of other tree species, was planted in three sections, the first over 11 years ago," says Stephen.

At the time of planting, Stephen's father undertook farm forestry training provided by the Teagasc Forestry Development Department, in conjunction with the Department of Agriculture, Food and the Marine.

"Our forestry is literally a growing farm asset, as well as an efficient and sustainable use of our marginal land," Stephen says.

Before starting the farm forestry module, he was involved in the establishment of the more recently planted areas of his farm forest.

"I had some understanding of the planting process, since we recently planted a parcel four years ago and again two years ago," he says.

"The forestry module has given me a lot more information about our forestry, has given me the confidence to understand what management is needed and has enabled me to plan the next important steps. I can also avail of on-going advice from my local Teagasc Forestry advisor, John Casey."

Together with his father, Stephen has plans for their farm forest going forward into the future and identifies how it can enhance sustainability within the farming enterprise.

"With thinnings of the older forest coming up in the next three to four years, discussing the timber markets during the module has given me clear insight into timber uses and how we can optimise our timber sales in the future," he says.

Stephen Jones and Richard Wallace.

Farm Forestry Module

The farm forestry module within the

Stephen Jones.

Teagasc Certificate in Agriculture course aims to broaden the level of knowledge and awareness of forestry topics amongst current and future farm forest owners. The introduction of this module is one of a wide range of initiatives undertaken by Teagasc to promote sustainable afforestation.

It's also designed to increase awareness of the potential of farm forestry and to create a positive environment for potential future forest plantings. The farm forestry module covers seven key topics, which include:

- Incentives for farm forestry.
- The benefits of sustainable forestry as a land use.
- The physical and performance indicators of forestry.
- The silvicultural requirements for success in establishment and management.
- The effects of farm forestry on the environment, biodiversity, landscape, climate and land mobility.
- Common forestry tree species and utilisation of timber/products.
- Forestry establishment options for a given site.

Forestry can be an excellent addition as an on-farm enterprise that also provides multiple environmental benefits. It is important that farmers and landowners are clear about their land use objectives and understand the implications of establishing a farm forest, including the replanting obligations.

When undertaking the farm forestry module, students learn about the growth of forests, the markets for timber and the potential returns, as Stephen outlined. Sustainable forest management is also emphasised, including thinning, harvesting and environmental enhancement. The thinning of a forest can be beneficial to the forest owner, by providing a source of fuel, periodic income and improving the growth rate of future crop trees, due to the provision of additional growing space.

In the design process of a farm forest, the impacts on the environment, biodiversity, landscape and climate must be considered. Students are made aware of the various designations such as Special Areas of Conservation, Fresh Water Pearl Mussel catchment areas, archaeological sites, etc., and how these may influence species choice, forest design and on-going management.

The role of forests in sequestering carbon is also highlighted, from carbon uptake during forest growth through to carbon storage in harvested wood products.

A key part of the module involves fostering students' ability to identify some of the common tree species found in Ireland, including matching the right trees to the right place with appropriate objectives. Students may already have an awareness of common timber uses and this module embellishes their knowledge with practical information and demonstrations. For example, European Beech can be found as a material for woodworking benches or mallets.

During the module, students are taken on site visits to nearby farm forests, where they can experience this exciting enterprise at first hand, while also availing of the forest owner's considerable experience. Additional insights from the forest owner provide invaluable perspective on the important factors when making the decision to plant, experiences learned along the way and additional benefits gained by having a forestry enterprise on-farm.

The Teagasc Forestry Development Department provides research, advisory and training/education support to the forestry sector in Ireland. For more information on a range of forest topics/available courses, log onto www.teagasc.ie/forestry or contact your local Teagasc Forestry Advisor.

Opportunities at the National Botanic Gardens

John Mulhern,
Principal, Teagasc College

September 2019 saw a big influx of students attending first year programmes here in the Teagasc College at the National Botanic Gardens. In total, we have over 130 new students attending first year Certificate in Horticulture full-time, part-time and degree level courses.

This year on our Level 5 certificate programme, there is great interest in all our modules, especially Plant Identification, Fruit and Veg, Landscape Construction, and Biodiversity and the Natural environment, which only started recently. Keep an eye on the Teagasc website for summer course offerings at the Botanics.

The part-time learning mode is ideal for students who may be working and wish to pursue one or more modules at a time that suits them. They can achieve the full award over several years. It's a busy time in the college, and in November, we welcomed our Advanced Certificate students following either Nursery, Landscape, Turfgrass or Food Production streams.

Courses

Our Level 6 advanced Certificate in Horticulture, which is the follow-on award for Level 5 students seeking a higher qualification in horticulture, has over 50 learners who are choosing streams in Landscape, Nursery, Food, and Sportsturf. This year, Food Production is back on the college programme at Level 6 and it was the area that received the most interest from students.

Interestingly, a similar trend is evident in the degree programme, where students are choosing the Sustainable Food Production elective. A number of factors are influencing this. In first year Level 5, on top of the mandatory subjects in horticulture covering the basic sciences, we now offer additional subject choice of either Amenity Horticulture or Food Production Horticulture.

Essentially, students choose either Landscape Construction and Maintenance, or Fruit and Veg production. This then drives the selection of either Landscaping/Sportsturf versus Food Production in Level 6. While some students involved in Food Production are going back to their own farms equipped with a Green Cert at Level 6, others will find employment with established growers.

Another subject area that our first year Level 5 students are increasingly engaging with is Biodiversity. There is no doubt that all of our students are acutely aware of the ongoing narrative in relation to climate change and biodiversity, and the high numbers looking to do the module on Biodiversity is particularly welcome.

The model of part-time learning in horticulture has been proven in the Teagasc Colleges. In our education system, it is possible to gather individual component awards and build towards a major award. Increasingly, our students are opting for component awards which over time will stack up and earn them a major award at Level 5 and Level 6, which equals a Green Cert.

However, it must be clearly stated that a full major award is not everyone's goal, nor should it be. Learners in horticulture should examine what's available from either Kildalton College or the Teagasc College in the Botanics. Learners can choose either of these colleges to pursue these awards. Picking specific modules that suit your current learning curve in horticulture is absolutely possible.

For details on Level 5 and 6 Teagasc Horticultural Courses and Teagasc WIT courses contact:

- Teagasc College Of Amenity Horticulture, National Botanic Gardens, Glasnevin, Co Dublin: (01) 804020.
- Kildalton College, Piltown, Co Kilkenny. Contact details: (051) 644400.

Applications for 2020 now open - https://www.teagasc.ie/education/going-to-college/apply-online/

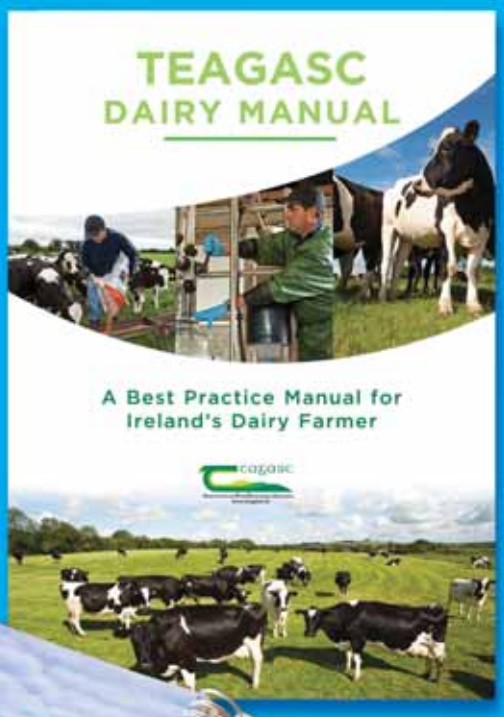
Next open days in Colleges :

- **Friday 6 March** Teagasc Kildalton.
- **Thursday 12 March** Teagasc College at the National Botanic Gardens, Glasnevin.

All enquiries welcome.

TEAGASC DAIRY MANUAL

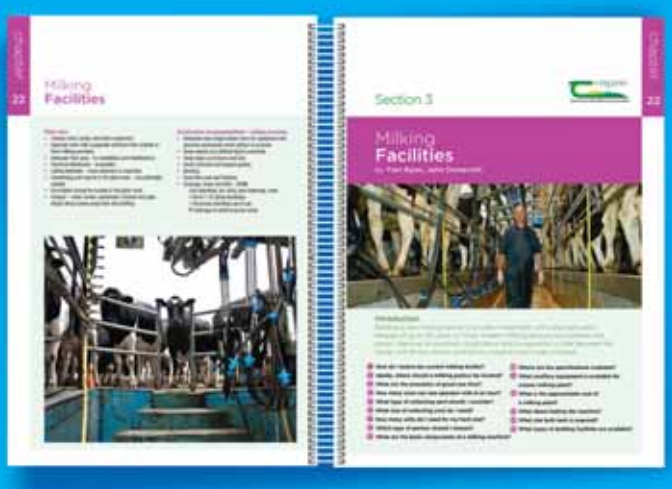
A comprehensive source of practical advice for any dairy business.



- Why dairy farming?
- Business management
- Dairy facilities
- Dairy farming and the environment
- Milk quality
- Feeding dairy animals
- Dairy breeding
- Dairy animal health

These sections are further divided into a total of 49 chapters with titles such as: Creating a Business Plan, Winter Facilities, Feeding the Dairy Cow, Managing Your Grass, Replacement Heifer Management etc.

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



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

Makes an ideal Christmas gift

The Teagasc Dairy Manual is available from your local Teagasc office **(clients €25, non-clients €50)**. Alternatively contact **Therese Dempsey (059 9183422)** who will send you a copy by post **(p&p €7.50 extra)**

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