TEAGASC

September – October 2016 | Volume 27 | Number 5

Today's Farm

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New KT groups worthwhile?

We get this Leitrim farmer's view 15

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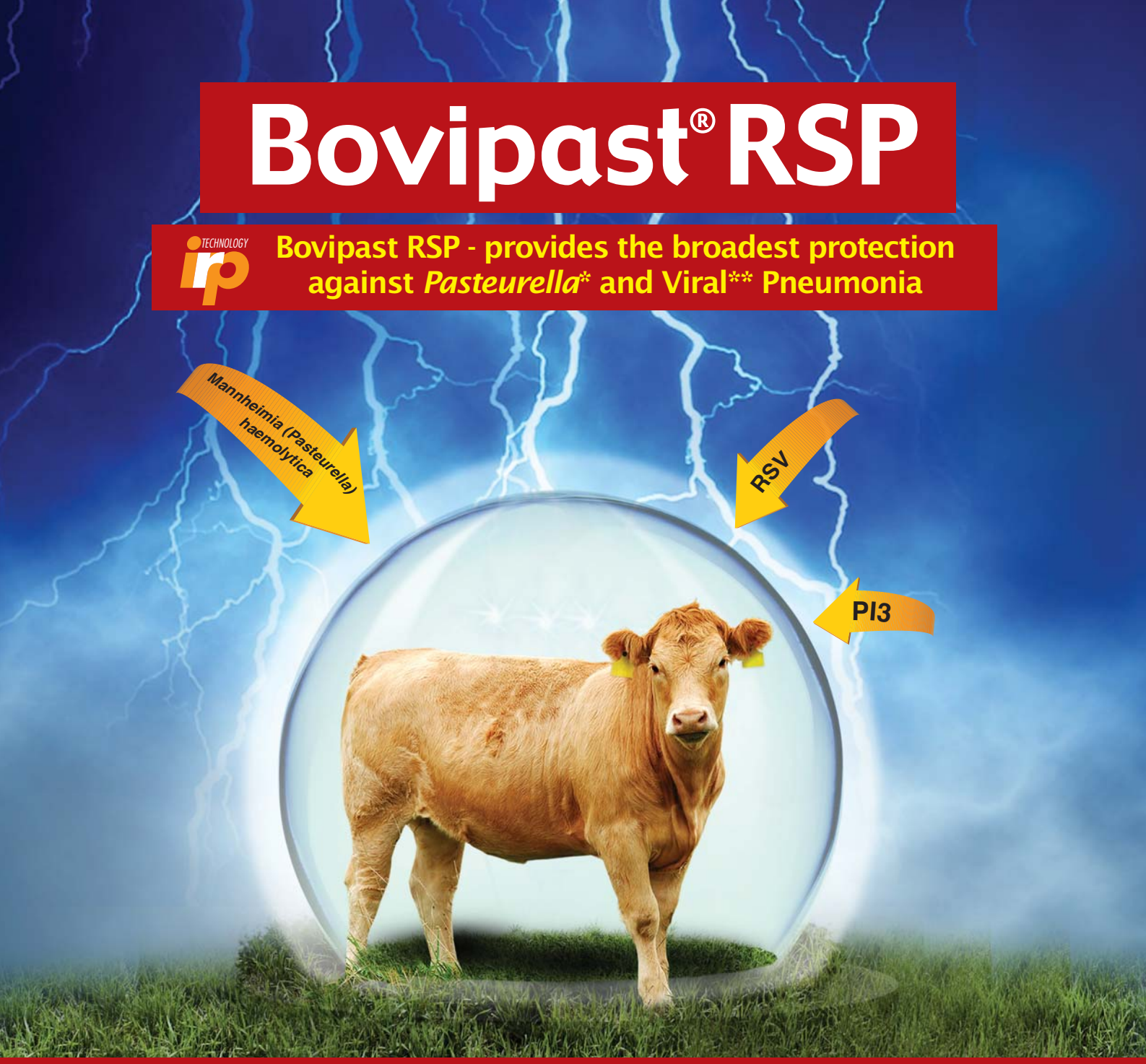

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IE/BBR/0815/0012 August 2016

PESTICIDE USAGE

Kieran Kenny and Joseph McGee discuss the importance of preventing MCPA, or any other pesticide, getting into water courses.

>> 24-25

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Cover | Deirdre McGuckian is an enthusiastic member of the Rinn Valley Beef Discussion Group in south Leitrim.

COMMENT

Mark Moore
Editor,
Today's Farm

Don't stick your head in the sand on P and K

A recurring theme in the stories we feature in this edition is the influence of soil phosphate (P) and potash (K). Many grassland and tillage fields have seen their indices gradually decline as crop offtake exceeds the level of fertiliser applied. P and K application is often reduced in tough times.

Whereas inadequate nitrogen has a very obvious and often visual impact, the soil reserves of P and K can cushion the effect of a temporary reduction in bagged fertiliser applications. But gradually yields of grass or grain will inevitably decline as the plant is starved of the building blocks it needs. As a minimum, have soil samples taken to find out where each field stands. If levels are low rectify them as soon as you can. Otherwise, as they say... you're at nothing.

Má dhéanann tú rud amháin....

Téama a phléitear arís agus arís sna scéalta atá san eagrán seo is ea tábhacht thorthúlacht na hithreach, agus go mór mór an tionchar atá ag Fosfáit (P) agus Potais (K) ar thorthúlacht na hithreach. Tá laghdú tagtha de réir a chéile ar innéacs na gcothaitheach sin in ithir go leor féarthailte agus páirceanna curaíochta de bharr gur iondúil go mbaintear níos mó de na cothaithigh sin as an ithir ná mar a chuirtear léi mar leasachán.

Cé gur minic go bhfeictear go ríshoiléir tionchar uireasa Nítrigine ar an ithir, is féidir le stoic P agus K na hithreach cúiteamh a dhéanamh ar an drochthionchar a bhíonn ag laghdú ar úsáid leasacháin i málaí. Mar sin féin, is cinnte go dtitfidh táirgeacht an fhéir agus an ghráin diaidh ar ndiaidh d'uireasa na gcothaitheach sin, atá riachtanach d'fhás an phlanda. Is fusa sampláil ithreach a dhéanamh agus leasachán i málaí a úsáid ar bhonn thorthaí na samplála sin ná, cur

i gcás, síolta a chur as an nua.

Is féidir an dá rud a dhéanamh, más gá sin, ach bí cinnte nach ndúnfaidh tú do shúile nuair is P agus K atá i gceist.

Energy in agriculture

(L-R): Mike Pearson, principal of Gurteen Agricultural College; Minister for Communications, Climate Action and Environment Denis Naughten; Cllr Siobhán Ambrose, county cathaoirleach, Tipperary County Council; Professor Gerry Boyle, director of Teagasc.

Energy in Agriculture 2016 took place in Gurteen Agricultural College, Co Tipperary recently. It's the first event looking at various energy saving opportunities for farmers together with renewable energy deployment opportunities within the various sectors. The event was organised by Teagasc in combination with Tipperary County Council and Tipperary Energy Agency and supported by SEAI.

On many farms there is scope to reduce the amount of energy consumed per unit of output, or to invest in a renewable energy technology and reduce the use of fossil fuels. There is an increasing focus on greenhouse gas emissions (see also our article on P18). Improving energy efficiency, or investing in renewable technology, will reduce greenhouse gas emissions per unit of output and improve the green image of local agriculture.

Energy in Agriculture was opened by Minister for Communications, Climate Action and Environment Denis Naughten.

He talked about the need for Ireland to substantially decarbonise the energy system, wean ourselves off our dependence on imported fossil fuels and move to cleaner, greener energy sources.

He referred to the lead taken in agriculture where Ireland has the lowest carbon footprint in Europe for dairy production and the fifth lowest for beef production.

Guidance on the new specification for farm concrete

The Irish Concrete Federation in association with Teagasc, has produced a publication on the new specification for farm concrete (S100).

S100 is the minimum concrete specification required for the construction of agricultural structures in Ireland for compliance with the EU Nitrates Directive. The specification was revised by the Department of Agriculture, Food and the Marine in 2015.

The two-page document provides details on the changes to the specification and the certification requirements for concrete manufacturers and farmers who are submitting a grant claim under TAMS II. The document also offers guidance on ordering concrete, site access and preparation, and highlights the importance of placing and curing concrete correctly.

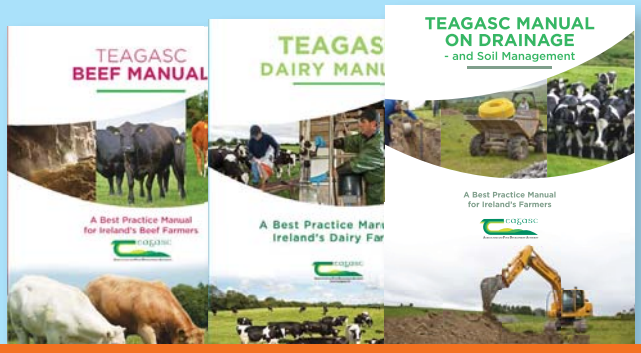
The publication will be available on the Teagasc website and at local Teagasc offices in the coming weeks.

The Teagasc/UCD Michael Smurfit course in Business Strategy

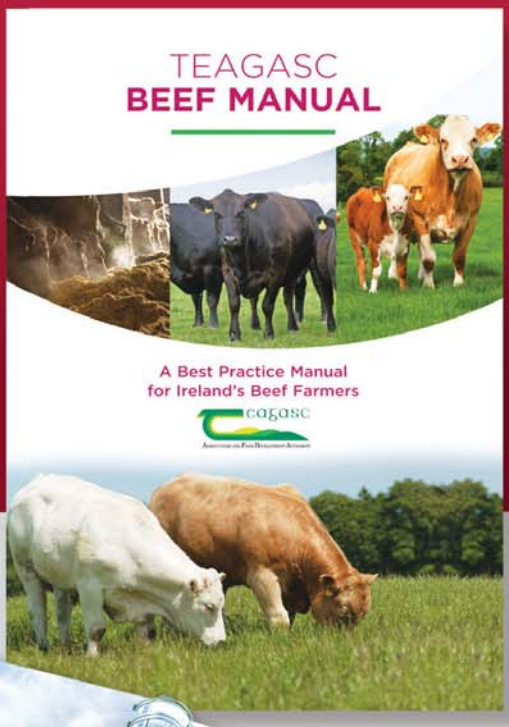
This course is almost booked out for this year but there is a small number of places still available. If you have considered doing the course (it was described in the July-August edition of Today's Farm) contact Mark Moore on 087 417 9131 or you may miss out.

Teagasc manuals

The Teagasc Beef, Dairy and Drainage Manuals have proven extraordinarily successful, selling in total more than 10,000 copies. If you have purchased a Teagasc manual, we would like to hear your views about the publication now that you've owned a copy for some time. If you would like to participate in our online survey, please log on to www.teagasc.ie and you will be directed to a short series of multi-choice questions. All those who participate will be entered into a draw for a €100 prize.

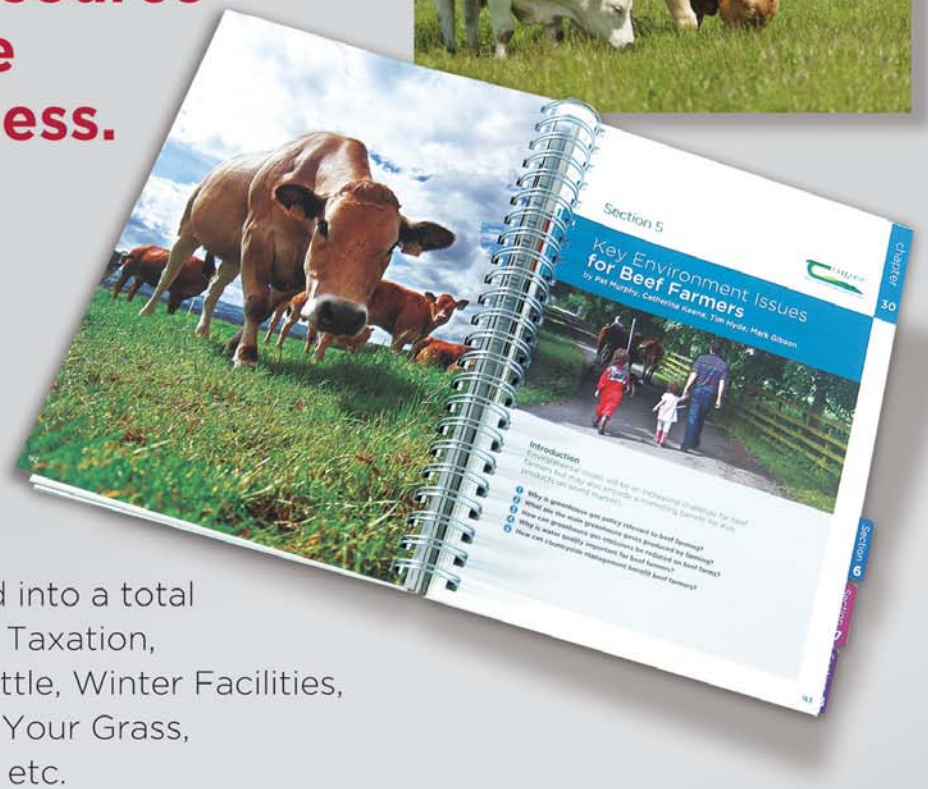


TEAGASC BEEF MANUAL



A comprehensive source of practical advice for any beef business.

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



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

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

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

REVISED AND UPDATED FOR 2016

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

NATIONAL PLOUGHING CHAMPIONSHIPS

Teagasc invites all readers to visit our stand at the National Ploughing Championships on 20, 21 and 22 September. We have many exciting innovations on our stand and, next to it, we have prepared a large grass management demonstration area where we will have presentations on all aspects of grass management.

In a sure sign that times are changing, we will have an area on the stand where you can learn about recruitment and career opportunities in Teagasc. Within the marquee, you will find a range of Teagasc advisors, specialists and researchers. So, if you have a query or simply wish to say hello, we will be delighted to see you.

NATIONAL CROPS FORUM

- 7 September 2016
- Event Time 2:00-5:30pm
- Venue Keadeen Hotel, Newbridge, Co Kildare

The National Crops Forum is focused on agronomy and farm financial returns this year. Variety selection, agronomy for the coming season combined with the latest information on grain markets and autumn varieties will also be covered on the day. The poor financial returns and their impact on cereal growers in terms of current spending, debt repayments and potential investments for the future will also be addresses. All are welcome.

Topics:

- Winter cereal/OSR varieties for drilling in 2016
- Rotations, seeding rates, disease control autumn 2016
- Tillage farms financial health and outlook
- Assessing capital investments (with an eye to TAMS)

TALKING TIMBER

- 16 September 2016
- Event time: 10am to 2pm (registration at 9.30am).
- Venue: The Rose Hotel, Tralee, Co Kerry
- Where forest owners meet timber buyers.

PIG FARMERS' CONFERENCE

- 18 October 2016.
- Event time: TBA.
- Venue: Horse & Jockey Hotel.

BEEF CONFERENCE.

- Teagasc National Beef Conference 2016.
- Tuesday 4 October 2016.
- Hodson Bay Hotel, Athlone.

This year's conference takes place in the Hodson Bay Hotel in Athlone on Tuesday 4 October starting at 3pm. The first session will cover the latest results from the Teagasc research farm in Johnstown Castle on dairy calf-to-beef systems, controlling the environmental conditions during the crucial calf-rearing phase and the experience of a farmer who successfully rears a significant number of calves each year.

The second session will detail lessons Irish farmers can learn from the French experience of a suckler cow breeding programme, which has been in existence for many decades, how an Irish farmer has used accurate recording of birth weights, weaning weights and other data to make more informed breeding decisions and increase the reliability of the genetic information on his cows and heifers. The many benefits that genomics will bring to the future of the Irish beef industry will be the final topic of the conference.

This is a DAFM-approved Knowledge Transfer (KT) beef event where farmers who are in Beef KT discussion groups will be given credit for attending.

There will be a sign-in desk at the start of the conference. The first session will begin at 3pm and the conference will conclude by 8.30pm, with a short break in between, where refreshments will be served.

This is a free event and Teagasc invites all interested beef farmers to attend what should be a very informative and enjoyable conference.

The Teagasc National Beef Conference will take place on Tuesday 4 October.

College open days

Thursday 6 October 2016 Open day 2pm to 4.30pm (Tours ongoing)	College of Amenity Horticulture, Teagasc, College of Horticulture, National Botanic Gardens, Glasnevin, Dublin 9 Principal: John Mulhern Phone: 01 8040201 Email: botanic.college@teagasc.ie
Thursday 6 October 2016 Open day 10.30am to 12.30pm (Tours ongoing)	Gurteen Agricultural College, Ballingarry, Roscrea, Co Tipperary Principal: Mike Pearson Phone:067 21282 Email: info@gurteencollege.ie
Friday 7 October 2016 Open day 10am to 1pm (Tours ongoing)	Teagasc, Agricultural College, Ballyhaise, Co Cavan Principal: John Kelly Phone: 049 4338108 Email: ballyhaise.college@teagasc.ie
Friday 7 October 2016 Open day 10am to 1pm (Tours start at 10am and 11am)	Teagasc, Kildalton Agricultural & Horticultural College, Piltown, Co Kilkenny Principal: Paul Hennessy Phone: 051 644400 Email: reception@kildaltoncollege.ie
Wednesday 12 October 2016 Open day 10am to 3pm (Tours ongoing)	Teagasc, Agricultural College, Mountbellew, Co Galway Principal: Tom Burke Phone: 0909 679205 Email: tvburke@iol.ie
Friday 14 October 2016 Open day 11am to 2pm (Tours ongoing)	Teagasc, Agricultural College, Darrara, Clonakilty, Co Cork Principal: Majella Moloney Phone: 023 8832500 Email: clonakilty.college@teagasc.ie

EBI drop a sign of progress

The higher your herd's EBI, the better, right? So why are all values set to plummet?

George Ramsbottom Teagasc Animal and Grassland Research and Innovation Programme
Kevin Downing ICBF Bandon

During the recent Olympics, Irish hurdler Thomas Barr came fourth by the narrowest of margins. The same time would have got him a bronze Olympic medal in London in 2012 and a silver in 2008. With each passing year, athletes perform better. So, too, for cows.

With an index like EBI which reflects an animal's relative merit, we need to recalibrate the base comparison every few years or every cow would eventually be a "gold medal" winner. To reflect improvements made in milk production and fertility in the Irish dairy herd, the base (reference) cow used to measure EBI will change in September. From then, cows will be compared with cows born in 2005 and milk recorded in 2007. The result? All EBIs will drop by €71.

The current base comparison is with cows born in 1995 who entered milk production in 2000. Most countries choose a fixed base which is updated periodically.

Table 1: Base change in milk production and fertility for first calvers

	Base for production (305-day)		Base for fertility	
First lactation	Milk yield	Fat/protein yield	Calving interval	Survival
Old base	5,192kg	196kg/171kg	404 days	80.0%
New base	5,743kg	224kg/195kg	400 days	82.5%

The average performance of the new base cows is summarised in Table 1. This increase is a reflection of both the improvements in genetics as well as non-genetic factors such as feeding, grassland management, and improved animal husbandry.

Table 2: Genetic changes to milk and fertility sub-indexes in the new base

	Milk sub-index		Fertility sub index	
	Yield	Fat/protein	Calving interval	Survival
Change in PTA	-116kg	-4.9kg/-6.0kg	+2.8 days	-0.65%
Value of sub-index change (€)		- €29		- €42
Total value of EBI change (€)				- €71

The impact in terms of the genetic component is summarised in Table 2. In the next evaluation run in September, every dairy animal will be scaled back by €71 EBI as a result of the base change. If only the base was

While the 2005-born heifers in spring milk herds produced 4,929kg milk in their first lactation, those born in winter milk herds produced 8,421kg.

changing, the change would be the same for every animal in the country and there would be no re-ranking of bulls. However, as more data will be included for animals in that evaluation, the exact change in EBI will also depend on what new data is added for the individual animal.

Health warning

In other words, the change in EBI seen in the September report may not be exactly €71. The milk yield detailed in Table 1 refers to the average production for the 2005-born spring first calvers. The performance of the base cow comes with a "health warning" – it can be hugely variable between years and within systems of milk production. So, for example, while the 2005-born heifers in spring milk herds produced 4,929kg milk in their first lactation, those born in winter milk herds produced 8,421kg.

It's also important to remember that the new base refers to 2005-born cows – further genetic progress has been made nationally since then. The reason why 2005 was chosen as the new base year is that solid data is needed for the base cow – over 60,000 cows are included in the new base with data included from up to five subsequent calvings.

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Changing to a 2005 genetic base: impact on the value of EBI

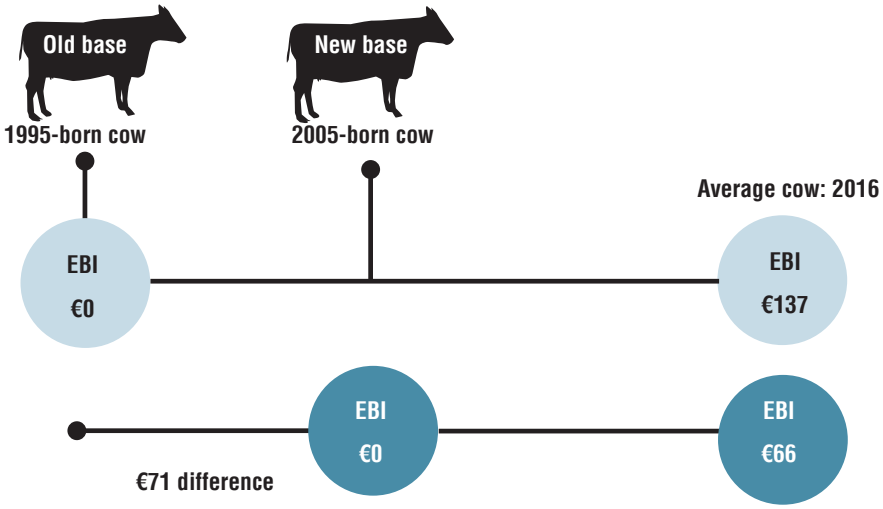


Table 3: Actual milk production of base cows in spring-calving herds

	Actual yield – spring-calving herds only			
Lactation number	% of herd	Milk yield (kg)	Milk solids (kg)	Days in milk
1	18	4,929	356	252
2	16	5,780	413	253
Mature cows	66	6,331	449	251
Herd average		5,991	427	

RECOMMENDATIONS

A base change should not influence a farmer's decision-making process when it comes to breeding. As always, this process should be:

- Know which trait(s) you want to improve;
- Check your HerdPlus EBI report for the genetic indexes of the trait(s) you wish to improve;
- Select a team of bulls that are on average better than the genetic index for the trait(s) you wish to improve.

Provided you are selecting bulls with a figure that is better than the herd index, progress will be made for that trait. Allowing for the base change, the following targets for selecting teams of bulls will apply for the next breeding season:

- Target a team average EBI of greater than €300;
- Target a team average fertility sub-index of greater than €100.

How the typical base cow performs

When we talk about the base cow, we all like to visualise what her performance is, so we've summarised this in Table 3. While the herd average for a stable herd of base cows is 427kg milk solids in a 252-day lactation, the actual average milk solids yield produced by different herds will vary enormously. There are many reasons for this.

- **Greater number of days in milk:** the herd average in Table 3 is 252 days in milk. For a typical 280 days in milk, herd average milk solids yield would be approximately 464kg per cow.
- **More first and second calvers:** the herd detailed in Table 3 is a mature herd (5.5 lactation average). In a much younger herd (2.6 lactation average) with 30% first calvers and 25% second calvers and milking for an average of 252 days, milk solids yield is predicted to be 412kg milk solids per cow.
- **Higher stocking rate:** farming at a high stocking rate affects per-cow yield of milk solids – typically a one cow/ha increase in stocking rate reduces milk yield per cow by 10% to 384kg milk solids per cow.
- **Higher meal feeding rate:** the level of meal fed to the base cows was approximately 900kg per head. Research and on-farm studies have shown that typical response rates to higher levels of meal feeding result in a response of 0.6kg milk (0.042kg milk solids) per kilo meal fed – so feeding 250kg more meal would result in an increase in milk solids yield of approximately 11kg per cow to 438kg milk solids per cow.

How will herd EBI change at farm level?

In Table 4, we present the before and after base change EBI report for a high-performing dairy herd. In 2015, the herd was stocked at 2.5 LU/ha (2.7 cows/ha on the milking platform) and fed 750kg meal per cow.

The cows produced 476kg milk solids per head (4.69% fat and 3.83% protein). Calving interval in 2015 was 369 days and 91% of the herd calved in six weeks.

While this herd has gone from a plus figure to a negative figure for milk kilos the cows haven't changed – it's just that the reference point that they are compared against has changed.

In fact, analysis at ICBF shows, that the proportion of herds with minus kg for milk will increase from approximately 15% to over 60% after the base change. As far as I'm concerned, this is a non-issue. Your cow's potential to produce milk hasn't changed one bit.

Table 4: Herd EBI and sub-indexes for the example farm before and after the base change

	Milk kg Fat kg Prot kg	% %	Surv % CI days	Milk % cont	Fertility % cont	EBI €
Before base change	**17**			**€50**	**€97**	**€178**
	9.6	0.18	2.4	25%	49%	
	6.2	0.11	- 5.4			
Adjustment factor	- 116			- €29	- €42	
	- 4.9	- 0.01	+2.8			
	- 6.0	- 0.02	- 0.65			
After base change	**- 99**			**€21**	**€55**	**€107**
	4.7	0.17	-0.4	20%	51%	
	0.2	0.09	- 4.8			

Better ewe genetics – more lambs sold

Genotype has a big influence on ewe productivity

Tim Keady
Teagasc Animal and Grassland Research and Innovation Programme, Athenry, Co Galway

A number of studies have been undertaken by Teagasc to evaluate the effect of ewe genotype on ewe productivity. In these studies, crossbred ewes were out of either Scottish Blackface or Cheviot ewes and were sired by rams from different breeds.

The resultant female offspring were retained for three production cycles, i.e., had an opportunity to produce three crops of lambs. The crossbred ewes were managed in a lowland grass-based system for prime lamb production.

The results of these studies are summarised in Table 1. The number of lambs reared per ewe joined (put to the ram) varied among genotypes by up to 0.44 lambs, which is equivalent to approximately €40 per ewe joined.

The ewe genotypes that reared the highest number of lambs per ewe joined were the Belclare-X and the Charollais-X. The Suffolk and Texel breeds (the two main terminal sire breeds) account for 61% of the sires of the national ewe population.

Table 1: Effect of ewe genotype on ewe productivity (lambs reared per ewe joined)

Breed of sire of ewe	Lambs reared / ewe joined
Belclare	1.70
Charollais	1.66
Blue Leicester	1.55
Vendeen	1.51
Bleue du Maine	1.51
Border Leicester	1.51
Texel	1.49
Suffolk	1.49
Rouge de l'Ouest	1.37
Galway	1.35
Charmoise	1.27
Cheviot	1.26

(Source: after Hanrahan and Keady 2014)

A study currently under way on the research flock at Athenry includes further evaluation of the influence of ewe genotype on lamb productivity.

Table 2: Effect of ewe genotype on ewe productivity (lambs reared per ewe joined)

	Ewe genotype		
	Belclare	Belclare x Suffolk	>75% Suffolk
Litter size	2.02	1.93	1.69
Lambs reared/ewe joined	1.62	1.63	1.33
Weight (kg) of lamb weaned per ewe joined	50.2	51.8	42.2

(Source: Keady 2016 - unpublished)

Relative to Belclare-X ewes, Suffolk-X and Texel-X ewes reared 0.21 fewer lambs per ewe joined. The national average is only 1.3 lambs reared per ewe joined. This relatively low level of performance is, in part, a reflection of the breed profile of the national flock.

A study currently under way on the research flock at Athenry includes further evaluation of the influence of ewe genotype on lamb productivity. The ewe genotypes being evaluated are Belclare, Belclare x Suffolk and ewes that are at least 75% Suffolk. The Belclare and Belclare x Suffolk ewes were born at Athenry, while the ">75%" Suffolk ewes were purchased from farms in Galway, Mayo and Roscommon.

All ewes were March-born, and managed as one group from four months of age. The effect of ewe genotype on productivity is presented in Table 2. Ewe genotype altered litter size and the number of lambs reared per ewe joined by 0.33 and 0.29, respectively, which is equivalent to approximately €28 per ewe joined.

Relative to the >75% Suffolk ewes, the Belclare and Belclare x Suffolk ewes increased the weight of lamb weaned per ewe joined by 19% and 23%, respectively.

Key messages

- The number of lambs reared per ewe joined is a key factor influencing ewe productivity.
- Ewe genotype can alter lamb productivity by up to 0.44 lambs per ewe which is equivalent to approximately €40/ewe joined.
- Breed replacement is the quickest way to increase ewe productivity in a flock which has a consistently low litter size.

GIVING IT A GO

A drive to succeed is this west Cork farmer's strength

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

When thinking about ways to improve profitability, areas such as farm planning, improving soil fertility, increasing stocking rate, etc, come to mind. However, putting these measures in place is easier said than done, so I recently caught up with a west Cork farmer who has taken these messages on board and, more importantly, implemented them.

Paddy Galvin farms by the Bandon river in picturesque Ballinadee and works part-time off the farm. With wife Mary and sons Timmy and Cillian, Paddy lives in Carrigaline (20 miles from Cork city). Paddy "commutes" to the farm but is building a house on the farm and looking forward to a better lifestyle.

The farm extends to 25ha. "We have 40 cows and finish all the offspring," says Paddy. "I'm not a hobby farmer and, like everyone, I want the farm

to generate as much income as possible."

Paddy has made impressive progress, increasing gross margin from €620/ha in 2011 to €1,200/ha in 2015. So, how has he done it? When I put the question to him, he says:

"I have a lot to learn, but I am always willing to try things and see how they go."

Teagasc beef specialist Karen Dukelow and Paddy Galvin, who farms by the Bandon river in Ballinadee, Co Cork.

TRYING NEW THINGS

I first met Paddy when I worked as an advisor in Bandon. He had come in to the Teagasc office in Bandon to fill in his farm waste management application, but I was struck by his interest in improving his farm. So when I was putting together the Bandon Beef Discussion Group, his name came to mind.

"I go to nearly all the group meetings. I always pick up tips, and if I am unsure about something, I can ask another group member for advice before going ahead with something new," Paddy says.

With the guidance of their new Teagasc advisor John Crowley, one of the areas the Bandon Beef Group has decided to work on is soil fertility, and Paddy soil-tests every two years. "When the first soil results came back a lot of fields were index 1 and 2 for P," says Paddy. "I blanket spread 18-19-0 to correct soil fertility.

"As a result, nearly all fields are index 3 and 4 for P. It is a work in progress and I aim to apply further lime this autumn. The lime tends to get washed out over time on my soil type, so this autumn I'll apply more than the recommended 1t of lime/acre."

Continued on next page

Grass

Paddy has improved his grazing management over the years by putting in paddocks and extra troughs. Previously, he had set-stocked the farm. He now gives stock one to two days of grazing, effectively getting cattle to graze like dairy cows.

"I walk the farm regularly and take out paddocks quickly if there is a surplus," says Paddy. "It's all about keeping grass growing. If the grass gets ahead, I don't mind taking out a paddock and making extra silage. It's money in the bank."

He also likes to keep on top of reseeding and reseeded 13 acres two years ago. He would like to be reseeding more but investment in his new home has "stalled the ball for a while".

The improvement in soil fertility, combined with better grazing management, has allowed Paddy to increase stocking rate by an impressive 50%. He has gone from 1.9 LU/ha in 2011 to 3.05 LU/ha in 2016.

"The farm has to grow nearly 14t of grass to support this number of animals," says Paddy. He has upped cow numbers from 24 to 41 and has also bought in weanling bulls to finish this year. Finishing bulls has allowed Paddy to improve output and he is producing over 1t liveweight/ha.

So, where to from here? "It's all about 'pushing on'," says Paddy. "I like to hear what I am doing wrong so I can focus on those areas."

Paddy admits that his calving pattern could be improved. He had a problem with a sub-fertile bull two years ago, which has pushed out his calving spread to six months and his calving interval to 422 days.

"I'm paying the price for this now with uneven calf size and the later bulls missing out on the premium price in May/June. This alone is costing €100/bull finished."

Realistically, Paddy needs to be bringing in plenty of replacements to allow for a hard cull in his cows. He could also use the opportunity to improve the replacement index of his herd, currently at €85, which is just above national average. There is a wide range within the herd from €4 to €177, so plenty of room for improvement!

Another key area for improvement is mortality. "Some losses can be accounted for by living too far from the farm which is soon to change," says Paddy.

Animal health plan

An animal health plan would be a good idea with strategic use of vaccines and a plan for bought-in stock, in particular. Paddy has a weighing scales on the farm which he finds very useful to monitor performance.

When he was grazing bulls, he was measuring a performance of 1.7kg ADG/day when bulls were given access to fresh grass every day. Maybe the next step for measuring is to take the leap into full grass measurement on the farm. "That should help me squeeze another bit out of the system and also identify paddocks that were not producing as much grass as others," says Paddy.

In terms of what can ultimately be achieved on Paddy's farm and indeed any beef farm in the country, it is useful to look at the BETTER farm programme.

At the end of phase two, farmers producing bulls at under 20 months were achieving almost €1,500 GM/ha when adjusted to a stocking rate of three LU/ha. So by improving animal performance through a better cow type, better calving pattern and fewer losses, there is potential for Paddy to achieve this margin. And I have no doubt that Paddy will give it a try, and succeed.

Paddy Galvin with his sons, Timmy and Cillian.

Shane Kilrane and Deirdre McGuckian.

KT groups – the logical next step

With the new Department of Agriculture, Food and the Marine Knowledge Transfer (KT) programmes officially up and running, we speak to Leitrim farmer Deirdre McGuckian

Shane Kilrane
Teagasc advisor, Mohill

Deirdre McGuckian, who works full-time and is married with three children, farms near Carrigallen in southeast Leitrim on the Cavan/Longford border. The farm comprises 40ha of mostly heavy land broken into three main blocks. In 2012, Deirdre joined a local Teagasc discussion group as part of the BTAP programme.

"I always had an interest in attending farm walks in the county. When I enquired what discussion groups were about, it seemed logical to join," she says. Deirdre is part of the Rinn Valley Group, which pulls together suckler farmers from the south Leitrim area. Even though BTAP ended in late 2014, the group has met regularly in 2015 and 2016 and the members have signed up to the new KT programme which started last June.

Just as in BTAP, there is a payment of €750 at the end of each of the three years for compliance with the programme. Deirdre feels the payment is an added bonus but not the ultimate reason for joining up. "Every meeting has something you can relate to, something you might try at home or do differently. You tend to talk more openly in the smaller group as opposed to a large farm walk."

Under this KT programme, the focus is on animal health, financial management, grassland management, a detailed breeding plan and farm health and safety.

Grassland

Deirdre is keen to build on the improvements made on her farm over the last four years.

One aspect of this was soil fertility. In autumn 2013, soil analysis showed some worrying results. Only 30% of the farm was at Index 3 for phosphorus while all samples were shown to be deficient for lime.

"Soil fertility was neglected; the last samples taken were for REPS probably 10 years ago and even then there was little emphasis on the result.

»Continued on next page

» From page 15

The importance of having proper soil fertility can't be over-estimated, especially if you want good quality silage ready for cutting at the end of May."

As a result, the whole farm has received lime over the last three years and Deirdre has switched back to using compound fertilisers with a high P and K content.

"Soil fertility won't be sorted overnight but with more frequent testing I can keep an eye on it," she says.

Breeding

"I keep 25 mainly Limousin cross cows running with a Charolais stock bull and calving from late December to March," says Deirdre. Weanlings are sold in October at the local Carrigallen mart. In 2012, the calf per cow ratio was 0.70, but this has improved to 0.98, well above the national average. Deirdre attributes this to tightening the calving spread to no more than three months:

"It's easier to work with a more uniform set of cows; they receive the same treatment over the winter, get their boluses and vaccinations together and are in the same condition come breeding time."

Of course, this means a uniform batch of calves at selling which appeals to many buyers. With Deirdre working full-time off-farm, this system suits her best. "I've switched to scanning cows earlier in August as opposed to waiting until housing so empty or problem cows can be picked up quicker."

Quality is something Deirdre believes is key to maximising returns from her farm and this is evident from prices received for her weanlings last autumn.

"When you take the costs involved in keeping a cow over the winter period here in Leitrim, if the quality is not right, I'm wasting my time."

Deirdre's bull calves averaged €3.15/kg, while the heifers averaged €3.05/kg as can be seen in Table 2.

Under this KT programme, the focus is on animal health, financial management, grassland management, a detailed breeding plan and farm health and safety.

Looking to this autumn, Deirdre hopes Brexit will have little effect in the northwest, which is so heavily reliant on the weanling trade. "Over the last number of years, my calves have been bought by exporters and specialised bull beef finishers. I hope they are around the ring this October."

Table 1

	2013	2016
% of soils at Index 3 or 4 for P	30	60
% of soils at Index 3 or 4 for K	45	70
% of soils at optimum pH 6.3 for Lime	0	45

Table 2 Autumn 2015 sales performance

	Bulls	Heifers
Average weight (kg)	352	319
Average €/kg	3.15	3.05

Another important aspect of the KT programme is the requirement for a detailed Farm Improvement Plan. This involves more one-to-one contact between the farmer and advisor on the challenges and improvements that need to be addressed in the coming years. Deirdre says: "Every farm is different and has different circumstances, so to be able to meet with Shane in the yard or out viewing the stock is important. It's good to get an independent opinion."

However, it's not just cattle that catch Deirdre's eye. She is an enthusiastic horse breeder and trainer, having a third prizewinner in the loose jumping at this year's RDS Horse Show.

"It's something we grew up with as kids, having horses around the house, so it's great to be able to continue the tradition." Not just happy at being a member of the local beef discussion group, Deirdre was instrumental in setting up a local equine group this year in the Carrigallen area. "I saw the benefits of group participation on my own farm, so I said let's try it with the horses also."

FUTURE PLANS

Deirdre is keen to continue the improvements in soil fertility and maximising the performance of the stock from grazed grass. In 2015, 10 acres were reseeded. The plan was to reseed a further eight acres this year, but the poor weather means this will be pushed back to 2017. A number of fields have been sub-divided into paddocks but the aim is to increase the number of paddocks over the full grazing platform. This will push on the weanling performance with calves grazing ahead of the cows and also, once weaned, there is a quality sward for the calves prior to selling.

"Once you get the water supply organised, the paddock system is easy enough to implement. I saw it in operation on one of the group walks, it's worth it for the quality of the grass alone."

The margins in suckling are tight but Deirdre feels participation in all schemes such as GLAS, BDGP and the KT groups are a must to make it worthwhile. These, along with simple management changes inside the farmgate, can make a big difference on all suckler farms.

"Sucklers are a challenge at the best of times," concludes Deirdre. "The new KT groups offer the benefit of sharing tips and experiences with other farmers with the added benefit of input from an advisor like Shane.

"Joining one seems like a no-brainer to me. The only thing they can't help you with is the weather!"

Deirdre McGuckian pictured with her children, Lily (five), Katie (four),Thomas (two) and her husband Frankie.

Navigating the carbon challenge

Reducing greenhouse gases and improving farm efficiency go hand in hand

Tom Kelly
Teagasc advisor, Ballina

Though he's the last person who would boast about anything, Tommy Holmes could point out that when it comes to low-carbon beef production, he can beat almost any farmer in Europe. Tommy is a farm contractor and weanling producer who runs a suckler herd outside Ballina, north Mayo.

As a participant in the BDGP programme, Tommy was required to complete the Carbon Navigator. The Carbon Navigator is an online farm management package developed by Bord Bia and Teagasc. It quantifies the potential environmental gains that can be made on each applicant's farm. It is a very useful and simple tool, which allows an individual farmer to look at changes that can be made on their farm in areas such as the length of the grazing season and average calving interval.

It then illustrates what that change would mean in terms of reduced greenhouse gas emissions from the herd and the increased profitability associated with such a change. It has been developed to promote the uptake of carbon-efficient farming practices and demonstrates, for each scheme participant, the level of emissions at farm level, while also setting targets to reducing them. Being a participant in the Bord Bia quality assurance scheme and using the data from the ICBF HerdPlus account made its completion fairly straight forward.

"The Carbon Navigator identified three main areas for improvement," says Tommy. "The first was to try to extend the grazing season by at least three weeks. Winters are fairly long in north Mayo and anything that can be done to reduce the housing period is welcome.

"The second was to increase the calves/cow/year figure. Improved management, culling and genetics should achieve this. The third was to try and utilise all of the slurry in the spring. Most of the slurry was spread in the spring of 2016 and this boosted grass growth as a result."

These goals are building on an already impressive system. Currently, all the progeny are finished on the farm with additional weanlings purchased. The farm has a major focus on grass with all stock rotationally grazed within a paddock system.

Bulls are grazed for a second grazing season and are moved to a fresh paddock twice a day. Surplus grass is taken out as baled silage and animals are weighed regularly to measure performance. All fields/paddocks have been reseeded over the last 10 years and the farm hosted a reseeding demonstration in early July where over 530 farmers attended.

"Like a lot of drystock farmers in the county, we let our P+K levels gradually decline in the last 10 years on the farm. This resulted in lower overall grass yields and slower spring growth. We've been addressing this by applying compound fertilisers such as 18:6:12 rather than CAN or pasture sward. We apply lime on a proportion of the farm every autumn."

Tommy records grass on the PastureBase system every week. All 25 cows receive exclusively AI with most cows calving from August through to Christmas. The best females are selected as replacements to calve down at 24 months and surplus females are fattened. With an Angus base, all of Tommy's cows are four- and five-star on the new replacement index. Equally, a large number of the

NUI Galway joins forces with Teagasc

Cutting greenhouse gas emissions from milk and meat production is a major challenge for Ireland. To help address this and other related challenges, Teagasc and NUI Galway today announced the establishment of a Strategic Research and Training Alliance on Carbon-Neutral Agriculture. Building from existing collaborative activities between both institutions, the Strategic Alliance will see new postgraduate courses come on stream, and a range of new research projects aimed at transitioning our agriculture and food systems to a lower carbon footprint.

Tommy Holmes and Teagasc advisor Tom Kelly.

6 STEPS to reduce your carbon footprint

1. Slurry management
A 20% shift to spring application can reduce farm GHGs by 1.3% while a shift to trailing shoe can lead to a reduction of 0.9%.

2. Nitrogen efficiency
A reduction in N fertiliser of 10kg per ha will reduce farm GHG emissions by 1% and improve income by €10/ha.

3. Improved growth rate
The impact of increased weight gain on GHG emissions is estimated at 1% per 100g increase in lifetime average daily gain for beef cattle systems. The economic impact is estimated at €63 for an increase of 100g/head/day.

4 Calving rate
For a 40-cow herd improving the calving rate by 5% will increase the profitability of the herd by €1,720 and reduce GHG emissions by 4%.

5 Age at first calving
The impact of age at first calving is to increase GHG emissions by 0.3% for each month that first calving is greater than 24 months of age. The economic impact of lowering the age at first calving by one month is estimated at €50 per cow.

6. Extended grazing
For every 10-day increase in the grazing season, there is a 1.7% reduction in GHGs and profit is increased by €25/cow or €1,000 in a 40-cow herd.

Recent Teagasc research into new fertiliser formulations and nutrient use strategies indicate that nitrous oxide (a key greenhouse gas) emissions could be reduced by up to 20%.

replacement heifers are highly rated on the maternal index. The main focus now is to tighten up the calving interval on the farm and having adequate replacements will allow this.

"The Carbon Navigator is another way to measure progress," says Tommy. "We have to be ambitious and seek more efficiency. I find that being a member of the North Mayo Finishers Discussion Group is really useful as a place to discuss and share new ideas."

Looking to the future, Tommy says he will increase cow numbers by 25%, grow more grass and convert this grass into beef in the most efficient way possible. By doing that, of course, he'll reduce his carbon per kilo of beef even further.

Proposals for reducing greenhouse gases in EU

Proposals for binding greenhouse gas reduction targets for EU member states, including Ireland, were announced in Brussels by the European Commission in July.

The proposed reduction targets, to be achieved over the period 2021-2030, represent the most important EU climate change policy development since reduction targets for 2020 were agreed back in 2007. Overall, by 2030, the EU is seeking to reduce greenhouse gas emissions by 40% compared with 1990 emissions.

The proposals indicate that by 2030 Ireland will be required to reduce its emissions by 30% relative to the 2005 level. This is an ambitious target for Ireland. Emissions from Irish agriculture currently constitute 30% of total national emissions and 47% of emissions from the non-traded sector. This is much higher than for any other EU member state.

Remember biosecurity

With a new season approaching, farmers are purchasing sheep breeding stock. So, how can buyers try to reduce the risk of bringing disease on to their farms?

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

Every sheep introduced to your flock has the potential to bring with it some nasty disease or parasite. My aim is to encourage farmers purchasing stock to assess the risks and implement a strategy to reduce or eliminate the possibility of bringing diseases and/or parasites on to the farm. In this article, I will deal with the main diseases/parasites, but this is not an exhaustive list.

Parasites

There are lots of parasites that affect sheep. Most farmers will be aware of stomach worms and liver fluke against which they regularly treat animals. Purchased sheep that also have these parasites might not be of much concern. But what if the parasites in the purchased sheep are resistant to the drugs being used on your farm? These resistant parasites will colonise your pastures and eventually the drugs you use won't work.

We have seen this happen for stomach worms and liver fluke. However, there are other parasites such as rumen fluke, sheep scab, lice and ticks, which either cause disease or carry disease. Again, maybe these parasites are also becoming resistant to pour-on, injections and dips?

The solution to this potential risk is for all purchased sheep to be treated with products that you are confident still work against the majority of parasites. Secondly, animals should be quarantined (kept away from your existing sheep) for a period of time to prevent the eggs of these potentially resistant parasites from contaminating pasture. From a practical point of view, this will mean treating the sheep as follows:

- Oral worm drench Zolvix (1ml/10kg – comes in 0.5, 1 and 2.5-litre packs) or Startect (1ml/5kg – currently only available in five-litre packs). Note that these are POM medicines and need a veterinary prescription.
- Injectable wormer Cydectin or Dectomax/Zearl (note: only use 1% Cydectin injection if you are sure that the sheep being purchased have never been treated with the footvax vaccine).
- A fluke drench that is effective against immature fluke (excluding triclabendazole based as resistance has already been identified to these).
- Keep the sheep indoors for 48 hours to allow any resistant worm eggs to pass out in the dung.
- Ideally, plunge-dip the sheep to control ticks and biting/sucking lice or else use a pour-on that is effective against these. Note: shower dips/sprayers are not approved for the controlling external parasites.

Lameness

Most sheep farmers regularly encounter lame sheep. However, there are a number of causes of lameness and one which is becoming more prevalent is a condition called contagious ovine digital dermatitis (CODD).

This disease is highly contagious and is not controlled by routine foot-bathing with copper/zinc sulphate, formalin or oxytetracycline sprays/injections. To prevent this condition from entering your flock, all sheep being purchased should have their feet thoroughly check for signs of lameness or infection.

Grazing purchased sheep in a separate field from your own flock for a period of four weeks is a good idea to allow conditions such as CODD to show themselves. At least if the disease is identified in the quarantine stage, it won't have contaminated all the other sheep on the farm. A lot of farmers confuse CODD with footrot, but it can be easily distinguished by the fact that:

- The infection generally starts at the coronary band (where the hoof and hair meet).
- Unlike footrot, it does not have a strong pungent smell.
- Where this condition is identified, you should consult with your vet about appropriate antibiotic treatment.

Abortion

Purchasing female sheep that bring a contagious abortion-causing disease into your flock can have a devastating effect on future flock productivity. There are lots of reasons why sheep may abort, and not all of these are

Farmers who are purchasing stock should assess the risks and implement a strategy to reduce or eliminate the possibility of bringing diseases and/or parasites on to the farm.

There are lots of reasons why sheep may abort, and not all of these are caused by infections, and of those that are, not all are spread from sheep to sheep. For Irish sheep farmers, the main concern from an abortion point of view in purchased females is enzootic abortion (EAE). Enzootic abortion is a disease that is spread from sheep to sheep. Sheep that become infected with the organism will abort in a subsequent lambing period.

They can potentially spread the disease to other sheep in the flock following abortion and following subsequent normal lambings. There is a vaccine available and farmers who choose to purchase replacements should seriously consider, at a minimum, vaccinating the replacements coming into the flock once a year.

To purchase the vaccine, a veterinary prescription is required and the vaccine can only be given to non-pregnant animals at least four weeks pre-mating.

Caseous lymphadenitis (CLA)

Caseous lymphadenitis is a disease of the lymph system which is highly contagious and results in ill thrift and death in affected sheep. The disease is characterised by swellings appearing around the neck, tail and brisket region. The lumps contain a green cheesy puss, which is highly contagious. There is no cure for the disease and flock owners should avoid purchasing sheep from flocks which have sheep affected by this condition.

FLOCK HEALTH

Flock health-related spending on sheep farms is a significant cost and flock health issues can have a major impact on productivity and profit. Purchasing sheep without having a plan in place as to how to avoid introducing new potentially harmful diseases is high risk.

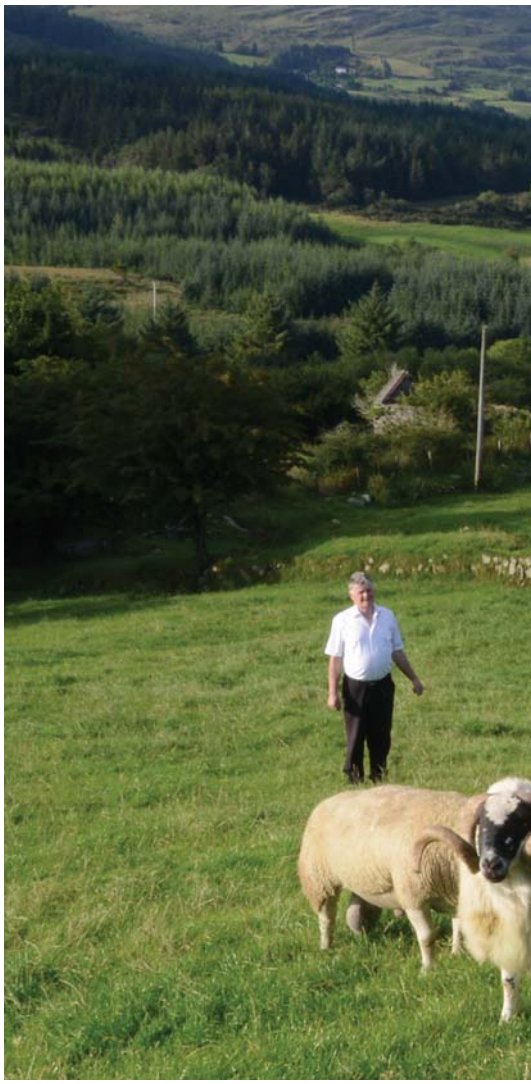
The ideal situation is to run a closed flock, but this is not practical in most situations. However, limiting the number of sheep that need to be purchased and having a plan in place to eliminate or reduce the risk of infecting your existing flock with new disease is possible.

This year, before purchasing rams or breeding ewes, take a few minutes to plan how you can take steps to safeguard your flock. Your veterinary surgeon or advisor will be able to help you to develop a practical plan. Ignoring the risk posed by purchased sheep is likely to end badly.

Overcoming challenges in Oak Valley

This farm family breeds excellent hill sheep and avail of the latest production technology in remote west Cork

Michael Connolly
Teagasc, Skibbereen



As Danny McCarthy drives his SUV along the Derryfadda valley near Kealkill, Bantry, Co Cork, his passengers ''Carlow'', ''Chips'' and ''Malibu'' fidget impatiently. On a word, Carlow leaps off and races up the sloping field on the righthand side of the road. A little further along, the others follow, eager, ears up, attentive to Danny's every command.

"You couldn't farm sheep here without good dogs," says Danny. "But the hills are steep and the dogs work hard so you have to have a pup, a dog in training and another working to be sure you'll always have a good dog coming through."

Though there are cattle on the lower ground, this valley is sheep country and Danny and his wife Margaret have raised seven children on land which is elevated, exposed and often dangerous.

"Over the last 20 years, especially during the Celtic Tiger time, young farmers in these areas saw hill sheep as non-profitable and highly labour-intensive. Off-farm work was easier and readily available," says Danny. This trend has resulted in a decline in hill sheep numbers, along the western seaboard and west Cork is no exception.

Danny and his son John are a good example of how this decline in hill sheep farming may be halted. This is crucial if these tracts of upland grazing are to be kept in good agricultural and environmental condition to comply with the Department of Agriculture Food and Marine's requirement for the areas of natural constraint (ANC) and the Basic Payment Scheme.

As well as suckler cows, Danny and Margaret keep around 50 purebred Scotch blackface ewes. They have been breeding Scotch rams for sale for the last 40 years and this is very important locally. In west Cork and south Kerry, hill sheep farmers need good quality Scotch rams to breed replacement ewes.

"If the mountain bloodline is not maintained, flocks here will not be able to survive our seven-month winters with high rainfall and cold conditions," says Danny. The surplus ewe lambs that are not needed for replacement on the farm are easily sold, usually at home or in the local marts.

The Scotch ewe is an excellent mother, usually quite milky and will rear an excellent crossbred lamb with lowland rams such as Suffolk, Texel or Charolais. Hybrid vigour will be at play in the crossbreeding, which will result in higher growth rates in the lamb than the average of the parents.

Carrying on the tradition

John (pictured) purchased a hill sheep farm north of Glengarriff village near the Kerry border 10 years ago. Like his parents, John has around 30 adjusted hectares in this farm, mostly upland and south-facing.

"That's important in the winter-time," says John. "It gets more sun than a northern facing hill and snow melts earlier."

John keeps around 80 ewes that are Scotch and Scotch crosses and he breeds them to a terminal ram, generally a Texel or Suffolk. He is using the hybrid vigour to his advantage to produce a well-conformed and fast-growing lamb. "I select terminal rams for breeding on the Sheep Ireland star rating system. I try and get a five-star ram, if possible," he says. Travelling to sales up the country or even to the north of Ireland is not an issue for either John or Danny. "I've travelled as far as Antrim to source suitable breeding rams," says Danny. "Buying in the north has become more difficult in recent years due to restrictions on sheep movement and I cannot see Brexit helping."

Both farmers participated in the STAP sheep discussion group scheme from 2013 to 2015, with myself as facilitator in the Teagasc West Cork Caha group. The McCarthys made good use of the technology transfer and tasks required in the programme. They scanned their ewes which is an important management tool for any sheep farmer to identify dry ewes and twin-bearing ewes that will require extra supplementary feeding before lambing.

"Scanning has helped us to increase our lambing percentage over the three years from around 0.9 to 1.1 lamb per ewe weaned," says John. "We both completed a Teagasc eProfit Monitor each year. That identified where expenses could be reduced by better feeding management of the ewes before lambing in particular as

Danny and Margaret with some of their Scotch rams.

a result of scanning. It also helped us recognise unnecessary expenditure on gadgets and surplus machinery."

John and Danny are enthusiastic about another task in the STAP programme: creep feeding of hill lambs at weaning time to allow a more presentable lamb for sale in the autumn. As all sheep farmers know, it can be difficult to train lambs to eat ration around weaning if they have not seen it done in earlier life.

It is often necessary to confine them to a shed or concrete yard for a while and introduce them to a sweet palatable creep ration in order to train them to eat.

Both Danny and John now use creep feeders to feed ration to their lambs from July onwards as the ewes' milk dries up and grass quality and quantity may be more difficult to maintain. Silage after grass may not be available to Danny until August.

Like most hill sheep farms in west Cork, silage ground is not closed until mid-May after ewes and lambs have grazed the good pasture and the mountain pasture is able to support them.

"Creep feeding of lambs is very important whether they are being sold or kept as replacements," says John.

Margaret and Danny are exceptional trainers and operators of sheepdogs but the dogs never stay still long enough for pictures!

"Buyers of store lambs want them trained to eat meals so that any setback on movement at purchase time is minimised. Also, they will be getting a heavier lamb that will take less time to finish to slaughter or a replacement ewe or ram that will not have to be trained to eat."

Danny, Margaret and John say they developed their sheep enterprise a lot during the STAP programme.

"We're pleased that the new sheep Knowledge Transfer programme has finally got the green light and group meetings may proceed once the groups are approved," says Danny.

Both he and John will be participating in the Teagasc Beanntrai Sheep Knowledge Transfer Discussion Group with myself as facilitator.

Pointing out ancient cottages long since abandoned and fields planted with conifers, Danny points out that Derryfadda means "oak valley". Conifers have a role in hill areas but families like the McCarthys who avail of useful technology will ensure that these scenic valleys continue to be populated… by both sheep and people.

Extraordinary care needed

MCPA is a crucial herbicide on grassland but, as for all pesticides, you cannot allow even an iota to get into water courses

Kieran Kenny
Teagasc Castlerea

Kieran Kenny and Joseph McGee discuss the crucial importance of preventing MCPA, or any other pesticide, getting into water courses.

Key messages

- Ensure that the sprayer is fit for purpose, calibrated and inspected.
- Never fill the sprayer directly from a water course.
- Spray at the right time and when conditions are right; a young healthy growing crop of rushes, suitable weather conditions and when the land is reasonably dry (no marks with tractor tyres).
- Always read the label carefully for application rate, volume of water, etc.
- Be aware of all water bodies and take note of buffer zones and safeguard zones.
- Tank washings must be sprayed in the field and not emptied in the farmyard.
- Consider other options for rush control; weed wiping with glyphosate, cutting, drainage works and sward improvement.
- Spraying is prohibited from 30 September to 1 March.
- There will be major implications for farmers if the MCPA issue is not solved. At a local level, bye-laws could restrict or prohibit its use or, nationally, it could be removed from the market.

> A water body is defined as any feature capable of holding water permanently or at any stage during the year

The EU drinking water standard for a pesticide is 0.1 microgram/litre. This extremely low figure is as close as possible to zero. It's the equivalent of only one drop in an Olympic-size swimming. Just a single drop of MCPA (which could be found on the foil cap) is enough to contaminate up to 30km – nearly 20 miles – of a small stream. Careless storage, handling or application of pesticide can easily cause breaches of the legal limit.

Pesticides can reach water bodies from two pathways: point sources or diffuse sources. The point sources include leaks during storage or spillages when mixing, filling or washing out the sprayer. The diffuse sources occur in the field and they are losses due to spray drift, run-off and seepage through the soil.

Since 2008, there have been an increasing number of detections of pesticides in surface water bodies. Some of these incidents include water bodies used for public water supplies.

Irish Water and the local authorities are responsible for monitoring our drinking water. They carry out routine sampling and the results are reported to the Environmental Protection Agency (EPA). The EPA has identified MCPA residues as the greatest problem. MCPA accounted for more than 80% of the total "exceedances" in 2014-15.

MCPA is the chemical of choice for the control of rushes in grassland. It is retailed as Mortone, Agroxone 50, NU46 and a range of other products.

Recent increase in MCPA detections

In general, rushes grow where there is poor drainage and, often, saturated soils. The recent wet summers have increased the rush cover and with the fear of penalties from land eligibility inspections, farmers are using greater quantities of the chemical. Compared with other herbicides, it is a relatively cheap product and perhaps farmers are not as careful using it. MCPA is very mobile in water and can easily travel to water bodies in saturated soils.

The increased monitoring of drinking water by the relevant authorities has also directly raised the detection rates. In the recent past, there have been low level detections of MCPA in drinking water samples throughout the country, including water supplies in Limerick/north Kerry, Donegal,

Kilkenny and Longford. This summer, the problem seems to have escalated further with more detection reported in Mayo and Roscommon.

In an attempt to start raising awareness of the issue among farmers, we piloted an event on ''Responsible Use of MCPA on Grassland and Implications for Water Quality'' on the farm. This was hosted by Joseph McGee, Cloonart, Bornacoola, Co Longford.

The aim of the event was to raise awareness and provide information to pesticide users on the potential effects of MCPA on drinking water quality. The farm is located within the Lough Forbes Catchment that supplies water to the Longford Central Supply.

A large crowd of farmers were present together with spraying contractors, professional advisors and a representative from the local authority. The presentations focused on improved MCPA application techniques, changes to product rates, buffer zones, best practice for using sprayers and the Sustainable Use Directive.

Some farmers were unaware of the two main water protection measures under the Sustainable Use Directive: buffer zones and safeguard zones.

Buffer zone

Brendan Moran from Hygeia explained that the buffer zone is where you must leave an untreated area adjacent to a water body. This area is a minimum of 1m wide for all herbicides but, in the case of MCPA, it extends to 5m.

A water body is defined as any feature capable of holding water permanently or at any stage during the year.

The safeguard zone is a prohibited area for applying pesticides around a drinking water abstraction point. This can extend up to 200m, depending on the capacity of the supply. Brendan also stressed that the application rates for MCPA were reduced in December 2015 as another means of controlling the problem. The new labels will clearly identify the reduced rate plus information on the buffer zone.

Older product with the higher application rate on the label is now revoked and must be used up on the farm by June 2017. "We need to be able to continue to use MCPA, particularly for rushes," concludes Joseph McGee. "So, we need all farmers to get it right all of the time."

Beat the rush

Now is the time to start working on the formation of your Family Farm Partnership

Tom Curran
Teagasc Rural Economy
Development Programme

The accountant can provide advice and help in the setting up of your partnership and in making tax returns annually.

There are already close to 1,500 partnerships on the Department of Agriculture, Food and the Marine register. The scheme incentives are driving this growth. Three-quarters are family farm partnerships involving parents and a son or daughter. This is very positive from a family farm succession perspective.

A registered farm partnership can be created at any time of year. Getting started on the formation of your family farm partnership now, however, will ensure that you are ahead of the rush before the Basic Payment deadline in 2017. There are four areas that must be addressed during the formation of a partnership:

- The on-farm agreement.
- Revenue requirements and accounting procedures.
- The Partnership Agreement.
- Interaction with EU/DAFM schemes and procedures.

This article outlines the steps required during the formation of your farm partnership.

Setting up the partnership herd number

The existing herd number must be changed into the same name as the partnership. This generally means adding a name, or two names, to the existing herd number (e.g. David Browne is changed to David, Mary and John Browne).

Changes to a herd number must be made through the local District Veterinary Office (DVO) by completing an ER1.1 form or and ER1 form as appropriate. These forms are available from the local DVO office and copies of all ER1 and ER1.1 forms submitted to the DVO should be kept on file along with a date stamp or receipt from the DVO as proof that it was submitted.

Amalgamating two herd numbers

In a case where two herd numbers are amalgamated into one, a separate ER1.1 form must be completed for each herd number to change the name on each respective herd number into the partnership name.

Where one of these two herd numbers is being made dormant (will no longer contain livestock), it is vital to instruct the DVO in writing not to "End Date" this herd number. It is still required for payment purposes under the Basic Payment Scheme, Areas of Natural Constraint scheme, Organic scheme and GLAS.

When is best to change a herd number?

The key window for making changes to a herd number is after basic payments have been received for the current year but well in advance of the Basic Payment Scheme application period for the following year. Generally, this means changes should be made between December and the end of February the following year to allow ample time for successful processing of the ER1 and ER1.1 forms by the District Veterinary Office.

Basic Payment Scheme entitlements

Any changes to the names on a herd

AVOID DELAYS

Getting started on the formation of your partnership now will help to avoid delays in processing of forms and the registration of your partnership early in 2017. Further information is available at www.teagasc.ie and www.agriculture.gov.ie.

number will require a "Transfer of Entitlements" form. If the changes occur before the Basic Payment Scheme deadline, then the transfer form must be submitted before the Basic Payment Scheme deadline. Where the change occurs after the deadline, a transfer form will have to be submitted before the BPS closing date in the following year.

Partnership bank account

A new partnership bank account must be set up in the same name as the partnership. This becomes the trading account for the partnership through which all partnership income and expenditure is channelled. It is vital to take ownership of the process of moving bank accounts to ensure that any direct debits or standing orders for utilities or loan repayments are re-established in the new partnership bank account.

Completing the on-farm agreement

The on-farm agreement should be completed by the partners and their families as part of setting up the partnership. Some professional help can be used in this document but the day-to-day operation of the partnership is very much the responsibility of the partners. If this aspect is not taken seriously, many of the benefits from partnership formation such as improved lifestyle, may not become a reality.

Completing the registration process

The formation of the farm partnership and the registration process is typically completed with the help of one of the following professionals or a combination of all three:

- The accountant.
- The solicitor.
- The agricultural consultant.

Tip one: Pay particular attention to the DAFM checklist to ensure all necessary documents are included in your application.

Role of your Teagasc advisor /agricultural consultant

The Teagasc advisor or agricultural consultant is best placed to help to plan the future direction of the farm business and to advise on technical issues associated with setting up the partnership. This involves;

- A look at the current viability and financial situation on the farm. The ability of the farm to generate more than one income and how this might be structured.
- A look at the technical performance on the farm and how this might be improved.
- Teach new skills that impact directly on your profit such as: grassland management, financial management, animal breeding and crop husbandry.
- Help to complete the on-farm agreement.
- Explain the financial benefits available from EU schemes and enable you to maximise those benefits.
- In the case of an agricultural consultant, help you to complete the registration process with the DAFM.

The role of your tax accountant

The accountant can provide advice and help in the setting up of your partnership and in making tax returns annually. During the formation of the partnership, your accountant must carry out the following:

- Register the partnership with Revenue using a TR1 form.
- Create a capital account for each partner to record the value of livestock, machinery and working capital contributed by each partner.
- Apply cessation and commencement rules where necessary.
- Advise you on establishing a profit-sharing ratio and also on setting appropriate levels of salaries and / or personal drawings in the on-farm agreement.
- Liaise with your solicitor and/or agricultural consultant in the preparation of documents relating to the formation of the partnership.
- Calculate the profit for the partnership each year and apply the profit sharing ratio based on the written partnership agreement.
- Make separate tax returns for each partner based on their share of the partnership profits.
- Complete a FIRMS 1 form and submit to Revenue.
- Annually update the capital account for each partner in line with any capital invested or retained in the business during the accounting year.

Tip two: Always consider the implications of capital investment on the dissolution of the partnership.

The role of your solicitor

A written partnership agreement is the foundation of the partnership. It is the key document where farmers entering a partnership can shape the arrangement to suit their own needs. While template agreements are available, it is not sufficient to take a template and complete it without legal advice. Before entering into a partnership, consult your solicitor. The role of the solicitor is to:

- Explain the legal structure of a partnership and highlight key aspects of operating a partnership.
- Review the template agreement.
- Tailor the agreement to meet your particular circumstances. This may involve the inclusion of additional clauses to protect all partners.
- Liaise with the accountant and/or agricultural consultant in the preparation of documents relating to the formation of the partnership.

Beef producers: a diverse group

Teagasc and UCD researchers are studying competitiveness

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Cattle production is the dominant type of farming in Ireland. The Census of Agriculture 2010 classified 55% of farms as "specialist beef producers" and established that over 110,000 farm enterprises, 70% of all farms, were involved in some aspect of beef production. Yet, returns from beef production to most beef farmers are low, if not negative, as shown by the National Farm Survey, (NFS) 2014. The majority of beef farmers depend on CAP-related payments to off-set production losses.

Agricultural policy related to the Irish beef sector is increasingly based on EU external trade policy and decoupled income support payments under the Common Agricultural policy (CAP). In the two most recent reforms of the CAP (2003, 2013), member states were given limited freedom to "recouple" some of their direct payment budget to agricultural production. Ireland, to date, has chosen not to do this. As a result, cattle producers have become increasingly exposed to the volatility of international markets and international competitiveness has become ever more important.

Teagasc and UCD have compared the relative competitiveness, measured in terms of productivity and profitability, of beef producers in Ireland with those of selected international competitors. The research-based findings show that cash costs, e.g. fertiliser, feedstuffs, seeds and external costs such as wages, rent and interest paid, plus depreciation charges, associated with beef enterprises in Ireland are high when compared with key competitors from outside the EU (Figure 1).

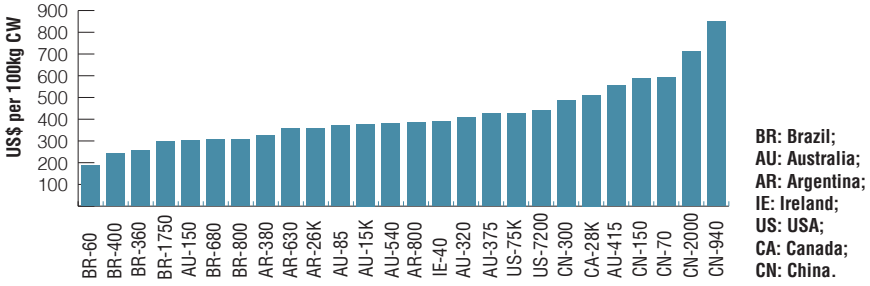
This is particularly true for suckler enterprises and highlights the challenges associated with any further opening up the EU beef market to international producers and the need to improve technical efficiency among cattle producers in Ireland.

Types of farms

While we know from the BETTER farm beef programme that with high efficiency and output, suckler enterprises have the potential to match the profitability of the average dairy farmer, an examination of beef enterprises in Ireland indicates that technical efficiency is relatively low. We used Teagasc National Farm Survey data to identify different types of farm producing cattle and, subsequently, identify sources of efficiency.

The classification of cattle enterprises was achieved by analysing a variety of social, demographic, economic and enterprise characteristics. The model drew on data from the NFS (2012) and included all farms with any cattle (there were 821 in the survey sample). The analysis identified eight distinct groups of farm enterprise engaged in cattle production:

Figure 1
Economic costs of beef finishing production systems: Ireland v other non-EU countries (cash cost and depreciation). Source: Agribenchmark, 2013)



TEAGASC AT THE PLOUGHING

Teagasc will launch a number of publications for beef producers at the National Ploughing Championships in September. For the industry as a whole, there will be the Teagasc Roadmap for Beef to 2025. Also, a completely revised series of cattle budgets will be available. These will include budgets for:

- Bull beef.
- Weanling to beef.
- Store-to-beef.
- Winter finishing.

You can pick up copies at the Ploughing or they will be available to download from www.teagasc.ie once launched.

The research-based findings show that cash costs associated with beef enterprises in Ireland are high when compared with key competitors from outside the EU.

- Dairy enterprises (with beef).
- Finishers (mid-earning and elderly).
- Finishers (with tillage).
- Diversified on-farm enterprises.
- Extensive suckler enterprises.
- Off-farm diversifiers.
- Low-earning bachelors selling stores.
- Cattle farming enthusiasts.

Efficiency

Table 1 shows a comparison of the financial performance of the eight different types of beef farmer. The average gross output varies considerably between the classes, e.g. output from "Dairy enterprise (with beef)" is more than double that of "Extensive Suckler" enterprises. This is largely due to differences in stocking rate. This, in turn, is likely to be influenced by conditions on the farm such as soil quality and the characteristics of the farmers themselves. The most worrying aspect is that only two of the eight were, on average, making a positive market-based net margin.

Key findings

Farm enterprises producing cattle that generate a return from the marketplace are generally combining beef with dairy or tillage production. These enterprises represent the opposite ends of the supply chain. Dairy enterprises are typically, though not always, producing calves or weanlings; tillage enterprises are finishing cattle for slaughter.

Enterprises engaged in rearing cattle are, on average, making a loss and, hence, are highly dependent on CAP payments.

Looking to the future, it seems unlikely that EU agricultural policy will revert to coupled direct income support measures or policy measures designed to support producer prices other than those associated with tariff protection. It will be necessary to develop initiatives that enhance the efficiency of all producers. The final stages of the project will assess the adoption of new knowledge and technology by those involved in cattle production.

ACKNOWLEDGEMENTS

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This article reflects the contributions of several authors in addition to those listed above, including Maria Martinez Cillero, Thia Hennessy, Anne Kinsella, Daniel O'Callaghan and Fiona Thorne.

Table 1: Average financial performance excluding premia (€ per hectare) of the eight cattle farm classes

	Dairy enterprises (with beef)	Finishers (with tillage)	Finishers (mid-earning)	Diversified on-farm enterprises	Off-farm diversifiers	Extensive suckler enterprises	Cattle farming enthusiasts	Low earners selling stores
Gross output	1,791	1,654	1,025	1,012	979	647	958	754
Direct costs	1,089	961	599	634	544	409	568	508
Gross margin	703	693	426	378	434	238	390	246
Fixed costs	608	635	480	459	494	402	556	446
Net margin	95	58	-54	-81	-60	-165	-166	-200

Red clover – a new look at an old crop

Dan Clavin
Teagasc Rural Economy
Development Programme

Red clover has been grown alone or with grass for centuries, and occurs naturally in many old permanent swards across the country. In the past, it was considered a short-lived perennial forage legume that could be highly productive for two to three years, and its upright growth habit made it particularly suited for hay and silage-making.

Its use declined in recent decades mainly because it did not fit in with streamlined systems of livestock farming common today that are based on long-term pastures receiving inputs of synthetic bagged nitrogen (N) fertiliser.

But, in recent years, it has received renewed interest, especially among arable and organic farmers.

How to use red clover

• Red clover is an upright growing crop, which is normally cut three to four times per year. Its main role is for silage production and soil fertility building in arable/horticulture farms, although it is often grazed by cattle or sheep after the final silage cut in the autumn.

• The best establishment method is through a full reseed rather than broadcasting with the red clover generally making up 25% to 50% of the seed weight in the mixture. Successful mixtures used by Teagasc include 10kg/ha perennial ryegrass and 10kg/ha red clover, giving very good silage yields for up to six years in research trials.

•Red clover will not persist if continuously grazed or cut more frequently than every 30 days due to a combination of excessive foliage removal and plant crown damage by hoof trampling. The supply of adequate nutrients especially phosphorus (P) and potassium (K) and a target soil pH of 6.0-6.5 is key to a high-yielding persistent crop.

Advantages of red clover

•**Nitrogen fixation:** Red clover is a homegrown fertiliser factory. An annual nitrogen fixation of approximately 200kg/ha is achievable from well-established swards with a high red clover content. This is the equivalent of six bags of CAN (17% N /acre/year.

•**High yields:** Red clover is high yielding with yields of 12t to 15t DM/ha achievable when grown with ryegrass.

•**Feed value:** Teagasc research shows that the feeding value of red clover silage is higher than grass silage, resulting in greater animal intakes and higher levels of animal performance in terms of milk and liveweight gain. It has a protein content of 16% to 20%.

•**Break crop:** Red clover is suitable as a break crop to improve soil structure and fertility and as a supplier of organic matter. It can also be used as a green manure crop.

•**Organic production:** Red clover is a key conservation and fertility building crop for organic farmers.

Challenges with red clover

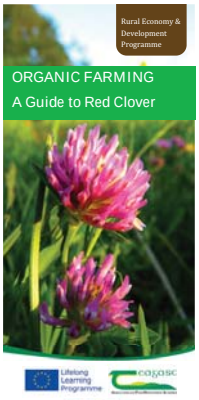
•**Persistency:** Relatively poor persistency vs perennial ryegrass. Red clover crops at farm level normally persist for three to four years.

•**Versatility:** Suited to silage rather than grazing due to its upright growth habit and the risk of crown damage by grazing.

•**Oestrogenic compounds:** Red clover can contain up to 1% of oestrogenic compounds. Oestrogen levels can lower ewe fertility. In grazed red clover swards, these can temporarily affect ewe fertility so ewes at mating should not graze red clover.

•**Ensilability:** Crop requires adequate wilt (24 to 48 hours) or an additive to reduce the risk of poor ensilability.

• **Pests and diseases:** The crop may be susceptible to pests and diseases. Thus, it is recommended that there should be a six-year gap between red clover crops.



For more information on red clover and organic farming, visit www.teagasc.ie/organics

Ken Gill, is a suckler-to-beef farmer in Co Offaly.

FARMER EXPERIENCE

Ken Gill, Clonbollogue, Co Offaly

Organic suckler beef farmer

Ken Gill, is a suckler-to-beef farmer in Clonbollogue, Co Offaly, and made the move into organic farming in 2013. While many would believe organic farms to be lowly stocked and return low levels of output, Ken has a stocking rate of 1.6 LU/ha. He has a 63 suckler cow herd, bringing all followers to finish on 87ha and he succeeds in achieving a premium of approximately 20% over conventional prices by supplying all finished cattle into the organic beef market.

Key to achieving this level of performance has been his use of red clover to make high-quality silage. Ken first introduced a red clover – ryegrass sward in 2014, carrying out a full reseed on 11ha. So happy was he with the crop that he sowed another 7ha on a separate part of the farm earlier this year.

The plan is to always have around 15ha per year rotated around the farm with the possibility of sowing an organic cereal crop or a new grass - white-clover ley to replace the red clover after three to four years of cropping.

"For me, red clover is the best kept secret in organic farming," says Ken. "Last winter, I had plenty of good quality feed for my cattle and the clover supplies me with nitrogen for free. My cattle love eating it and the liveweight gains over the winter are in excess of what they were on silage alone when I was a conventional farmer."

An important challenge in Ken's experience is supplying the red clover with the required nutrients – phosphorus (P) and potassium (K) in an organic system. He does this by applying slurry, dung and imported dairy sludge, according to soil sample results. In addition, organically certified mineral fertilisers such as sulphate of potash are spread to make up the nutrient shortfall.

Another challenge is controlling weeds especially in the year of sowing the crop but Ken believes that a vigorous crop with the right amount of nutrients is key to smothering them out. To find out more about organic farming and to meet the sector experts, go to one of our 12 national organic demo farm walks between September 2016 and June 2017. See www.teagasc.ie/organic for a full list.

Invisible yield (K)iller

Potassium deficiency can be hard to spot but it can seriously affect barley yields

Mark Plunkett & David Wall
Teagasc Crops Environment and Land use Programme, Johnstown Castle

Martin Bourke
Tillage Advisor, Wicklow

It's common knowledge that potassium is one of the building blocks for crop yield development. Less widely known is its role in helping protect the crop against disease. So K deficiency is important but unlike for nitrogen (N) or phosphorus (P), sub-optimal K applications to cereal crops can be difficult to detect during the early- and mid-growing season. The effects of K deficiency may not be visible until the combine starts cutting, at which stage both grain yield and quality may have been compromised.

With the area of land in winter barley production increasing, new questions in relation to K are emerging. Do six-row varieties have a higher requirement for K due to higher yield potential and straw production than two-row varieties? What is the most suitable type of K fertiliser for barley, e.g. muriate of potash (MOP) or sulphate of potash (SOP)? What effect will low soil K index have on grain yield potential?

Last autumn, we conducted a trial in Arklow, Co Wicklow, to shed some light on the K requirement of high-yielding winter barley and the most cost-effective type of K fertiliser to use.

Crop K requirements

Winter barley varieties have a yield potential in excess of 10 to 12t/ha for two- and six-row varieties, respectively depending on the growing season. To satisfy crop K requirements during the growing season it is important to formulate K fertiliser programmes based on soil K levels and target crop yields. Fertile soils (Index 3 or higher) will supply sufficient levels of potassium to meet crop demand during the year, but it is important that the K removed in grain and straw is replaced or soil levels will decline.

Heavy soils generally have more capacity to supply K than lighter soil types and will therefore buffer against large crop K off-takes for longer. Maintenance rates of K fertiliser must be applied to maintain soil fertility levels (Table 1). Problems with K in the field tend to occur on low fertility soils (esp. K Index 1), which will have insufficient soil K reserves to meet crop demand during peak growing periods.

This situation can penalise on-

Mark Plunkett.

Table 1: Potassium removal (grain and straw) for grain yields for barley crops

Winter barley		Spring barley	
Crop yield t/ha	K off-takes kg/ha (units/ac)	Crop yield t/ha	K off-takes kg/ha (units/ac)
9	90 (72)	6	68(55)
10	100 (80)	7	80 (65)
11	110 (88)	8	90 (73)
12	120 (96)	9	103 (82)
13	130 (104)	10	115 (91)

High levels of brackling present in zero K plots.

Very low level of brackling present in 160kg K/ha plots.

SOIL FERTILITY CONFERENCE

The complete trial results will be presented at the National Soil Fertility Conference, Lyrath Hotel, Co Kilkenny on 19 October.

the-double as crop yield will be reduced and further depletion of soil K levels will also occur, affecting the subsequent crops in the rotation.

Table 1 shows the total levels of K removed at harvest in both grain and straw for winter and spring barley crops at different yield levels. On average, winter barley removes 10kg K/tonne of grain yield and spring barley removes slightly more at 11.4kg K/tonne of grain yield.

On low K fertility soils (i.e. K index 1 and 2) additional K is required (30kg and 15kg K/ha, respectively) on top of the maintenance K application (Table 1) to build soil K levels over time to the target index 3. Potassium is not limited by nutrient legislation and can be applied at any time of the year and without any effect on the environment.

Straw breakdown (brackling) and potassium

In the Wicklow trial, the two-row variety showed high levels of mildew during the flag leaf emergence to ear emergence stages where K application rates were low. This highlighted the important role of K in the plant's natural defence mechanisms.

In the last two to three weeks before harvest, the effect of K deficiency on straw brackling (breakdown) was very evident in both two- and six-row varieties. As the rate of K fertiliser increased, the percentage of brackling decreased. Pictures one and two show the levels of brackling at zero K and 160kg K/ha applied, respectively.

Best source of potassium for barley

Muriate of potash, which contains 50% K, is used in the majority of potassium containing compounds in Ireland. MOP is a cost-effective source of K and its high concentration delivers 50 units of K per 50kg bag applied. An alternative source of K is sulphate of potash (SOP), which contains 42% K and 18% sulphur. This tends to be a more expensive source and is mainly used for high-value crops such as potatoes. The Wicklow trial is investigating the effect of K fertiliser type (i.e. MOP v SOP) on grain and straw yield and quality.

Advice for 2017

Now is a good time to take out the soil test results and assess soil K (including P and pH) levels for fields that will be planted to winter barley for 2017 harvest. Calculate the average crop nutrient off-take over the last number of years to determine whether the fertiliser programme used was supplying adequate P and K.

On soils with very low soil fertility levels (Index 1), it may be time to re-think the fertiliser programme for the coming season. In relation to K, it is good practice to apply 50% of the crop's K requirements at sowing time or once the crop has emerged in the autumn.

Calculating the K requirements for a winter barley crop

For example, the soil test report shows a soil K index 2 (85mg/L). The average crop yield is 10t/ha. How much K should I apply?

- K for grain yield @ 10t/ha = 100kg/ha.
- Additional K for soil buildup = 15kg/ha.
- Total K requirement = 115kg/ha.

When should I apply K? Apply in early spring with N applications.

Poultry manure can offer big savings on tillage farms

Average yields and poor grain prices have made 2016 a year to forget for tillage farmers. Reducing input costs could help in 2017

Martin Bourke
Tillage advisor, Teagasc, Tinahely

> Visual observations of the trial to date show the poultry manure to be performing at least as well as the chemical N

One of the biggest costs in growing crops is fertiliser. The most recent Teagasc costs and Returns booklet says that €313/ha is spent on fertiliser to grow a spring feed barley crop, almost one third of all the variable costs. Only machinery costs account for a higher spend per hectare on tillage farms. So is there scope to save on your fertiliser spend without compromising crop yields?

With colleagues Mark Plunkett (soil and plant nutrition specialist, Johnstown Castle) and Patrick Forrestal (research officer, nutrient management, Johnstown Castle) we have been conducting a comprehensive trial examining the potential of poultry manure to reduce fertiliser costs in a crop of spring barley. This is the second year of the trial.

Poultry manure is very well balanced in all the major and minor nutrients. This trial series is specifically looking at the nitrogen value of the poultry manure. The manure used in the trial contained approximately 30kg of total N per tonne (based on SI 378, half (50%) of this N is considered to be available, i.e. 15kg N per tonne).

Provisional results of the 2015 trial confirmed that there was no difference in crop yield when poultry manure was substituted for bagged fertiliser. However, the poultry manure offered a saving of €100/ha in fertiliser costs alone, even when you factor in poultry manure purchase and spreading costs.

In 2016, the trial has been taken a step further to investigate some practical aspects of integrating poultry manure into a spring barley fertiliser programme:

- Ploughing down poultry manure vs surface incorporation.
- Layer manure vs broiler manure.
- Poultry manure on its own vs chemical fertiliser on its own.
- Poultry manure combined with CAN versus combined with urea.
- Optimum economic rate of manure to use.

Rates from zero N all the way up to 254kg of available N/ha were used with the poultry manure, and will be compared with rates of CAN from zero up to 250kg N/ha. This will give valuable yield data to generate a nitrogen response curve for the manure versus bagged N and to determine the available N content of the poultry manure.

Visual observations of the trial to date show the poultry manure to be performing at least as well as the chemical N. One particular combination showing potential is the 150kg N/ha combination of poultry manure and urea. This combination has 68kg available N/ha in the form of poultry manure ploughed down, along with the other 82kg N/ha in the form of urea. This type of combination has the potential to reduce fertiliser bills on tillage farms by between €100 to €125 per ha compared with standard.

Table 1: Teagasc costs for spring feed barley 2016

Seed	85
Fertilisers	313
Sprays	140
Machinery hire	395
Miscellaneous	62
Total variable costs	€995/ha

HOW MUCH POULTRY MANURE IS PRODUCED IN IRELAND?

Recent figures estimate that 71,000t of layers' manure and 113,000t of broiler manure are produced annually in the Republic of Ireland alone. A proportion of this manure (about 50,000t) makes its way into compost yards. Assuming an application rate of 5.5t/ha, there is still enough manure available to spread to almost 25,000ha of tillage land.

The full results of both years' trials will be presented at the Teagasc National Soil Fertility Conference on 19 October in the Lyrath Hotel, Co Kilkenny.

LEFT: Martin Bourke and Patrick Forrestal.

forestry

Afforestation – yields a range of benefits

Liam Kelly
Teagasc Forest Development Officer, Mullingar

I recently asked two forest owner clients why they had planted some of their land. Both had planted smaller areas in the past and each had since decided to plant more of their land. For both, the afforested area is now more than half their farm's size. Each included marginal and good agricultural land in their recent planting.

The two forest owners also share a strong interest in trees and are actively involved in the maintenance and management of their forestry enterprises and regularly attend forestry events. Neither has regrets about planting a large tract of their land while continuing to farm.

AFFORESTATION

Afforestation is the planting of land not previously under forest. The current scheme (Afforestation Grant and Premium Scheme 2014 - 2020) is applicable to agricultural land and even non-agricultural land if there are no significant silvicultural or environmental constraints.

There are approximately 731,650ha of Forestry in Ireland or 10.5% forest cover (Forest Service, 2014). Since 1986, there has been 271,090ha planted by the private sector mainly by farmers (Forest Service annual report 2014) involving over 27,000 individual applications.

James Ham, Moyvore, Co Westmeath

James planted a 0.5ha plot on his own in the early 2000s where he has since honed his forest management expertise. He planted seven hectares of a mixed conifer/broadleaf plantation in 2005 under grant aid.

In 2014, he planted a further 19ha with a mixture of species including Norway spruce, Douglas fir and Scot's pine and some larch. His broadleaf species included sycamore, alder, birch and some hazel.

James also runs an intensive autumn-calving Simmental suckler herd and grows some barley to feed his stock in wintertime. Since planting, he has reduced his tillage and is also looking at changing his cattle breed to reduce management time. His reasons for planting included:

- **Having problems with wet ground:** "In the midlands, many recent summers have been ''indifferent''. This led to traditional summer grazing ground being difficult to manage even during the summer months."
- **To make life easier:** "I have been able to streamline my farm work and still be happy with the returns. My family have all left college and home to take up employment, therefore I don't have to help on the farm with calving, etc."
- **Always interested in forestry and trees:** "I have always enjoyed hedge-laying during the winter months. This encouraged me to complete a City and Guilds NCPT five-day chainsaw course facilitated by the local forest owner group in 2011. This will be a very useful asset in the management of the crop."
- **Source of firewood for fuel (providing for two houses):** "The two older plantations are at a productive stage, (I am currently applying for a Woodland Improvement Grant to thin my older broadleaves). The thinnings will supply firewood which will be used to heat both my house and my parents' house."
- **Incentives were good:** The forest premium was good and payable for 20 years at the time of planting. The Basic Farm Payment could also be drawn on the afforested land which is very beneficial.
- **Complements farming system:** "My system of farming allows me time to work in the forest at various times of the year, which I enjoy."
- **A different crop dimension:** "As forestry is a new, alternative, crop, it requires new and management decisions which I enjoy learning. The different management requirements can be spread over time unlike in farming."
- **Diversification of species:** "I set out to have as much diversity as possible within the crop. This was to ensure greater resilience to disease. I dislike Sitka spruce as a coniferous species and wanted to have other alternatives as far as the site allowed it."
- **Wildlife improvement:** "Bird numbers and diversity of species has increased on the farm with the addition of the forests."
- **Some products can be used on the farm:** "In time, I would like to use some of the timber to provide various products such as larch thinnings to provide stakes for the farm."

John Phelan.

John Phelan, Coolrain, Co Laois

John planted 49ha of his land in 2014. He had also planted 18ha in 1996 and a further 5ha without premium in the 1980s. The older block was clear-felled this summer. John was lambing over 1,000 ewes and carrying 40 suckler cows. Once the entitlements system was introduced, John reduced his sheep flock by half and removed the cow herd.

Since planting, John has again reduced his flock by half to make life somewhat easier. John also developed a large fishing lake on the farm in the last few years to help his supplement income.

> John planted 49ha of his land in 2014. He had planted 18ha in 1996 and a further 5ha without premium in the 1980s

John, who is based in the foothills of the Slieve Bloom Mountains, planted a mainly commercial forest with Sitka spruce being the main species as it was in each of his earlier plantings. The 2014 plantation also contains some alder, birch and some oak planted for landscaping and diversity reasons. He says his reasons for planting included:

- Next generation not interested in farming: "My three daughters have all left home and are working; they will not farm like I had to."
- Did not want to sell: "No one in the family wanted the land to be sold or leased and therefore we thought planting as much of the farm as possible made good sense."
- Too old to continue intensive farming: "I was farming on my own, a relatively large farm and trying to make it pay. Forestry reduced the workload."
- My farm income was low compared with the forestry income: "With the annual forest premium and the benefit of still collecting the basic payment – afforestation made financial sense."
- Trees easier to manage than sheep: "The initial years may involve some management and maintenance, but unlike sheep you don't have to be looking after them every day."
- Land unsuitable to convert to tillage: "So it was less suitable to lease out."
- Land also suitable for forestry: "Land around here is very good for producing timber. Sitka spruce grows well."

James Ham and Liam Kelly.

Planning

Why landowners decide to plant is obviously due to a combination of many factors unique to their situation as can be seen from these two case studies. Forestry should be considered in the light of "whole farm planning" as both of the farmers have highlighted. Nearly all farms have scope for some afforestation. If you are considering afforestation or would like to know more, contact your local forest development officer.

From the bots to pebble beach

Colm Dockrell, assistant principal at the Teagasc College of Horticulture, National Botanic Gardens, reports on Level 6 Certificate in Horticulture student, Shaun Brear, who is interning at the world-famous Pebble Beach Golf Club in Monterey, California

Shaun Brear comes from Carrigart in Donegal, although he was born in St Kitts/Nevis, a dual-island nation situated between the Atlantic Ocean and the Caribbean. Shaun says he can trace his interest in horticulture back to the time when he was living in Nevis, helping his father who had a landscaping business.

His earlier horticulture experiences were more to do with growing herbs and salads; his interest in all aspects of turf management were to come later when he moved to Donegal.

When Shaun completed the Level 5 Certificate in Horticulture in Donegal, he was faced with the task of choosing which aspect of horticulture he wanted to pursue. A short internship in Rosapenna golf course in Donegal convinced him to progress into the golf management business.

He says: "When I started working in Rosapenna golf club, I instantly fell in love with turfgrass maintenance." Shaun joined the Level 6 Certificate in Horticulture course in the College of Horticulture National Botanic Gardens in November 2015 and selected the turfgrass maintenance stream.

This course is offered over 32 weeks, with students undertaking a mandatory 16 weeks of internship in golf course and other sports turf facilities at home and abroad.

Very early on in the course, Shaun indicated his desire to gain more turf experience in America and he enrolled in the Ohio State University International Intern Programme, which is coordinated by Mike O'Keeffe from his base in Columbus, Ohio.

> My experience in Pebble Beach is amazing. The people I work with are so dedicated and every day I face new challenges

Mike, who is a former student of Warrenstown Horticulture College, has been placing international students on many of the top American golf courses for decades. In February of this year, just weeks before he was due to start his internship in the US, Shaun was informed that he was to spend the next year in Pebble Beach Golf Club in beautiful Monterey, California.

Shaun Brear plans to remain at Pebble Beach until April 2017 taking in the PGA professional golf tournament, which is held in Pebble Beach every February.

Pebble Beach first opened in 1919. Located on the shores of Monterey Bay, it is widely regarded as the most picturesque golf course in the world with its rugged coastline and ocean views. It is a public golf course that frequently rates as the number one golf course in the US.

Since his arrival in Pebble Beach, Shaun has been involved in almost every aspect of the maintenance of the golf course where attention to detail is paramount. His day usually starts at 4.30am, bringing the golf course to pristine condition before the golfers tee off at first light around 6.30am.

"My experience in Pebble Beach is amazing. The people I work with are so dedicated and every day I face new challenges," says Shaun.

Shaun plans to remain in Pebble Beach until April 2017 taking in the PGA professional golf tournament, which is held in Pebble Beach every February. He then hopes to return to the Teagasc College in the National Botanic Gardens to embark on further academic training, where he will enrol in the second year of the Level 7 degree in horticulture offered in partnership with the Waterford Institute of Technology.

Shaun's goals are clear. "I would like to progress in the golf management business, eventually becoming a golf superintendent, not sure where, but definitely somewhere warm!"

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