



Today's Farm

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



Early grass: The foundation for a profitable year in beef, dairying and sheep

12 + 19

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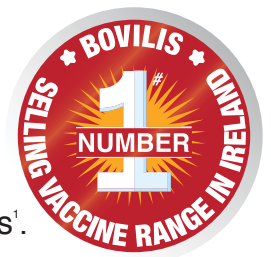


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[^]Bovine Viral Diarrhoea

[§] PI = Persistently infected.

* Animal Health Ireland website www.animalhealthireland.ie - Accessed Dec 2015.

[#] GfK sales data November 2015.

1. Moen et al (2005). Indication of transmission of BVDV in the absence of persistently infected (PI) animals.

Preventive Veterinary Medicine 72, 93-98.

Legal categories: Bovilis BVD: ROI **POM(E)** NI **POM-V**.

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COMMENT



Mark Moore
Editor,
Today's Farm

Ireland's flooding challenges deepen

As we go to press, many fields are submerged and some farmers will be challenged to feed their animals for the remainder of the winter. They deserve our support in what is a thankfully limited echo of the 2009 fodder nightmare. But, very soon, grass will be growing strongly again and making effective use of that grass is worthy of your last few coins of that debased currency – the new year's resolution.

Resolve to get animals, be they beef, dairy or sheep, out as soon as ever soil and growth conditions allow. Unless you feel you are entering uncharted waters (to use an unfortunate pun) with your turnout dates you're probably not going early enough. Output prices are not set for a stellar year, so costs are key. More grass, less concentrates, but with equal or better animal performance will rise all boats.

Má tá sé mar rún agat rud amháin a dhéanamh...

Agus muid á chur seo i gcló, tá cuid mhaith páirceanna faoi uisce agus beidh sé mar dhúshlán ag roinnt feirmeoirí a n-ainmhithe a chothú ar feadh na coda eile den gheimhreadh. Tá ár dtacaíocht tuille acu agus iad i gcrúachas nach bhfuil chomh dona le géarchéim fodair 2009, ar an dea-uair.

Ach beidh an féar ag fás go láidir arís go luath agus is fiú é a bheith mar Rún Athbhliana agat úsáid éifeachtach a bhaint as an bhféar céanna.

Bíodh sé mar rún agat ainmhithe a chur amach chomh luath agus is féidir de réir dálaí ithreach agus fáis, bíodh ba mairteola, déiríochta nó caoirigh i gceist. Mura mbraitheann tú go bhfuil tú ag dul sa seans leis na dátaí a chuireann tú amach iad, is maith an seans nach bhfuil tú á dhéanamh luath go leor.

Níl an chuma air go mbeidh na praghsanna aschuir rómhaith i mbliana, mar sin tá rithábhacht le costais a laghdú. Feabhsóidh tuilleadh féir; níos lú dlúthbhianna, ach feidhmíocht chomhionann nó fheabhsaithe ainmhithe an cás do chách...



CASHFLOW

Dairy farmers must focus sharply on cost control this year >> 8

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

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Cover | Alan Keogh, John Watchhorn, David Kinsella and Jimmy Dempsey are beef producers and members of the New Ross Discussion Group. All are enthusiastic grass managers and routinely measure and manage grass covers to maximise the amount of grass in their animals' diets.



SPRING TILLAGE SEMINARS

Get the latest information from Teagasc on spring crop agronomy, including varieties, drilling, crop nutrition, and pest management.

Topics covered will include:

- Bean agronomy.
 - Tillage discussion group.
 - Crop margins.
 - Crop nutrition in 2016.
- See Table 1.

CALFCARE EVENTS

Over one million calves will be born on Irish dairy farms before the end of April this year. Teagasc and Animal Health Ireland, in conjunction with the dairy milk processors Aurivo, Dairygold, Glanbia and Lakeland Dairies, and supported by Volac, have joined forces to organise a series of 10 calf events. Each event will promote best practice in rearing and looking after calves.

Each of the events will focus on four topics:

- The “1,2,3” of colostrum management.
- Performance of calves on either

milk replacer or whole milk.

- Controlling cryptosporidium and coccidiosis in calves.
- Streamlining the workload during the calving season.

Ten on-farm events will take place in January in Kildare, Wexford, Cork, Kilkenny, Waterford, Cavan, Limerick and Galway, with each event starting at 11am. Details of the venues and dates are outlined in Table 2.

TEAGASC ORGANIC WALKS

- **20 January:** Ballydermot House, Clonbullogue, Co Offaly.
Take the R445 from Kildare town to Monasterevin. From there, take the R414 north to Fern's Bridge.
- **10 March:** Ballinree, Boherlahan, Cashel, Co Tipperary.

TEAGASC NATIONAL TILLAGE CONFERENCE

- **Date:** 28 January 2016
- **Venue:** Lyrath Hotel, Kilkenny.

Programme

- **9.30 am:** Registration/tea/coffee.
- **10.30am:** Conference opening.

Paddy Browne, head of crops, environment and land use programme, Teagasc

Session one

Chaired by John Spink, head of crops science department, Teagasc.

- **10.45am:** Grassweed control – learning from the mistakes of the English. Speaker: Sarah Cook, ADAS
- **11.45am:** Wheat growth and development.

Speaker: Joe Lynch, Teagasc.

12.15pm: Wheat disease control and resistance issues

Speaker: Steven Kildea, Teagasc.

12.45pm: Discussion and Q&A.

1pm: Lunch

Session two

Chaired by Andy Doyle, *Irish Farmers Journal*.

• **2.30pm:** Tillage knowledge transfer groups.

Speaker: Phelim McDonald, Teagasc and farmer.

• **3pm:** Cropquest – break crop options.

Speaker: Dermot Forristal, Teagasc.

• **3.30pm:** Bean production and agronomy.

Speakers: Farmer and John Carroll, Teagasc.



In December, the first cohort of farmers to complete the Teagasc/UCD Michael Smurfit Business School course in Business Strategy graduated in Belfield. In 2015, two further groups began the course and Teagasc will run the course again later in 2016. If you wish to register your interest, please contact Mark.moore@teagasc.ie. Pictured are: James O'Connor (Monaghan), Dermot Tobin (Waterford), Denis O'Donovan (Cork), Jim Teacy (Tipperary), John Butler (Tipperary), Martin Quigley (Louth), Conor Moloney (Tipperary), John Fitzgerald (Cork), Pat Gibbons (UCD), Cathal Moran (Kilkenny), Mark Moore (Teagasc), Simon Breen (Tipperary), Jason McGrath (Waterford), Tony Kenny (Tipperary), Jim Dwyer (Laois), Sean Bugler (Clare), Brian Doherty (Kilkenny), Leo Nulty (Meath) Ger Pardy (Offaly) and Heinz Eggert (Kildare). Michael Barry (Tipperary), William Kingston (Cork), Nicholas Kearney (Offaly) and Tommy Cooke (Tipperary) could not attend.

- **4pm:** Close of conference. Speaker: Professor Gerry Boyle, Teagasc director.
- **4.15pm:** Tea/coffee

POTATO CONFERENCE

This year's Teagasc/IFA potato conference entitled "Opportunities for Growth" will be held in the Red Cow Hotel, Dublin, on Tuesday 23 February, from 9am to 4.30pm. The conference is organised in association with Bord Bia. The topics covered in this year's conference focus on two main areas.

The first session focuses on marketing and the new media marketing campaign, with presentations from the campaign director and Bord Bia. This session will also cover the positive nutritional aspects of potatoes.

The second session focuses on technical aspects of growing potatoes. The ongoing salad potato initiative, yield formation and nitrogen interaction and virus prevalence in potatoes will be discussed. The conference includes an industry trade show, with all the leading potato suppliers present.

Table 1: Spring tillage seminars

Date	Location
Mon 18 January	Teagasc office, Dundalk, Co Louth
Mon 18 January	Riverside Park Hotel, Enniscorthy, Co Wexford
Tues 19 January	Munster Arms Hotel, Bandon, Co Cork
Tues 19 January	Teagasc Office, Kinsealy, Co Dublin
Wed 20 January	Teagasc office, Navan, Co Meath
Wed 20 January	Teagasc office, Dungarvan, Co. Waterford
Thurs 21 January	Clanard Court Hotel, Athy, Co Kildare
Tues 26 January	Teagasc Office, Letterkenny, Co Donegal
Mon 1 February	Belair Hotel, Ashford, Co Wicklow
Mon 1 February	Teagasc office, Clonmel, Co Tipperary
Tues 2 February	Teagasc Office, Kilkenny
Wed 3 February	Teagasc office, Athenry, Co Galway
Thurs 4 February	Teagasc office, Nenagh, Co Tipperary
Tues 9 February	Tullamore Court Hotel, Co Offaly
Tues 9 February	Ballyroe Hotel, Tralee, Co Kerry

Table 2: Calcare events

Date	Venue
Tuesday 19 January	Pierce and Adrian Casey, Kilmacthomas, Co Waterford John Fitzgerald, Newberry, Mallow, Co Cork
Thursday 21 January	Ballyhaise Agricultural College, Co Cavan Ger Kirby, Parkroe, Ballyneety, Co Limerick
Friday 22 January	John and William Donohue, Rathgorgon, Athenry, Co Galway

Table 3: Sheep conferences 2016

Hill sheep conference

Date: Wednesday 17 February 2016

Venue: Jackson's Hotel, Main Street, Ballybofey, Co Donegal Tel: 074-9131021

Starting time: 5pm

Agenda

Time	Paper	Speaker
17.00 – 17.15	Conference opening	TBC
17.15 – 17.40	Sustainable liver fluke control on hill farms	Dr Barbara Good, Teagasc
17.40 – 18.05	Hill sheep sector in Co Donegal: current profile and potential	Seamus Campbell, Teagasc
18.05 – 18.40	Importance of managing upl and habitats on hill farms	Dr Eileen McClosky, CAFRE, NI
18.40 – 19.05	Budgets and targets for finishing hill lambs	Prof Michael Diskin, Teagasc
19.05 – 19.15	Conference close	Michael Gottstein, Teagasc
19.15	Refreshments served	

Note: There is no charge for attending the conference and booking is not required

Table 4: Spring grazing farm walks

Early turnout and the use of proven grazing technologies will increase performance and reduce costs. Teagasc will hold a series of on-farm demonstrations of the practicalities of spring grassland management throughout January and February

Date	Location
Mon 25 Jan	Peter Hynes, Aherla, Bandon, Co Cork
Mon 25 Jan	PJ O'Keeffe, Callan, Co Kilkenny
Mon 25 Jan	Mark Cassidy, Cookstown, Kells, Co Meath
Tues 26 Jan	Teagasc, Curtin's research farm, Fermoy, Co Cork
Tues 26 Jan	Conor Beausang, Churchquarter, Grange, Co Waterford
Tues 26 Jan	Teagasc, Johnstown Castle dairy unit, Co Wexford
Wed 27 Jan	Teagasc, Clonakilty Ag College, Clonakilty, Co Cork
Wed 27 Jan	Michael Ryan, Deansgrove, Cashel, Co Tipperary
Thurs 28 Jan	Oliver Looney, Burnfort, Mallow, Co Cork
Thurs 28 Jan	Edmond Hearne, Ballyneale Castle, Ballyneale, Co Tipperary
Friday 29 Jan	James Kennedy, Bawn, Nenagh, Co Tipperary
Mon 1 Feb	John Roche and Piers Dennis, Fortgranite, Baltinglass, Co Wicklow
Tues 2 Feb	Francis Clune and family, Newgrove, Tulla, Co Clare
Tues 2 Feb	Teagasc, Ballyhaise College dairy unit, Ballyhaise, Co Cavan
Wed 3 Feb	John Payne, Torboy, Moydow, Co Longford
Thurs 4 Feb	Padraig Condron, Dullas, Croom, Co Limerick
Thurs 4 Feb	Ronan Joyce, Carrowjames, Belcarra, Castlebar, Co Mayo
Thurs 4 Feb	Sean Daly, Banagher, Co Offaly
Fri 5 Feb	Dan Callaghan, Castlefinn, Co Donegal
Fri 5 Feb	Eugene Lawler, Portersize, Ballitore, Co Kildare
Mon 8 Feb	James McCarthy, Castleisland, Co Kerry

While every effort is made to ensure that the information is correct at the time of going to press, we cannot guarantee that some event dates will not have passed before the publication date.

Teagasc help available for flood-hit farmers

Teagasc was highly active during the flooding countrywide, working with partners and helping farmers to minimise the effect on their livelihoods and their animals' welfare. **Tom Kellegher*** reports

As we went to press, the Minister for Agriculture, Food and the Marine, Simon Coveney TD launched a scheme of assistance for farmers who have suffered fodder losses as a result of the severe flooding in recent weeks.

"I have witnessed first-hand the significant difficulties and losses experienced by farmers in areas flooded in recent weeks," the minister outlined. "I am committed to supporting these farmers and, in this regard, the Government has agreed to provide up to €2m for the new fodder scheme." This support will apply to the loss of silage, hay, straw and concentrates where there is evidence of damage caused by flooding and where the losses are not covered by insurance.

Application forms are available from Teagasc offices where advisors will continue to provide one-to-one advice to those impacted by flooding. On-farm visits will be undertaken by Department personnel in the case of all applicants for assistance under the Fodder Scheme to confirm the quantities of fodder lost due to the flooding. The closing date for applications is Friday 22 January.

Teagasc was highly active during the flooding countrywide, working with partners and helping farmers to minimise the effect on their livelihoods and their animals' welfare.

Taskforce

A multi-agency flood relief task force convened by Teagasc met in Athlone on 14 December. Teagasc, DAFM, IFA, Arrabawn Co-Op, Aurivo Co-Op, Veterinary Ireland and the OPW and the *Irish Farmers Journal* were represented.

Ninety (rising to 170) severely affected farmers had been visited. In some cases, the army helped advisors to make visits and a list was compiled and sent to DAFM. This information helped inform government decisions.

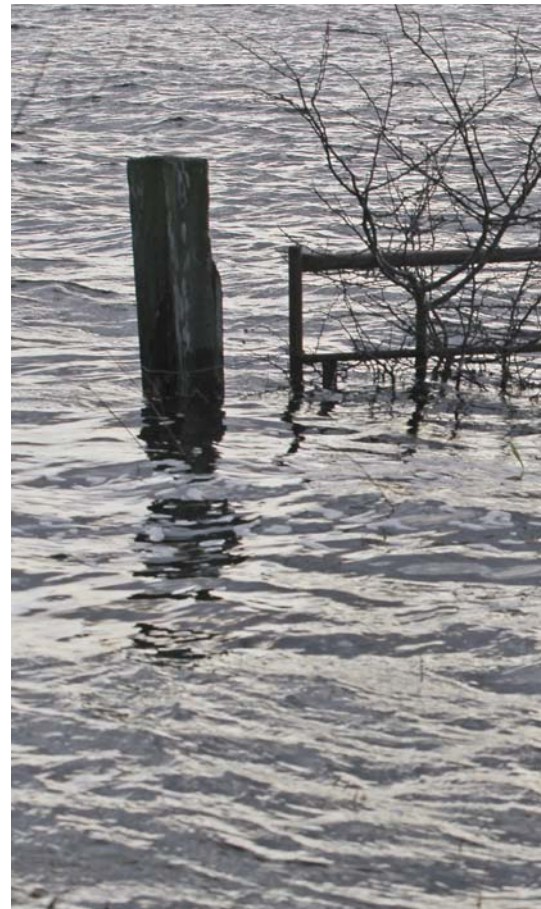
- These 90 were subsequently visited by DAFM officials and were allocated concentrate vouchers.
- A booklet on animal nutrition was prepared by Teagasc and distributed to affected farmers and media.
- A Teagasc helpline was set up pre-Christmas and has been manned since that date.
- A small number of farmers need to move stock out of flooded areas. Teagasc working with others identified farms/marts willing to take stock for the period of the floods.

"I think the response by my Teagasc colleagues demonstrates, yet again, both the depth of expertise within the organisation and the resolute determination of front-line advisors to assist farmers in their hour of need," said Prof Gerry Boyle, director of Teagasc.



Councillor Maura Hopkins, James Kelly, Teagasc, *Tom Kellegher, Teagasc Regional Manager, Minister Simon Coveney and Joe Curtin, Teagasc.

6 things to consider



1 Effect of flooding on forage crops >> Silage pits/clamps that had not been opened when the floods submerged them may undergo relatively modest damage. Silage pits/clamps that were open when the floods submerged them may undergo more extensive wetting and may release more effluent after the floods recede, and will likely have a larger loss of digestibility.

If the pH of this silage is below 4.0 after the flood recedes, there may not be a problem but if it is greater than 4.3, then deterioration is more likely.

Bales of silage that have been shifted by floods will likely have had their plastic film damaged. Bales that had some holes (even if small) in the plastic wrap film before being submerged in the flood will have taken in water.

A risk with all bales that are submerged is that water works its way in between the layers of film, wetting the silage. When the water recedes the seal through which water entered/left, the bale will not reseal.

It is therefore important to check the seal on bales and, if it is compromised, the only option (assuming the bale remains edible) would be to



re-wrap it. This may be difficult to do correctly if the bales have lost their cylindrical shape.

If hay becomes submerged in water, dampness can soak up to a greater height than the level of the flood water (as per blotting paper). When the flood recedes and surplus water flows out of the hay, the latter could still be only 30% to 40%DM and thus be prone to heating. If heating commences, all of the hay may need to be removed (separating the dry and wet/damp bales) in case heating gets excessive.

2 Animal nutrition >> If you have lost some silage due to flooding, then you need to consider how you can ration out existing fodder reserves to get you through the rest of the winter. It may be better to budget immediately to minimise the likelihood of running out of forage.

Rather than buying in extra forage, it may be worth considering feeding minimum roughage to all classes of stock for several weeks to make up the shortfall.

You should consider the following principles when feeding minimum roughage:

- Cattle need a minimum amount of

roughage to ensure healthy rumen function. The lowest level of roughage required is for ad-lib diets. Outside of this, animals will ideally be offered in the region of 50% of their nutritional requirement in the form of roughage.

- High performance is not a requirement, maintenance, plus minimal growth (0.2kg to 0.4 kg/day) is the objective for yearlings/stores.
- Maintenance of milk production without excessive weight loss is the target for suckler cows.
- Because we do not have high performance targets, some cheaper feeds can have a role in this emergency-feeding situation.

Contact your local advisor for the feed needs of individual stock categories.

3 Sheep >> Feed supplementation required for sheep during this present weather crisis needs to be targeted based on the type of feed available and the type of animals being fed. See also article on pages 23 to 25.

High-energy buckets or liquid feeders are an alternative feed source. These are predominantly molasses bases plus or minus protein ingredi-

ents. They are a useful supplement where the quality of forage (either grass or silage) is poor. They work out at a higher cost per unit energy supplied.

However, in practical terms, they present a viable option for situations where frequent access is limited. As a guide, you will need one high energy bucket (20kg) per 25 to 30 ewes. These should be spread out to allow greater access.

When offering liquid feed (molasses) via a lick, a general recommendation is for one ball per 50 ewes.

4 Animal health >> Flooding and contaminated waters increase the risk of disease to stock. We are already witnessing instances of acute fluke in sheep this year and we will have to be mindful of the potential for a higher incidence of rumen fluke on ground that has been flooded. Stock will be at a greater risk from salmonella, cryptosporidia, redwater, etc, so it is worth engaging with your local vet to determine what steps you should take to minimise the risk.

5 Vermin control >> With rising floodwater, rats have been on the move. They will naturally move to drier areas around the farm, so farm buildings and farm dwellings will be under a bigger threat of infestation.

Be vigilant, keep baiting points around the yard and dwelling regularly replenished.

6 Preventing future damage – use your camera >> In some farmyards, there may be potential to avoid the worst of the flooding at a future date by recording flood levels now. The best option is to mark the heights to where the flood reaches or to record by taking photos (camera phone) and storing these photos carefully.

These records may prove useful in future planning. Where the flooding is caused by running water, there may be an opportunity to redirect that water-flow to protect the farmyard, animal housing and feed storage areas.

Where the flooding is as a result of general high water levels, in some cases it may be possible to relocate bale storage areas or the siting of new buildings. It may even be possible to have a protective bank of soil put in place to offer limited protection to some flooding.

A record of flood levels is a good start.

dairying

Strategies to optimise cashflow in 2016

Dairy farmers must continue to focus sharply on cost control this year

Tom O'Dwyer
Teagasc Head of Dairy
Knowledge transfer

Current indications are that 2015 has been a reasonable year for dairy farmers. On average, dairy farmers responded to the removal of EU milk quotas by producing more milk. This helped reduce the impact of the downward trend in milk prices on overall farm profit.

However, 2016 looks like being another challenging year when it comes to milk price. Unless farmers continue to focus on cost control in 2016, there is a risk that individuals, other than the farmer actually producing the milk, will be the ones who benefit.

If you want to have positive cashflow at the end of the year – and this will be a big challenge for many dairy farmers this year – you must make decisions and take action now. Change will be needed, which will require you to think and act differently. Beware of the loopholes or excuses that you use to postpone change.

Make 2016 the year that you stop procrastinating. Choose a new habit and make consistent progress in pursuing it. One habit that every dairy farmer should develop for 2016 is to monitor cashflow on a monthly basis. Your first step towards this habit is to be set up for online banking.

While this article will largely focus on cost reduction strategies, there will also be opportunities to increase revenue during 2016. Options will include the sale of surplus or non-performing stock; increased milk solids output (but must be from grass); and avoiding penalties.

The year 2016 will not be one to carry too many cows for the farm's grass growth potential, nor to carry



Running your farm at 90% of its potential production may be more profitable than attempting to get to 100% and spending more than 10% to get there



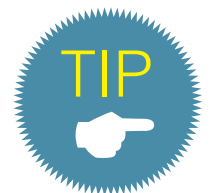
underperforming cows. Louis Kurrieger, speaking at the 2009 Teagasc National Dairy Conference, suggested that “running your farm at 90% of its potential production may be more profitable than attempting to get to 100% and spending more than 10% to get there”. The business cliché, “Turnover is vanity, Profit is sanity”, applies to dairy businesses too.

In relation to cost savings, there is no silver bullet or magic solution to suit all situations. It really is a case of saving €100 here and €200 there. Cumulatively, all the savings will add up. In general, identify what you must have (costs which are critical to your business success), shop around for the best value available, avail of discounts/special offers/cash deals of benefit to you and eliminate all discretionary spending. Remember that your costs are usually somebody else's profit.

Grass is key

Meal feeding is typically one of the bigger costs on dairy farms (accounting for almost one fifth of costs on a per litre basis). It seems obvious, but including more grass in a cow's diet will reduce this cost.

This will require you to be more focused on grassland management. For most herds on grass full-time during March, 3kg to 4kg meal should be adequate; aim for 1kg to 2kg/cow/day



Including more grass in a cow's diet will reduce meal costs



during April and no meal at all from mid-May onwards.

You can decide in the autumn whether meal feeding is justified or not. In general, there is a bigger saving to be made by focussing on reducing quantities fed than on the price per tonne. Nonetheless, shop around for best value but do not compromise on ration quality.

Fertiliser costs typically account for 12% of total costs on a per litre basis. Surprisingly, many farmers underspend on this cost but this is, in most cases, a false economy. Lime is the first thing to get right before one should consider building either soil P or K. Soil test so that P and K fertiliser isn't wasted. Focus on maintenance dressings of P and K early in the year and on buildup later in the year. Use slurry/soiled water to replace some purchased nitrogen, especially in spring. Match N application to stocking rate. Use urea rather than CAN (30% cheaper per kg N) until end of April. Spread sulphur (20 kg/ha; 16 units/acre) on dry farms from April.

Breeding costs

While AI/breeding costs are not usually one of the bigger expenses, there is often potential for savings. Firstly, this investment must be made, but make sure that you select the right team of AI sires for your herd.

Dairy farmers responded to the removal of EU milk quotas by producing more milk.



Continued on next page

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Use the maximum number of GeneIreland test bulls for your herd. Minimise AI costs by working hard to increase conception rates. Increasing conception rate to first service from 45% to 55% in a 100-cow herd will result in 20 less AI straws used over nine weeks (and at €20 per straw, a saving of €400).

Ensure that heifers are at target weight at bulling time. Thin cows and late calvers must be milked once a day to allow them to gain necessary body condition and increase the likelihood of conception. Match the number of AI straws to be used to the number of heifers required to enter the herd in 2018, then use lower cost beef AI straws (must be short gestation length and easy calving). Problem cows should be seen by a vet, otherwise veterinary interventions should be kept to a minimum. Heifers should be synchronised. Scanning is useful, especially where herd infertility is an issue; otherwise it is questionable. Tail paint is the cheapest heat detection aid available and must be used. Alternatives are available but may be more expensive.

Vet bills

Controlling veterinary costs is not about simply cutting costs, it can also be about ensuring that you are getting a good return on your investment in animal health. Firstly, you must spend money on protecting and maintaining the health of your herd. A really useful first step is to consult with your veterinary surgeon so as to develop an animal health plan for your farm.

Prevention will always be better than cure. What are you doing to reduce the risk of a disease outbreak or an animal health issue that requires costly treatment?

Knowing what the disease challenges on your farm are, and the health status of your animals, helps in this regard.

Savings can be made by challenging the cost of products, the number of treatments and the cost of various services.

By having an idea of your main veterinary supplies needed for 2015 (list of all vaccines, doses etc), you may be able to get a better deal from your supplier (an example of bulk purchasing).

Contractor costs

Managing contractor costs is not about simply cutting costs. It may



2016 looks set to be a challenging year when it comes to milk price.

make sense to have a bigger spend in this area, provided that you can reduce your overall fixed costs. Consequently, it is important to examine this figure in tandem with both the machinery operating/depreciation figures and the labour figures.

In order to ensure that your contractor can meet your needs, you will have to plan out the work that you need done and communicate this with your contractor. Prompt payment may allow you to negotiate favourable rates.

Spontaneous purchases

Watch out for the small additional items (sundries) which are picked up on a whim or because the salesperson recommends it. You must question every expense and justify how it adds value to your business.

Fixed costs

Fixed costs can creep into a business over time and can be difficult, but not impossible, to shift. Particularly for expanding dairy businesses, it is vital to carefully consider decisions which will commit the business to fixed costs for 10 to 20 years.

There are options available from

ESB/electricity, phone and insurance providers. Check out the different price plans and identify one which best suits your business. Labour costs and machinery costs can be tackled – even in the short term. Regular maintenance can save on expensive repairs.

Summary

In summary, the best way to effectively cut costs is to ruthlessly penny-pinch. When you have little money, you are forced to be frugal with all expenses. But with growth, it is easy to lose track of expenses.

Adopt a thrifty mindset to ensure that your business is successful in 2016.

Finally, lessons can be learned from the previous year's business performance. Take the time during January to examine 2015 cashflow records and to use these to plan/budget for 2016. Involve your wife/partner or other family members.

Talk to your adviser, accountant and bank manager. Completing the Teagasc Profit Monitor analysis can be extremely useful. Contact your Teagasc dairy adviser to arrange for this analysis.



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Early spring grass – your lifeline in 2016

John Maher

Dairy Specialist, Teagasc Animal and Grassland Research and Innovation Programme, Moorepark

There needs to be a greater focus on utilising early spring grass. Cashflow will be a challenge for all dairy farmers over the coming spring. Giving cows access to as much grazed grass from early February will:

- Lower costs of milk production.
- Increase milk price (through better milk composition.)
- Grow more grass on the farm.

Early grazing will generate an increased profitability of €2.70/cow/day for each extra day at grass through higher animal performance and lower feed costs.

There is a lot of grass on dairy farms at the moment. This means that most dairy farms will be able to turn their cows out to grass by day and by night (full-time) immediately after calving provided ground conditions are reasonable. Outlined in the rest of this article is the grazing plan for two dairy farms: Charles and Tom Crosse, from Tipperary and Mark, Liam and Billy Heffernan from Kilkenny.

Grazing plan

It is their plan to turn their cows out to grass by day and night in late January/early February. Both Mark Heffernan and Charles Crosse presented their grazing plan for 2016 at the Teagasc national conference in Kilkenny recently.

These farmers measure grass and record these measurements on the PastureBase Ireland database. The farms produced over 14 tonnes of grass DM/ha in 2015, which was higher than the average level of grass production recorded on PastureBase Ireland.

Both of these farmers are very focused on early turnout to grass in spring.

It is obvious from their spring-

grazing plans in Table 1 that they intend to graze a high proportion of the farm in February. Their reasoning behind this approach is to have a high proportion of the farm recovering in March, so they will have grass available to start the second round of grazing in early April. Charles Crosse said: “My aim is to graze 35% to 40% of the farm by 1 March – this will result in more grass grown on my farm.”

Nitrogen

To encourage grass to grow well, they will have about 75 to 80 units of N applied before 1 April (Table 2). Half of this nitrogen will be applied before 1 March.

Both farmers consider this to be critical to increase grass production. Urea is the choice of nitrogen fertiliser to be applied. The Heffernan farm may consider spreading 18-6-12 (two bags/ac) in March if soil test results are a concern. This strategy of applying 18-6-12 has worked well for them in the past.

The spring meal feeding plan for both farms is outlined in Table 3. Their broad plan revolves around having cows out grazing full-time and feeding about 3kg of meal/cow/day. Both farms have a high six-week calving rate (80%).

Given reasonable weather conditions and normal levels of grass growth in February and March, their feed budgets suggest that this level of meal feeding is achievable.

Crosse said: “My plan is to feed about 200kg meal/cow by the end of April. This can only be achieved by having a very high proportion of grass in the diet of the cow.”

However, both farmers are adamant that to grow more grass on their farms, they must graze a high proportion (30% to 40%) of the farm by 1 March.

Mark Heffernan said: “We would prefer to have the 30% to 40% of the farm grazed in February, than to be inside with cows in March looking out at lots of the farm to be grazed.”





Table 1: Summary of the spring grazing plan for 2016

	Crosse farm	Heffernan farm
Target closing cover (kg DM/ha)	800	700
Expected growth over winter (kg DM/ha/day)	4	4.5
Expected opening cover (kg DM/ha)	1,000	1,050
Turn out cows on	1 February	End of January (if conditions allow)
Target % of farm to be grazed by 1 March	35-40%	35-40%
Target % of farm to be grazed by St Patrick's Day	70%	65-70%
Date finished first round in 2015	4 April	5 April
Target cover/cow at start of second round (kg DM/cow)	180	220

Table 2: Fertiliser/slurry application strategy

	Crosse farm	Heffernan farm
Level of N fertiliser to be spread in February	23 units N/ac in late Jan 23 units N/ac in late Feb	40 units N/ac in Feb
% farm receiving slurry	20% in mid-Jan 30% farm in Feb after cows grazed	33%
Level of nitrogen applied up to 1 April	75 units N/ac	80 units N/ac

Table 3: Planned supplementation strategy for spring 2016

	Crosse farm	Heffernan farm
Level of meal to be fed/cow/day in February	3kg	3-4kg
Level of silage fed/cow in February	0	0 (when out full-time or 4-5kg if on/off grazing)
Level of meal to be fed/cow/day in March	2kg	3kg
Level of meal to be fed/cow/day in April	1.5kg	2.5kg



Giving cows access to as much grazed grass as possible from early February will lower costs of milk production

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6 TIPS FOR SIX-WEEK CALVING

Achieving the target six-week calving rate of 90% is worth an extra 5c/litre or €279/cow extra profit compared with the national average calving spread

Pat Clarke

Dairy Specialist, Teagasc Animal and Grassland Research & Innovation Programme

Research at Teagasc Moorepark shows that there is an extra €8.22 profit per cow for each percentage point increase in the six-week calving rate. Of course, calving such a high proportion of the herd in a relatively short period creates a workload challenge.

But it is a predictable workload. Farms with a 90% six-week calving rate expect half the herd to calve in 16 to 18 days. For a 100-cow herd, this is about three calvings per day; for 300 cows it's an average of 10 births/day. The number of calvings can spike in any day. It won't be spread evenly over the period, so you must be prepared for this too.

1 Facilities: ensure that you have adequate space

- A 100-cow herd with 50 calving in 17 days will need 10 calving spaces.
- Allow at least 2.3m² per calf in the shed.
- Consider turnout to grass after three weeks to lower calf density in sheds.
- Arrange sheds so that they can be mechanically cleaned out and bedding is easily accessible.
- Ventilation and drainage must be

adequate in calf sheds.

- Have adequate feed space for feeding thin cows.
- Prepare all facilities and purchase all equipment in advance.
- Have fresh foot dips in place.
- All routine maintenance, fences, water, etc, should be done in January.

2 Calve cows in the correct body condition

- Calve cows in good body condition (score 3.25) to reduce calving difficulty and the possible need for assistance.
- Feed according to silage quality on farm.
- Use an appropriate dry cow mineral.
- Vaccinate for diseases diagnosed (use bulk milk screening as a guide).
- Use easy-calving bulls, especially on heifers.
- Watch that late calving cows do not become over-conditioned.
- Train heifers to the parlour in advance. Allow them free access from the collecting yard into parlour. Include at least one cow who knows the route with the heifers.

3 Farm system – keep it simple

- Get cow to grass immediately.
- Sell bull calves as soon as possible,



Motorised movement of milk from the parlour to the calf house.



rear only replacement heifers.

- Limit the breeding season to less than 13 weeks.
- Turn calves out to grass early.
- Have a separate colostrum group initially. This means that the main herd can be milked without issues, and allows time with the colostrum group to work on any problems this group has.
- Consider contract rearing of heifers, or even replacement calf-rearing.

4 Organisation – have a structure to the working day

- Have basic instruction/operating procedures written and visible.
- Decide who is going to do what, in advance, e.g. slurry, fertiliser, calf-rearing, milking, paperwork, tagging, etc.
- Have a definite, early, start to evening milking, e.g. 4pm and a finish time, e.g. 6pm. After this, there should only be calving supervision.
- Cow and calf movement can eat into time. Most yards are a combination of buildings constructed over time. Can they be modified to reduce cow/calf movement in spring?
- Simplify the movement of milk e.g. pump, quad, etc.
- Minimise the movement of calves from shed to shed.

Farmer profile

Bryan and Gail Daniels, Co Kilkenny



Consider early turnout of calves in spring and once-a-day feeding.

5 Practices, proven by research, to reduce workload

- Consider once-a-day (OAD) milking of cows for a few weeks in spring.
- Practice OAD feeding of calves once they are over three weeks.
- Early turnout of calves to grass. Teagasc Moorepark trials show similar performance to calves reared indoors.
- Night feeding of silage can reduce the proportion of cows calving from 11pm to 6am.

6 People management

- Take stock, in advance, of how many people will be on the farm in February/March, e.g. yourself, family, employee, casual labour, contractors, relief milker, etc.
- Decide on each person's role and ensure that you make best use of their skills during this period.
- Prepare a roster where necessary.
- Do they need any training/introduction? If so, it needs to be done in January.
- Make sure that they understand your farming system and how all tasks fit into that system.

Bryan and Gail Daniels farm at Kilmoganny, Co Kilkenny. In 2016, they will have 267 cows to calf with a predicted six-week calving rate of 92%. Bryan spoke at the Teagasc national dairy conference in December and outlined their approach to the workload challenge with compact calving.

"We have four people working on the farm in spring," says Bryan; "myself, Gail, a full-time student and a student for three months. Communication is very important during this period; everyone must know their role."

All four have a walkie-talkie due to poor mobile coverage in the area. "We all have breakfast in the house at 10am. This is like a daily meeting in addition to getting a good meal after the morning work. We also have notice boards in the kitchen, calving area and dairy."

Preparation, according to Bryan, is crucial. There is an eight-week dry period where families spend time together and people recharge their batteries. All facilities are cleaned and prepared in advance. A list of supplies required is created by Christmas. This shopping list is purchased in bulk in January. All cow passages are numbered and there is a paddock map to avoid any confusion when busy. Paperwork is up to date in advance and each day after breakfast Bryan goes to the office to complete new paperwork. This can take from five to 60 minutes depending on the day.

"We have simplified cow and calf flow," says Bryan. "Two years ago, we relocated the calving area to the middle of the yard. This involved removing old cubicles from a section of a shed and creating a loose calving area for 38 cows. This calving area is convenient to the parlour and to the calf house and minimises movement of stock at calving. After calving, calves are moved in the morning or evening to the nursery (individual pens). They spend one to two days there; heifers move to the new heifer shed, bull calves to older sheds."

Compact-calving herds must be based on a simple system. The Daniels sell bulls as soon as possible and only farm cows and replacements. Cows go to grass by day immediately after calving.

"The fields are 700ft and 1,000ft above sea level, so grass growth is low in February and as a result cows go to grass day and night in March," says Bryan.

Gail is the calf-rearer on the farm. Milk is transported by motorised tanker from the parlour to calf-rearing shed. The heifer shed is a purpose-built six-bay shed with accommodation for about 12 calves per bay.

Bryan emphasises the importance of looking after yourself. "I will get a health check-up in January and it's also vital to eat well and get adequate sleep in the busy February and March period."



The Daniels' heifer-rearing shed.

Bull selection:

It's as simple as E...B...I...

George Ramsbottom

Dairy specialist, Teagasc Animal and Grassland, Research and Innovation Programme.

Breeding the type of dairy cow that suits your milk production system is an essential step in the development of your dairy enterprise. Teagasc advice is to use high Economic Breeding Index (EBI) AI bulls. The EBI is a measure of the relative profitability of the progeny of a sire and is expressed in euros. Higher EBI sires produce daughters who are more profitable than the daughters of low EBI sires. Milk production and fertility are the two most valuable traits in the index.

If your key target is to breed replacement heifers with the genetics available to meet your breeding objectives then select appropriate AI sires for your herd:

- Establish the genetic merit of your herd – this is available through participation in HerdPlus.
- Decide on your herd's priority breeding objective e.g. to breed a herd of highly fertile cows.
- Set genetic targets appropriate to your breeding objective e.g. to breed heifers with an average fertility index of €140.
- Select a team of bulls from the 'Active Bull List' that will deliver the heifers required.



How to estimate EBI and sub-indices of the next generation of calves

To do this you need to know the EBI and sub-indices of the sires and dams of the next generation of calves – add the values for each trait together and divide by two as outlined in Table 1 below.

The EBI is a measure of the relative profitability of the progeny of a sire and is expressed in euros.

Key performance indicators

Key performance indicators in breeding and bull selection include

- The average EBI of the AI sires used is greater than €350.
- The average EBI of the heifers born is more than €100 higher than the herd EBI.

Table 1

	Herd EBI	Milk index	Fertility index	PD milk
Example herd	€140	€30	€70	+ 50 kg
Average of AI sires used	€350	€120	€190	+ 100 kg
Estimate for calves born	€245	€75	€130	+ 75 kg

Table 2: Risks in selecting bulls

Risks	How to mitigate the risk
Low EBI bulls are chosen	Select bulls from the latest version of the 'Active Bull List'
Low EBI reliability	Use five bulls in similar proportions to ensure the reliability of the bulls used
Inbreeding	Use the Sire Advice Programme to match cows with unrelated AI sires



The guidelines outline the target weights that stock need to reach at certain ages, as well as the management needed to achieve these weights.

Beef production: system guidelines

Pearse Kelly
Head of Drystock Knowledge Transfer,
Teagasc Animal and Grassland
Research and Innovation Programme



An important element of any beef system is the potential margin that can be made from it

One of the key outcomes of the beef industry roundtable discussions chaired by the Minister for Agriculture, Food and the Marine, Simon Coveney, in 2015 was the production by Teagasc, Bord Bia and the Department of an agreed set of guidelines that beef farmers could use when pursuing a particular beef system.

While there are many different beef systems, these guidelines outline the 14 most common systems on Irish farms and include steer, heifer and bull systems. Beef cattle from both suckler and dairy cows are covered.

While some hard copies of the guidelines are still available in local Teagasc offices, they are also available on the Teagasc website www.teagasc.ie/beef. Each system is covered in two pages with a common layout, so that they are easy to follow and understand.

After describing a system, the guidelines outline the target weights that stock need to reach at certain ages; the management needed to achieve these weights; and the inputs required

over the lifetime of the animal. An important element of any beef system is the potential margin that can be made from it. This is also covered along with the different market considerations that farmers need to take into account.

Typical liveweights

As the production of the suckler calf up until it is weaned from the cow is quite similar, this stage of the production cycle is not covered under each system. There is an assumed common weaning weight for male and female calves of 320kg and 290kg, respectively. Similarly, the first 10 to 12 weeks' rearing phase of the dairy calf is not included with an assumed common weaned calf weight of 90kg to 100kg liveweight.

Table 1 is an example from the 24-month steer beef (suckler) system of the layout and content of what is in the typical liveweights section.

Table 1: Typical liveweights at different stages of production

Stage of production	Liveweight (kg)	Average daily gain (kg/day)
Weaning (start weight)	320	1.33
Turnout	400	0.60
Housing (second winter)	585	0.90
Slaughter weight	700	0.95
Carcass weight	360-400	



Continued on next page

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Example from the 24-month steer beef (suckler) system

This table shows that there are target weights which must be achieved at the different stages of the production cycle. Otherwise, the age at slaughter increases or cattle are sold as lighter stores rather than being finished.

Not meeting target weight gains in one stage of the production cycle means they have to be made up for in another stage. This can often result in increased costs due to the need to feed more concentrates or else accept a lower finishing weight.

Management

How to achieve the different liveweights is explained in the management guidelines section for each beef system. While every detail is not covered the different levels of meal feeding, grassland management and the importance of having a proper parasite control programme are all outlined.

The profitability of most beef systems depends on achieving a significant amount of weight gain from grass. This means having a long grazing season but also ensuring that cattle are grazing high-quality leafy grass for most of the grazing season.

After this, making good quality grass silage is essential if costs are to be kept to a minimum. Knowing when to start feeding meals and how much to feed at the different stages for a particular beef system are important if liveweight targets are to be met. The guidelines provide this detail.

Inputs required

Feed accounts for the majority of the inputs on any beef farm. On most farms grass, silage and concentrates are the only feeds provided. Knowing how much of each of these is required to bring a beef animal from a weanling through to slaughter is important as it gives an idea of the costs involved and it also gives an indication of the carrying capacity of a farm.

Table 2 is an example from the 24-month steer beef (suckler) system of the layout and content of what is in the inputs required section. The

Table 2: Inputs required

Concentrates	0.75t DM or 0.87t fresh weight
Grass	2.2t DM
Silage	1.6t DMF or 8t fresh weight
Stocking rate	2.7 animals/ha at 170kg organic N per ha

Table 3: Economics

		€
a) Weaned calf purchase value	320kg	
b) Carcase value	395kg	
c) Sales – purchases (B-A)		
Variable costs per head*		
Grass	2.2t DM	€88
Concentrates	0.87 tonnes	
Silage	Eight tonnes	€240
Veterinary	–	€39
Transport and levies	–	€40
d) Total variable costs		
Gross margin per head (C-D)**		

*Variable costs per head do not include interest or mortality costs.

**Subtract estimated fixed costs per head to calculate net margin per head.

information given both in the performance data in the liveweights section and the inputs required is based on data generated from Teagasc research in Grange Research Centre and Johnstown Castle.

Example from the 24-month steer beef (suckler) system

Where a farmer has an idea of the grass-growing ability of the farm, he can use this table to calculate how many cattle can be finished per hectare by summing the tonnes of grass and silage needed.

“ The profitability of most beef systems depends on achieving a significant amount of weight gain from grass

In this system, to bring each steer from the weanling stage through to slaughter requires 3.8t of grass dry matter (DM) per head (2.2t grass DM and 1.6 tonnes silage DM). If a farmer can grow 10t of utilised grass DM per hectare, the farm can carry 2.6 steers per hectare (10t/3.8t). But if a farmer has the capacity to only grow seven tonnes of utilised grass DM per hectare, the sum works out at 1.8 steers per hectare.

Economics

Each system guideline has an economics section. The purpose of this is to give farmers the opportunity to work out what their likely gross margin per head would be from any system once they have covered the cost of the weanling/calf at the start and all of the variable costs involved in bringing the animal through to slaughter.

Table 3 is an example from the 24-month steer beef (suckler) system.

The inputs are what were outlined in the inputs section, along with veterinary, transport and levy costs. Everyone using this table has to put in:

- The cost they expect the weanling is going to be.
- The total cost of the concentrates fed.
- The value they expect to get for the carcase.

Gross margin does not take into account fixed costs such as machinery running, depreciation, etc. On many farms, these are approximately €500 per hectare but can be a lot higher depending on the level of machinery and the amount of buildings there are.

Market considerations

In recent years, the demands from different markets for different carcass specifications has brought the issue of what the market wants to the top of the agenda for both farmers and meat processors.

Some systems, such as bull beef, can be more affected than others by market specifications and it is important that farmers discuss in advance with their meat factories what they are producing, so that there is a clear understanding of what they want when it comes to specifications.

It also has to be remembered that not all systems will qualify for the Quality Payment System (QPS) bonuses as they may not meet the age, conformation, fat score or quality assurance criteria laid down at the time of slaughter. The guidelines outline for each system what the market considerations are.

Using the guidelines

Beef farmers should get their hands on a copy of the beef production guidelines either in their local Teagasc office or online. Find the system that matches your own beef system most closely and compare your targets to what is in the tables for that system.

Producers who are looking to buy stock should make an estimate of their likely margins per head by using the economics table in the system. Whatever system you are planning on, take into account what the market requires, especially when it comes to likely carcass specifications over the coming 18 months.

Grazing on a plate

The phenomenal grass growth that can be achieved in Ireland is our key competitive advantage. These beef farmers use platemeters to manage their paddocks and grass covers. **Mark Moore** reports

Dairy farmers have a huge advantage when it comes to managing grass.

They get almost instant feedback on how well they are managing their paddocks. Yield, fat and protein levels based on milk recording or feedback from the processor are rapidly available.

For the drystock farmer the benefits, though less immediately visible, are equally worth having.

"Basically, you're getting more animal performance from the cheapest feed available to you," says David

Kinsella, who is a member of the New Ross Discussion Group. The group was established by Teagasc advisor Michael Fitzgerald and a dozen or so local farmers about eight years ago, and is today facilitated by Martina Harrington of the Teagasc Enniscorthy office.

"We try to move forward and make progress each year," says David Kinsella. "At the beginning, we were rotational-grazing and gradually we increased our use of paddocks. We started by judging grass covers by eye, but we now use a plate meter which is a much more accurate system."

Alan Keogh, David Kinsella, John Watchhorn and Jimmy Dempsey.



Continued on next page

David has a 70-cow suckler herd and finishes all the progeny. His animals include Charolais, Simmental and Limousin blood. "The farm is fragmented and we have four groups of stock: two groups of cows and one group of bullocks and one of heifers. Splitting the herd also helps with breeding management. All cows are artificially inseminated. By reseeding and keeping the fertiliser and pH levels right, we have been able to gradually increase our stocking rates," he says.

The group doesn't really call itself the New Ross Discussion Group. "But that's how we are identified on PastureBase Ireland," says John Watchhorn, another group member:

"The system allows us to use the Teagasc Spring Rotation Planner and other programmes relatively easily."

The group will meet regularly during the grazing season and discuss whether paddock rotation is going according to plan. All will bring the



most up-to-date covers to the meeting.

David Kinsella says it's vital to establish a rigorous routine: "You should measure on the same day each week and ideally at the same time.

"Stock are rarely more than two days in a paddock and the group will aim to have animals out by 1 February and have done a complete rotation of the farm by 1 April," says Martina Harrington. "By managing tightly, they are getting more and better quality grass."

"I'd say the biggest benefit from using the platometer is that it gives you the confidence to be a bit braver," says group member Jimmy Dempsey. "In the past, we'd always want to have a lot of grass in the bank whereas as when you have a very accurate picture of what's in each paddock you don't need to do that. If there is any surplus or deficit looming, you will know it far quicker when you are measuring and you can take action if needed."

Table 1: Some target pasture covers for a spring-calving herd stocked at 2.5 LU/ha

Month	Growth target	Avg farm cover	Event
15 Mar	15	600-700	Cattle out full-time
10 May	80	700-800	Expect supply to exceed demand
15 Aug	65.0	700-800	
1 Sept	51.0	1,100-1,200	

Month	Growth target	Avg farm cover	Event
15 Sept	37.1	1,200	Peak cover achieved
1 Oct	30.0	1,000	
15 Oct	26.8	900	Start to close paddocks for winter
1 Nov	15.0	700	Consider housing finishing cattle
15 Nov	8.5	650	
22 Nov	2.7	600	House by day and night

Key principles

Extend the grazing season in early spring and late autumn

- Turn animals out early, to an adequate grass supply, to achieve a long grazing season and increase total animal liveweight gain from pasture.
- Have a planned autumn closing date for paddocks.
- Close the farm in rotation from mid to late October onwards.
- Target about two-thirds of paddocks closed by early November.
- Do not regraze closed paddocks, if yield is below 700kg DM/ha.
- Target a closing farm cover of 500kg DM/ha.
- Consider housing some animals during periods of poor weather.

For suckler herds, match calving pattern to the start of the grass growing season.

- Begin calving at the onset of grass growth.
- Target an opening farm cover of

600kg to 700kg DM/ha (depending on stocking rates) and graze the whole farm during the first grazing cycle.

- Use the Teagasc spring rotation planner and stick to daily area allocations as planned.
- Aim to have the silage areas grazed by 4 to 6 April. Then move stock to the grazing area.

Maximise the productivity of your swards by improving soil fertility

- Soil-sample one-fifth of the farm each year. If there has been no sampling for many years, consider getting the whole farm sampled.
- Apply P, K and lime as recommended.
- Consider reseeding poor performing paddocks.
- Only use varieties on the recommended list.
- Graze the newly reseeded sward for the first time before it reaches 1,000kg DM/ha.

Match your stocking rate to the growth potential of your swards

- Perennial ryegrass dominated swards will produce the highest grass yields.
- You must have enough stock for a field's grass growth (match supply and demand).
- Don't waste grass.
- Use rotational grazing, strip grazing or block grazing. This will help you improve grass utilisation.

Use farm grass cover measurement and grass budgeting, during the year

- Consider housing stock in very wet conditions if soil damage is taking place and grass utilisation is poor.
- Graze-out paddocks to a low post grazing height in early spring. This will maximise grass utilization and "condition" swards to produce more grass during subsequent grazing rotations, while also improving sward quality.

If you don't weigh them, how do you know how they are doing?

If you want to sell lambs at a premium market price; reduce production costs and increase the carrying capacity of your farm, measuring lamb performance is key

Frank Hynes

Sheep Specialist, Animal and Grassland Research & Innovation Programme, Teagasc, Mellows Campus, Athenry, Co Galway

Teagasc established a research and demonstration farm at Athenry in 2011. The aim was to develop a profitable and sustainable grass-based system of sheep production. Figures available from this project provide a useful guide as to what performance to expect from a well-managed system under Irish conditions.

Lamb birth weights for 2014 for the research / demonstration farm are presented in Table 1. While the figures for 2015 were not fully analysed at time of going to print, they are similar to the figures for 2014 as are the pre-weaning growth rates achieved in 2012 and 2013.

The BETTER Farm Programme for sheep was established in 2008. The objective of this initiative is to provide an opportunity to apply technologies developed from various sheep research programmes on commercial farms and quantify the benefits. The Programme comprises a number of lowland and hill commercial farms located throughout the country.

The birth weights being achieved on the lowland farms involved in the BETTER Farm Programme are consistent with those on the research / demonstration farm at Teagasc Athenry. These birth weights are achieved primarily due to adequate ewe nutrition, particularly in late pregnancy.

Lamb birth weights that deviate significantly from these figures indicate some problem in ewe management during pregnancy most likely involving nutrition or flock health. Breed can also play a part, maternal



Young lambs can be weighed using a simple luggage scales.

sires such as Belclare or Lleyen lead to somewhat lighter lambs at birth.

Lamb growth rate

When monitoring performance, growth rate is usually measured in grammes per lamb per day (g/lamb/

day). Growth rate can be assessed for any given period by weighing lambs at the start and at the end of the period.

While an overall target lamb growth rate pre weaning of 300 g/lamb/day may be deemed desirable, even on a well-managed system this is difficult

Continued on p22

Table 1: Lamb birth weights for the research farm at Athenry for single, twins and triplets in 2014

Birth type	Birth weight
Singles	6.0 kg
Twins	5.0 kg
Triplets	4.1 kg

Table 2: Lamb performance pre-weaning on the research farm at Athenry in 2014

System	0-6 weeks GR (g/day)	0-8 weeks GR (g/day)	0-12 weeks GR (g/day)	0-14 weeks GR (g/day)	Weaning Wt.
10 ewe/ha	294	280	286	272	31.86
12 ewe/ha	291	286	276	263	31.28

Table 3: Effect of creep feed on lamb weaning weight

Grass height	Creep feed (g/day)		
	0	300	600
5	31.4	34.3	36.9
6	33.7	36.7	37.5

to average across all lambs. On the research / demonstration farm at Teagasc Athenry, lambs are weighed at birth, six, eight, 12 weeks and again when weaned at 14 weeks.

Lamb performance pre-weaning in 2014 for the research / demonstration farm for the 10 and 12 ewes per hectare flocks are presented in Table 2.

Creep Feeding

The data presented so far highlights performance from grass only systems. However, creep feed is regularly offered to lambs while they are still being reared by ewes.

Teagasc research has shown the benefit of creep feeding in terms of lamb performance. Lambs were offered either 300g or 600g of concentrates per lamb / day commencing when the lambs were about three weeks old. They were stocked on a set stocking basis with a sward height of either 5 or 6cm. The results are presented in Table 3.

- When 300g concentrates were offered to lambs on the 5cm sward, weaning weight was similar to that for lambs offered no concentrates on a 6cm sward. This shows that creep feed may simply be a replacement for good grassland management. The cheaper option is to ensure at least 6cm of grass is available for ewes rearing young lambs in spring.
- Offering 300g concentrates when 6cm of grass is provided, gives extra performance and results in lambs 3kg heavier at weaning. This brings forward sale date by approximately 2½ to 3 weeks. The financial benefit depends on the market at the time of year and the ability to sell lambs earlier for a premium price. However, it is usually uneconomic to feed concentrates when adequate grass is available.
- When lambs are offered a grass sward of 6cm, there is very little benefit in increasing from 300g to 600g concentrates.



Lambs should be weighed regularly to check growth rate

Questions to ask if lambs are not performing as you expect:

- Is there adequate grass and if not, why?
- Is there too much grass leading to stem and dead material?
- Is there a problem with paddock layout?
- Are there health issues to be addressed? (e.g. worms, coccidiosis, liver-fluke, lameness, etc.)
- Is there a possible deficiency, especially Vitamin B12 for which Cobalt may be a solution?
- What can be done to redress these issues and improve the business for the future?

Table 4: The effect of pasture type and pasture height on lamb performance post-weaning

Pasture type	Post grazing height (cm)		
	4	5	6
Grass only	100	140	160
Grass / clover	117	173	222

Post-weaning performance

As with pre-weaning, post-weaning growth rate is influenced by the quantity and quality of grass available. The effect of type and pasture height on lamb performance post weaning is presented in Table 4. The ideal post grazing grass height for lambs is 6cm. To graze tighter post weaning forces lambs to eat into stem and dead leaf that has built up over the spring and early summer.

Ewes drying off or dry ewes in good condition should be used to graze the pasture tightly (3.5 to 4cm) after the lambs. Cleaning out the pasture ensures good quality grass is available for the next rotation. The impact of clover on lamb growth rate is also evident from these figures. The figures presented in Table 4 relate to the period from weaning to sale.

In 2014, lambs on the research / demonstration farm at Teagasc Athenry grew at 154 and 137 grams per lamb per day after weaning for the 10 and 12 ewes per hectare groups respectively. However, in early summer, higher growth rates are achieved from grass alone. Figures from the BETTER Farm programme show that lambs can grow typically at 250 g/day in the weeks immediately after weaning, with this declining to less than 100 g/day by November.

Conclusion

Farmers should weigh all of their lambs on a number of occasions to check how they are performing. As a simple alternative, a small proportion of lambs should be selected, at random. These should be weighed and clearly marked so that the same lambs can be selected for weighing again after a number of weeks. This will allow you to calculate growth rate per day.

If performance is falling short of target, questions should be asked and adjustments made to redress the situation.

Each five percentage point increase in silage DMD increases ewe weight post-lambing by 6.5kg and increases lamb birth weight by 0.25kg.



Nutrition during late pregnancy

– the foundation for profitable prime lamb production

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



Birth weight is a major factor influencing lamb viability

Ewes which receive optimum nutrition during mid and late pregnancy will produce vigorous lambs which are close to, or at, the optimum birth weight. Having given birth, the ewes will have adequate colostrum. The result? Lower lamb mortality and increased performance which in turn reduces the workload around lambing. The outcome? Higher productivity and greater profit for the farmer.

My objective in this article is to summarise results from recent studies at Teagasc Athenry on the effects of the plane of nutrition offered to ewes during late pregnancy on their performance and that of their lambs.

Birth weight

The birth weight of lambs influences subsequent growth rate and, consequently, weaning weight. Studies at

Teagasc Athenry have shown that for each 0.5kg increase in lamb birth weight, subsequent weaning weight increases by around 1.7kg. The increased weaning weight is due to a combination of the increase in birth weight per se, plus increased growth rate.

Birth weight is a major factor influencing lamb viability. The effect of lamb birth weight on lamb mortality is shown in Figure 1 (page 24).

Optimum lamb birth weight is influenced by litter size (single, twin, triplet, etc). Regardless of litter size, as lamb weight increases mortality declines initially but reaches a plateau at the optimum birth weight, which varies by litter size. As birth weight increases above the optimum, lamb mortality increases again – probably reflecting difficulties immediately prior to and during delivery. The optimum birth weight, based on lamb mortality, for lambs born as singles, twins and triplets is 6.0, 5.6 and 4.7 kg, respectively. Thus, the optimum birth weight for lambs born as twins and triplets is 0.93 and 0.78 times that of singles.

Lamb mortality is also influenced by litter size. For lambs born as singles, twins and triplets mean lamb mortality is 6%, 7% and 21% respectively. As flock prolificacy (average number of lambs/ewe) increases, lamb mortality will increase.



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Variability in feed value of silage

The chemical composition of silage produced in Ireland and offered to livestock in the winter of 2015-2016, as analysed by the Hillsborough Feeding Information System, is summarised in Table 1. Silage composition is extremely variable as indicated by the data for concentration of crude protein and DMD. Silages with low digestibility (DMD) result in lower intake. The poorer quality silages would not even support animal maintenance.

Digestibility (DMD) is the most important characteristic of grass silage because it is positively correlated with energy concentration and intake. While the mean DMD for silage produced in Ireland in 2015 was 69.2% DM, the DMD of the best and worst silages were 82% and 52% DM, respectively. Consequently, when developing a nutritional plan for ewes in late pregnancy, it is essential to know the feed value of your silage.

Studies were undertaken at Teagasc Athenry to evaluate the effect of silage digestibility on the performance of pregnant ewes, and of their progeny until weaning at 14 weeks. The main results are presented in Table 2. The results of these and other studies show that when silage is offered to ewes during mid and late pregnancy, each five percentage point increase in silage DMD increases ewe weight post-lambing by 6.5kg and increases lamb birth weight by 0.25kg.

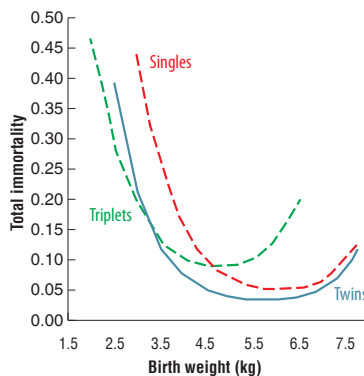
Another way to evaluate silage feed value is to determine how much concentrate is required to yield lambs of a similar birth weight. In a study at Teagasc Athenry (Table 3) ewes that were offered a high feed value (high DMD) grass silage and supplemented with 5kg concentrate (soya bean meal, plus minerals and vitamins) produced lambs that were heavier than the lambs from ewes offered a medium feed value silage supplemented with 20kg concentrate. The high feed value grass silage enabled concentrate supplementation to be reduced by at least 75%.

Concentrate requirement

The effects of concentrate feed level and silage feed value on lamb birth weight and ewe condition score at lambing are presented in Table 4. For ewes offered the 70% and 75% DMD silages, increasing concentrate feed level above 15kg and 25kg, respectively, had no effect on lamb birth weight but increased the ewe condition score.

The effects of silage feed value on the concentrate requirement of twin-bearing ewes in late pregnancy are presented in Table 5. Concentrate

Figure 1: Relationship between lamb birth weight and mortality



requirement is influenced by both silage digestibility and the harvest system (chop length). Silage DMD has a greater effect on concentrate requirement than chop length per se. The rate of increase in the required level of concentrate supplementation rises as silage digestibility (DMD) decreases.

Furthermore, as silage chop length increases, the quantity of additional concentrate required increases because intake declines. For example, for silages at 79% and 65% DMD, an additional 4kg and 10kg concentrate are required respectively for long chop-length silages, compared with precision chop silages. The concentrate requirements presented in Table 5 can be reduced by 5kg/ewe in the case of single-bearing ewes, while concentrate supplementation should be increased by 8kg for ewes carrying triplets.

Concentrate protein

For prolific flocks, the concentrate should be formulated to contain 190g of crude protein per kilogramme (i.e. 19% crude protein) as the grass silage on many sheep farms has a low protein concentration. Some commentators within the industry suggest formulating low- and high-protein concentrates for feeding to ewes during the second last and last three-week periods of pregnancy, respectively.

However, considering the size of most sheep flocks in Ireland and the fact that ewes are offered low levels of concentrate during the first two to three weeks of supplementation, together with the low protein concentration of grass silage on most sheep farms, the savings from using two different concentrates is, at best, marginal.

Where maize silage is offered as the forage, concentrate crude protein should be increased to 23%. Also, as maize silage normally has lower concentrations of minerals and vitamins, mineral and vitamin supplementation



should be increased by approximately 50% during late pregnancy.

In a recent study at Teagasc Athenry, the effect of concentrate protein source offered during late pregnancy on the performance of ewes and their progeny was examined. Two concentrates were formulated to have the same metabolisable energy (12.4 MJ/kg DM) and protein concentrations (18% as fed). The protein sources in the concentrates were either soya bean meal or a mixture of by-products (rapeseed, maize distillers and maize gluten).

Lambs born to ewes that had been offered the soya bean-based concentrate were 0.3kg and 0.9kg heavier at birth and weaning, respectively, than lambs born to ewes offered concentrate that contained by-products as the protein source. The increase in the weaning weight of lambs from ewes offered the soya bean-based concentrate in late pregnancy (extra cost ~ €0.50/ewe) is similar to the response obtained from offering each lamb 6kg of creep concentrate until weaning (cost ~ €3/ewe per set of twins).

Concentrate offered to ewes in late pregnancy should be formulated using ingredients that are good sources of protein, energy and fibre.

The ingredient composition of the concentrate which will be offered to ewes during late pregnancy at Teagasc Athenry is presented in Table 6.

The concentrate was formulated to contain 19% protein using good



Ewes which receive optimum nutrition during mid and late pregnancy will produce lambs close to, or at, the optimum birth weight.

protein (soya, rapeseed), energy (maize, barley) and fibre (beet pulp, soya hulls) sources. While concentrate price is important, it's worth bearing in mind that when offering similar levels of concentrate to ewes during late pregnancy as is offered at Teagasc Athenry, a reduction in concentrate price of €20/t equates to a saving equivalent of only 40c per ewe.

Concentrate feeding management

To optimise the use of concentrate, ewes should be penned according to predicted litter size (based on ultrasonic scanning) and expected lambing date (mating date – raddle colour).

As the demand for nutrients increases in late pregnancy, supplementation should be stepped up weekly over the weeks immediately prior to lambing. When supplementing ewes, the objective is to produce lambs at the optimum birth weight (which will be delivered unassisted) and ewes with adequate supplies of colostrum.

The feed schedules required to deliver different concentrate feed levels, varying from 10kg to 45kg per ewe in late pregnancy, are shown in Table 7. During the week prior to lambing ewes receive up to 1kg daily, clearly illustrating the benefits of penning ewes according to expected lambing date as well as expected litter size. For example, for each extra week ewes are on the high level of concentrate supplementation, they would consume approximately 7kg concentrate, dramatically increasing concentrate usage.

Table 1: Chemical composition of silages ensiled on Irish farms in 2015

	Minimum	Maximum	Average
Predicted silage DM intake (g/kg W ^{0.75} per day)	50	105	79
Crude protein (g/kg DM)	8.0	19.3	11.2
Dry matter digestibility (DMD)(g/kg DM)	52.0	82.0	69.2

(Hillsborough Feeding Information System 2015)

Table 2: The effects of grass silage feed value in late pregnancy on ewe and subsequent lamb performance

	Silage feed value	
	Medium	High
Dry matter (%)	23.0	25.9
DMD (%)	70.2	76.5
Animal performance		
Ewe weight post lambing (kg)	58.7	66.7
Lamb – birth weight (kg)	4.4	4.7
- weaning weight (kg)	30.5	31.7

(Keady and Hanrahan 2009, 2010, 2012a)

Table 3: The effects of grass silage feed value and concentrate feed level in late pregnancy on ewe and subsequent lamb performance

	Silage feed value		
	Medium	5	High
Concentrate (kg/ewe in late pregnancy)	20	5	20
Silage DMD (%)	73	79	79
Ewe weight post lambing (kg)	61.4	70.4	73.6
Lamb - birth weight (kg)	4.6	4.9	5.1
- weaning weight (kg)	32.9	34.0	34.7
- gain – birth to weaning (g/d)	292	301	306

(Keady and Hanrahan 2009)

Table 4: The effects of concentrate feed level in late pregnancy on lamb birth weight and ewe condition score (CS)

Concentrate offered during late pregnancy (kg/ewe)	Silage DMD	
	70 (CS)	75 (CS)
5	-	4.8 (3.4)
15	4.7 (3.1)	5.0 (3.7)
25	5.2 (3.3)	5.1 (3.8)
35	5.4 (3.5)	-
45	5.3 (3.8)	-

(Keady and Hanrahan 2010)

Table 5: Effects of silage quality on concentrate requirements of twin-bearing ewes in late pregnancy

	Silage DMD (%)		
	79	72	64
Precision chopped (kg/ewe)	8	17	25
Big bale/Single chop (kg/ewe)	12	24	35

Table 6: Ingredient composition of the concentrate that will be offered to ewes at Athenry

Ingredient	kg/t
Soyabean meal	200
Maize meal	190
Barley	170
Soya hulls	145
Beet pulp	100
Rapeseed	80
Maize distillers	40
Molasses	50
Minerals and vitamins	25

Table 7: Daily concentrate allowance (kg/ewe) required for different total concentrate inputs prior to lambing

Week prior	Desired total concentrate input prior to lambing (kg/ewe)					
	10	15	20	25	35	45
8						0.4
7					0.4	0.6
6		0.2	0.3	0.4	0.5	0.6
5		0.2	0.3	0.4	0.6	0.8
4	0.2	0.2	0.4	0.6	0.7	0.9
3	0.2	0.3	0.5	0.6	0.8	1.0
2	0.4	0.5	0.6	0.7	1.0	1.0
1	0.6	0.75	0.8	0.9	1.0	1.1

Note

- Each 0.5kg increase in birth weight increases weaning weight by 1.7kg.
- To develop an appropriate nutritional plan for pregnant ewes, it is critical to know the feed value of the silage being offered.
- The level of supplementation offered to ewes in late pregnancy should be based on lambing date, forage quality and expected litter size.
- Supplement with a concentrate containing 19% crude protein formulate using good protein (e.g. soya bean meal), energy (e.g. maize, barley) and fibre (e.g. beet pulp, soya hulls).
- Pen ewes according to expected litter size and lambing date to minimise concentrate usage.

Tillage groups – asking the awkward questions

Support for new tillage groups is welcome but members will only get the maximum benefit if they participate actively during the meetings

Barry Caslin

Renewable energy specialist, Teagasc Crops, Environment and Land Use Programme

Martin Bourke

Teagasc B & T tillage advisor, Tinahely

The Department of Agriculture, Food and the Marine's new Knowledge Transfer measure under the Rural Development Programme 2014-2020 proposes funding to support tillage farmers and energy crop growers. The scheme is designed to ensure that the farmers and advisor/facilitator engage in group discussion on key aspects of a farmer's business such as crop management, rotations and environmental sustainability with a very strong focus on integrated pest management (IPM).

Up until now, tillage has not been included under the Knowledge Transfer groups and, as a result, will not be subjected to the same criteria as existing livestock groups in having to diversify the groups and create new and varied membership.

Group approach

Experiences and research to date have shown unequivocally that there are significant benefits from attending group meetings. Farmers who

participate in discussion groups farm better and make more money.

Teagasc has been working with groups in the dairy and beef sectors for over 20 years. There is a clear difference between farm businesses which participate in groups and those that do not. Group participants are clearly influenced by visiting their neighbours and peers. They are influenced, often without even noticing it. As a result, they gradually adopt new approaches or make small changes in their businesses. Farmers operating in isolation are more likely to continue with a business-as-usual approach, which can lead to stagnation in output and profitability.

The advisory service takes messages from research and tries to deliver this as practical implementable advice for the farmer. Often the comments include: "That's all fine and well but that would not work on my farm." Such arguments are difficult to make when farmers are hearing it directly from another farmer with personal experience. Higher farm profitability follows from the adoption of modern farm practices.

How it works

Every group will have an approved facilitator (advisor) who will help to prepare a meeting and deal with any issues which may concern a host farmer. The facilitator will set out an agenda and make sure the meeting finishes on time. The facilitator will also present any research or technical data as required and will summarise the topics discussed at the end of the meeting.

Groups generally select a chair who informs the other group members of upcoming meetings. The chair can also be an important conduit, relaying the group's issues to the facilitator. The group should plan out meetings and create a schedule to ensure



maximum participation. Most groups also set out key rules and objectives and decide at the end of each meeting where the next discussion group meeting will take place. Groups, by their nature, start off being somewhat reserved, but experience shows that most groups get very close after a couple of meetings. It's at this stage that effective knowledge transfer occurs.

Requirements

The new programme will run for three years and will follow a similar format to previous discussion group

Farmer's viewpoint

Angus Woods



Angus Woods

Angus Woods who farms 120ha in east Wicklow is a member of the Teagasc East Coast Tillage Discussion Group. His farm includes a suckler-to-beef enterprise, mid-season lamb production, and winter and spring cereals. Angus is an active participant in three different discussion groups: one for beef, one for sheep and one for tillage.

"Seeing is believing," he says. "It's only when group members visit other farms and see what other farmers are doing, that they adopt some of the new things they see." For example, his sheep group was one of the first to see the benefit of rearing triplet lambs on artificial milk. Cost-saving and labour-saving ideas are a common theme to many debates.

Angus believes outside speakers contribute enormously to successful group meetings. "Honest and open discussion and debate is a good thing," says Angus. He strongly feels that farmers shouldn't just sign up to get the €750. He believes that there is an onus on the participants to be receptive to other farmers' ideas.

"We should avoid 50/50 groups," he says. "What I mean is that if 50% of the farmers in the group are genuinely in it to learn and listen to new knowledge, and the other 50% are only in it for the €750, and don't engage in the discussion, then the group doesn't function so well."

Technology uptake is going to be vital in the years ahead. Angus also



Angus Woods has extensive experience of livestock discussion groups and says that the concept will work well for arable farmers providing members engage fully.

commented that a range of personalities within the groups is a good thing. "You always need someone to ask the awkward, or maybe the simple, question that everyone else would like to have asked!"

"Knowledge transfer groups are unquestionably a good thing for your farm business regardless of your mix of enterprises," Angus concludes. "But like most things, you only get the best out of them if you fully engage," he says.

schedules. All participants will also be required, following one to one discussion with the advisor, to complete a tailored farm improvement plan (FIP) including:

- Profit monitor.
- Integrated pest management survey/crop monitoring.
- Nutrient balance.
- Safety statement.

Over the period of the programme, advisers will be required to hold a meeting on health and safety with a recognised expert in attendance. Each participant will be required to attend a minimum of five knowledge

exchange meetings or four meetings and one national event, facilitated by a DAFM-approved advisor.

Payment

Participating farmers will be paid a total of €750 annually for each of the three years they successfully complete. The advisors will be required to spend a total of 12 hours over the period of the programme directly engaging with the farmer in the completion and updating of the FIP. The advisor is responsible for verifying the completion of all aspects of the farmers' participation.

How to apply

Approved advisors will notify the DAFM of the establishment of a group.

The significant change from previous knowledge transfer funded groups such as STAP and BTAP is that advisors' groups will be ranked in the case of oversubscription with advisors only being awarded the number of groups that they qualify for.

If you are interested in getting involved in the new tillage knowledge groups you should contact your advisor immediately to express an interest.



Collaboration? take the broad view

Collaborative farming arrangements include registered partnerships, contract heifer rearing, share farming, cow leasing and land leasing

Thomas Curran
Farm Structures Specialist,
Teagasc Rural Economy
Development programme

Whether it's a partnership or contract rearing, all collaborative farming arrangements involve people working together for mutual benefit. The working relationship between the people involved is the engine room and the key to success. It needs to be managed and nurtured at all times.

At the beginning, the key question for any farmer considering a collaborative arrangement is simple: Why am I doing this? Why do I want to get into a collaborative arrangement? Is it for lifestyle, economic reasons, increased labour, shared workload, reduced isolation, expansion opportunities, reduced capital investment, or to facilitate off-farm work?

It is important for farmers to be clear about the issues around these questions and to answer them for themselves and their families.

Personal circumstances

The personal circumstances of a

farmer can often be a key motivator when considering a collaborative arrangement. It may involve the stage of life of the farmer. The need for more time to devote to a young family. The presence or absence of a successor in the mid- to late-stage of a farmer's career. Inadequate size of farm or scale of operation to provide a living for the family. Collaborative farming can offer solutions to these issues.

Changing mindset

Forming a collaborative or joint farming venture is a major change on the part of the people involved. Farmers need to change their way of thinking from "I and me" to "us and we". For example, decisions in the arrangement will be taken not for my business but for our business.

So, how do you go about identifying a person to collaborate with? The key is to recognise that a potential collaborator is a "person" and not simply an asset source. Many farmers look on other farmers as an asset source that may be of value to their business. In order to form a successful collaborative arrangement, you must take a broader view.

Figure one on page 30 illustrates the areas that each farmer should consider in a collaborative arrangement for both themselves and for the person they are considering forming a collaborative arrangement with.

Approaching it this way will tune the farmers into their potential collaborator and themselves.

Core Values

A prerequisite for successful collaborative arrangements is that they are based on strong core values, including: good communication; a positive attitude; transparency; trust; respect



and flexibility. These values are established as two farmers consider an arrangement but are reinforced during the formation of an agreement and throughout the lifetime of an agreement. Without these core values, the arrangement will never get off the ground.

Personality

Everybody has a different personality. Some people can work very well together; some people cannot work together and others can work successfully together when the daily work is well structured. A collaborative

arrangement does not require people to work side by side at all times. By using this approach, different personalities can work successfully together.

It is a useful for each farmer considering a collaborative arrangement to do a personality profile. This will help to establish what your values are. Are you a person that someone else could work with?

Take a simple example. If you are a person who does not place a lot of importance on a farm being tidy, then someone who does is unlikely to be a suitable collaborator or vice versa.

The ability to see the big picture and

the positives of collaborating with another farmer must be to the fore in the thinking of each perspective partner.

A positive, can-do attitude is vital. There will be many hurdles to overcome in putting an arrangement together and problems arise when these personality traits really come into their own.

It has to be recognised that some people are just not suited to collaborative farming. This is more often than not down to their inability to see the real advantages to the combined business and change their mindset



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away from thinking only about “me” and “my business” to “us” and “our” business”.

Compatibility

Establishing whether two people can work together is often tricky but is hugely important to the success of a collaborative arrangement. Where there is a previous working relationship, compatibility, or lack of, has probably already been established.

A common theme to the many successful partnerships in operation is that there was a previous working relationship of some sort. For example, in the Kiltallagh/Rinkinstown partnership, Andrew Purcell and Alf McGlew helped each other out with milking as the need arose. The relevance of this is that there was a lead-in period of cooperation.

Other relationships can include having been a member of the same discussion group where the people involved had the opportunity to get to know one another. Where they could establish if they had similar goals, were trustworthy, honest, flexible in their approach and hard working.

In situations where people are coming together without a previous working relationship, compatibility can be established during the exploration and formation stages of putting an agreement in place.

Farmers considering a collaborative option such as a partnership can establish early on whether they have common goals, outlooks, plans for the future, and systems of farming.

Skills

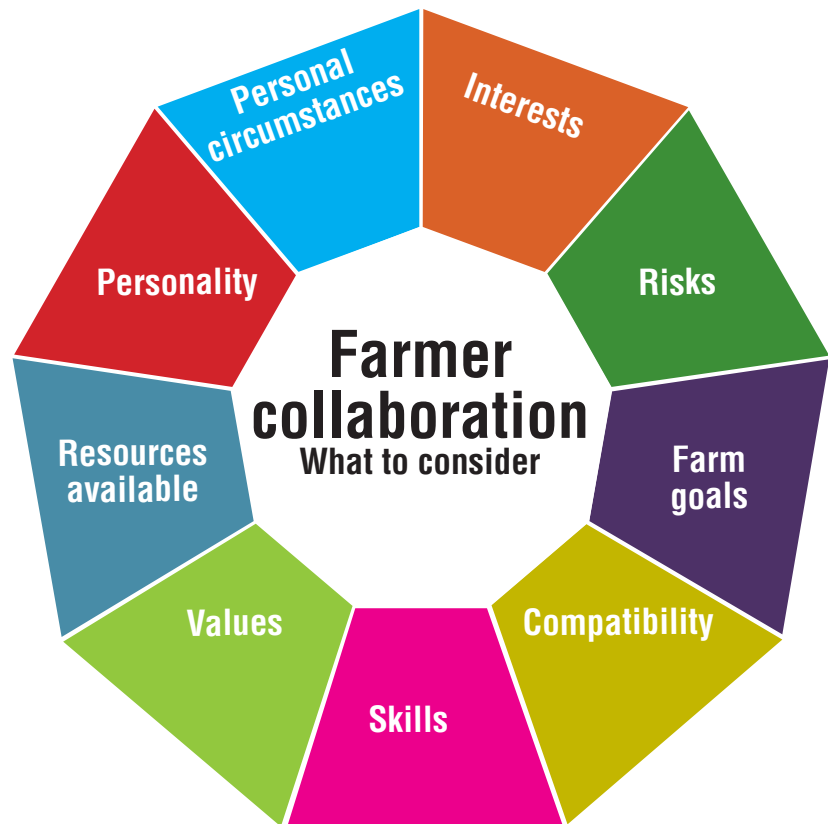
We all have things we are good at doing and things we are not so good at doing. When two farmers are preparing to form a collaborative arrangement, you get a greater mix of skills.

It is vital that a collaborative arrangement utilises all the skills that are available to it through the people involved. This can be done by putting a work structure in place that maximises those skills. A recent trip to France to look at joint farming ventures (GAEC's) in practice left a lasting impression on me about the strong emphasis placed on skills and skillsets that are of value to the businesses involved.

Skills can include business skills, technical skills and people skills. These can be itemised further by doing a skills audit. Farmers considering a collaborative arrangement should do a skills audit by listing their various skills and rating themselves on how good they are at carrying out these skills.

Surveys carried out by Teagasc in

FIGURE ONE: What to consider before entering into a collaboration



the past have shown that decision making can be better on farms in partnership due to the mix of skills available.

Personal Interests

Personal interests can be of benefit to the arrangement as they often lead to an eagerness to gain skills that are of benefit to the arrangement. Examples of this would include taking a strong interest in financial management, breeding or grass measurement.

Farm goals

Farm goals need to be aligned for any arrangement to be successful. If expansion is a priority, both farmers need to be fully on board with this from the outset as it will involve big decisions that have to be made in terms of capital investment etc. Other examples would include setting targets for technical and financial efficiency.

Resources available

The resources available to each farmer are important to the overall mix. They may determine whether a collaborative arrangement is a runner from an economic point of view or not. In other words, are there sufficient resources to provide two farm incomes to the parties involved? Resources include: stock, land, buildings, machinery, labour and access to capital.

Risk

Risk exists in any business and it is an integral part of daily farming life. The main risk in relation to collaborative farming is: what happens if the arrangement is dissolved?

Risk must be weighed up in the context of the many potential benefits of collaboration but it can be managed two ways:

- By drawing up a written agreement that clearly spells out how the arrangement is to be dissolved. This should be done at the outset and not at the point of dissolution.
- Nurturing the core values referred to in this article and the working relationship between the parties during the lifetime of the arrangement.

In summary, if you are considering a collaborative arrangement, take a broad view. Look at your potential collaborator as a person. Always treat them with respect and dignity. Value their skills and listen to their opinions. Look at the arrangement from your own perspective but also seek out and try to understand the perspective of your potential collaborator. Take your time when preparing a robust and clearly written agreement.

Templates are available on <http://www.teagasc.ie/collaborativearrangements/>. Teagasc advises all farmers to seek taxation advice and independent legal advice during the formation of agreements.

Sprayer testing: what you need to know

Sprayer testing is good for the environment and good for your pocket

Tom Ryan
Machinery specialist, Teagasc Rural Economy Development Programme



All boom sprayers greater than 3m and orchard/blast sprayers must be tested by 26 November 2016

Sprayers play a key role on many farms. On a larger crop farm with 100ha of winter wheat and 80ha of spring barley, the sprayer is tasked with applying €41,000 of plant protection products, annually, to crops worth €270,000. Even a 40ha spring barley grower typically applies more than €6,000 of product through a sprayer annually. To get the best return from these expensive products, they must be applied evenly to the crop, at the correct rate, without loss as drift, leaks or run-off. To achieve this, a properly functioning sprayer is needed and the operator needs to be able to set and operate it correctly.

The Sustainable Use Directive was introduced by the European Union to achieve the sustainable use of pesticides. The Department of Agriculture, Food and the Marine (DAFM) has the task of implementing the Sustainable Use Directive in Ireland. The directive requires Ireland and other member states to take action to regulate the use of pesticides and to put certain controls in place to make the use of plant protection products more sustainable. Each member state was obliged to adopt a National Action Plan. The plan sets out a national strategy for sustainable use of pesticides. Ireland's National Action Plan is in progress and consists of four broad areas, with actions in each area, as follows:

- **Training, education and information exchange:** advisors, distributors and professional users must attend training courses and a register of each has been established.
- **Controls on application equipment:** Sprayers must be tested and certified and a register of sprayer inspectors has been established.
- **Controls on storage, supply and use:** Introduce storage standards for wholesalers, retailers and professional users of professional products and

for wholesalers of amateur products. Guidance is being given on the safe storage of pesticides in the home/garden situation. Enhance awareness and use of buffer zones, safeguard zones and further restrict pesticide use in sensitive and designated areas.

• **Integrated pest management (IPM):** Adopt the principles of IPM with the assistance of advisors and professional users.

The focus in this article is on the requirement to test sprayers. All boom sprayers greater than 3m and orchard/blast sprayers must be tested by 26 November 2016. After this date, only sprayers that have passed the test can be used to apply professional products.

The test is not particularly difficult. Most sprayers in good condition should pass if prepared, or minor repairs may be needed (e.g. new nozzles or new pressure gauge).

Some sprayers in very bad condition may not justify repair and in this situation if a replacement sprayer is not justified, using a contractor should be considered.

For some grassland farmers, this may be a sensible option as it avoids the need for operator training and sprayer testing.

Sprayers must be tested and certified and a register of sprayer inspectors has been established.



Continued on next page

» From page 31

New sprayers need not be tested until five years after purchase.

The boom on some ATV sprayers is wider than three meters. To confirm the length of the sprayer, multiply the nozzle spacing by the number of nozzles, e.g. seven nozzles x 0.5m spacing = 3.5m. This indicates that it needs to be tested.

So, how soon is the next test due following the initial test? Tests completed before 1 January 2020 will be valid for a maximum of five years and will expire, at the latest, by 1 January 2023. Tests completed after 1 January 2020 will be valid for a maximum of three years.

Table 1 shows when the next test is due for sprayers tested between 2014 and 2022. The date (i.e. day and month) of retesting will be the same day and month as the previous test with the exception of those completed in 2018 and 2019, all of which must be re-tested by 1 January 2023.

Over the last two years, Teagasc has been working closely with DAFM in providing training courses for those interested in becoming sprayer inspectors. A register of pesticide equipment inspectors, approved to date, is on the DAFM website. <http://www.pcs.agriculture.gov.ie/sud/equipmentinspectors/>

At present, there are 36 on the register but that number is likely to double over the coming few months. Keep an eye on the list to see if someone local is providing this service and book a test.



The nozzles are the most important parts on the sprayer. The flow rate of each nozzle must be checked to ensure that it is correct

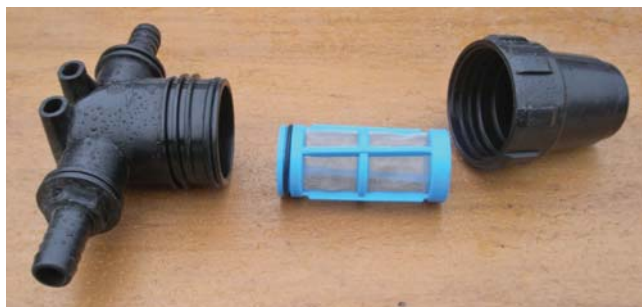
Preparing a sprayer for the test

Presenting the sprayer properly for the test will go a long way in helping to get through successfully. It will also help to reduce the cost of the test because it won't take as long. Before the test, ensure that the PTO is fully guarded and the sprayer is attached to the tractor.

The sprayer should be completely clean, inside and out, including basket, suction, pressure and nozzle filters. It should be full of clean water and ready for the test when the tester arrives. There should be a suitable hard standing area for the test. The sprayer operator should stay with the tester to operate the controls and generally speed up the process.

Testing process

The basis of any testing process is to carry out the tests, record the results on a test report, interpret the results and make recommendations and carry out repairs and any necessary maintenance. In addition, a copy of the test report must be given to the



Filters must be clean, undamaged, with changeable filter inserts and free from leaks.



The pressure gauge must be accurate, be easily readable from the driver's seat and have scale markings of at least every 0.2-bar up to five-bar.



Structural parts of the framework must be in good condition, with no permanent deformation and no significant corrosion or other defects. The strength and rigidity of the sprayer and the hitching device must not be affected. Locking of foldable parts must be secure.

Table 1: Due date of retest for sprayers tested between 2014 and 2022

Year tested	Year/date next test is due
2014	2019
2015	2020
2016	2021
2017	2022
2018	1 January 2023
2019	1 January 2023
2020	2023
2021	2024
2022	2025

Boom

The boom must be in good condition and stable in all directions. The boom should be straight and level and the unfolding mechanisms and break-back devices must function correctly.

Controls

All devices for regulating the flow and adjusting the pressure must be present and working properly. The on/off handle and boom section taps must be present and working properly. There must be no leaks from the controls or manifold they are mounted on.

Pipes and hoses

Pipes and hoses must be clean and in good condition to avoid restricting the flow of spray liquid or accidental spillage in case of failure. There must be no leakages from pipes or hoses, when run at a few bars above the normal spraying pressure.

Leaks

A sprayer with leaks will not pass the test. Leaks usually show up quickly when the pressure is increased a couple of bar above the normal spraying pressure. They are usually easy to fix by adjusting, cleaning, tightening couplings and fittings, repairing cracks or replacing “o” rings, etc.

Benefits of testing sprayers

One might think that a sprayer test is more trouble and expense foisted on us. But it is better to focus on the benefits of having your sprayer working correctly, capable of applying plant protection products evenly and at the right rate. A sprayer in good condition will ensure that no underdosing or overdosing will occur, resulting in less waste and better control ensuring ongoing savings and less risk of damage to the environment.

The risk to the health and safety of the user and others is controlled with a sprayer that has passed the test.

The possibility of pesticide getting into water courses or waterbodies, from spills or inaccurate spraying can be reduced by having sprayers in good condition. This will help to guarantee the continued availability of these products. The sprayer test verifies that the sprayer is in good condition.

sprayer operator/owner.

The sprayer tester must upload the details of the test on the DAFM website. A numbered and dated DAFM sticker must be attached to the sprayer, as well.

As well as testing the sprayer, the tester is allowed to carry out any servicing or replacement of worn or damage parts. There is no obligation on the sprayer owner to get them to do this. They can take on the job themselves or get someone else to do it. However, it would seem more straightforward to get it tested and fixed up all in one go.

Pressure gauge

An accurate pressure gauge is essential if you mean to apply plant protection products accurately. The gauge must meet certain requirements to pass the test. It must be accurate, the right size (at least 63mm diameter), be readable and have the correct scale markings. Gauges are relatively inexpensive, so if it fails the test it should be replaced with a new one before continuing the test. The new one should be checked also to see if it is accurate.

Nozzles

The nozzles are the most important parts on the sprayer. The flow rate of each nozzle must be checked to ensure that it does not deviate much (not to exceed +/- 10%) from the flow rate tables provided by the nozzle manufacturer.

As nozzles wear, their flow rate increases and the evenness of the spray pattern deteriorates. The test will determine the level of wear and whether or not they are due a change. Before the test, make sure that all the nozzles are the same along the boom and that there are no leaks, blockages or streaks in the pattern.

Filters

There must be a filter on the pressure side of the pump and most sprayers need to have a suction filter as well. Filters must be clean and undamaged. Filter inserts must be changeable and mesh size appropriate for the nozzles fitted to the sprayer. It must also be possible to clean the suction filter without spillage of any tank contents if it gets clogged while spraying. There must be no leaks from filtering units.

A new era in nutrient management planning

Pat Murphy
Teagasc Crops Environment and Land Use Programme

Over the last two years, Teagasc has been developing a new system, NMP Online. The system has the potential to greatly improve nutrient management planning on Irish farms. It is being introduced in early 2016 and will be used to provide nutrient management plans for farms applying for a nitrates derogation and for participation in GLAS. However, the ambition for the system goes further than scheme compliance – the goal is to radically improve nutrient management and fertiliser efficiency.

Improving nutrient management has been identified as a key target within Food Harvest 2020 and Foodwise 2025 for three main reasons. Firstly, the production targets set out in these plans requires good levels of soil fertility on Irish farms. Secondly, the challenging obligations for greenhouse gas emissions reduction will require a significant improvement in fertiliser efficiency and other changes in practice aimed at reducing nitrous oxide emissions. Thirdly, 10 years on from the introduction of the Water Framework and Nitrates Directive measures, a considerable gap still remains between the current status of Irish waterbodies and the targets set. Failure to deliver on these key environmental objectives is likely to lead to increased regulation, which will affect farmers' income.

Good overall fertility

Soil analysis results carried out by Teagasc reveal an alarming statistic: only one in 10 of the soils tested could be described as being of good overall fertility. This is defined as having a soil P index of 3 or 4, a soil K index of

3 or 4 and a pH of 6.2 or greater.

Worryingly, this has fallen in recent years. Regulation is often blamed for the fall in fertility. However, it isn't quite that simple. Breaking the overall figure down reveals the following:

- 54% of soils are below index 3 for phosphorus.
- 50% of soils are below index 3 for potassium.
- 65% of soils are below pH 6.2.

Of the three components regulation only applies to phosphorus. Farmers are not limited in relation to potassium and lime application. In reality, falling fertility can be put down to a combination of regulation, high fertiliser prices, pressure on income and a general failure to put in place sustainable nutrient management practices at farm level.

Of particular concern is the fact that the most rapid declines in soil fertility have occurred on the most productive farms. For example, on dairy farms in Co Cork, only 10% of samples are at optimum level.

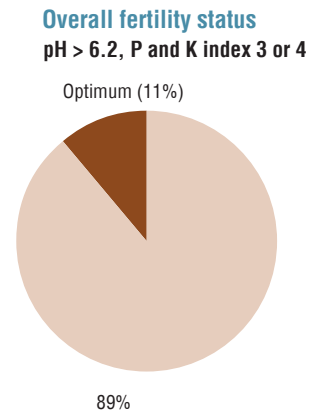
Informing better practice

NMP Online focuses firstly on providing better baseline information for farmers to understand the issues and challenges relating to soil fertility on their own farms. Based on the soil samples and analysis carried out for the plan, an assessment of soil fertility is provided. This assessment looks at overall farm fertility status and breaks it down into its component parts. In the example presented in Figure 1, only 7% of soils are of good overall status. In the pH, P and K charts the darker colour represents the proportion of land achieving required levels. In this case, it is clear that the key problems that need to be addressed are soil pH and potassium levels. This analysis provides the basis for the fertiliser plan.



Figure 1

Soil fertility summary



Soil fertility index

NMP Online will introduce a new concept – soil fertility index. This single figure will estimate the percentage loss in crop yield on the farm arising from sub-optimal soil fertility. It will provide an indication of why achieving good soil fertility is important, while at the same time providing a basis for tracking performance over time and also for providing comparison between farms in a group setting. As well as the overall figure, an estimate of potential production loss for each of the individual nutrients is presented.

Losses in production v optimal fertility

Overall	pH	P	K
30%	20%	8%	15%

Key messages

- NMP Online is designed to be efficient and user-friendly by linking directly with existing data sources, such as mapping and animal number data from DAFM and soil results from soil laboratories.
- It delivers a range of outputs to meet multiple output needs.
- NMP Online will meet the statutory requirement for nutrient management planning, but its main objective is to facilitate improved uptake of effective nutrient management on Irish farms and, in doing so, to meet the dual objectives of increasing farm incomes and improving environmental outcomes.



Soil analysis results carried out by Teagasc reveal an alarming statistic: only one in 10 of the soils tested could be described as being of good overall fertility.

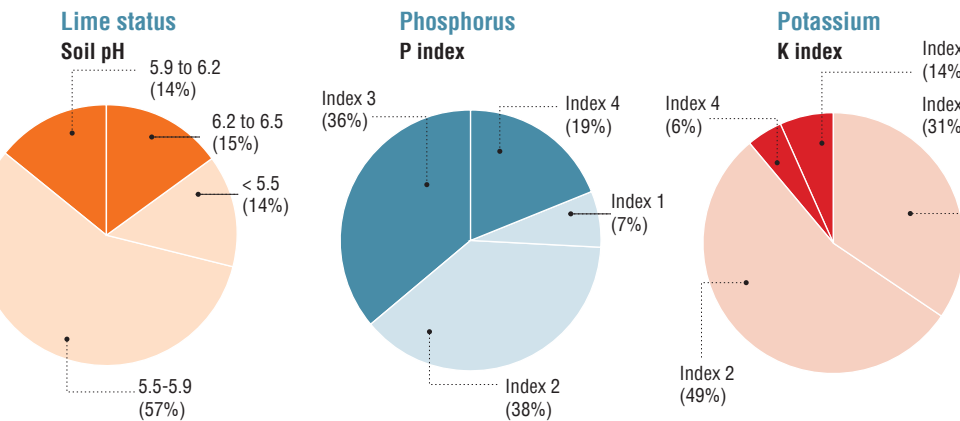
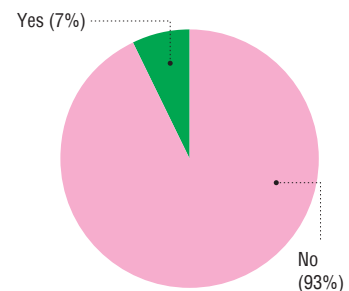


Figure 2

Good overall fertility
Soil pH > 6.2; soil P and K index 3 or 4



Your fertiliser plan

Understanding the soil fertility problems on the farm is the first step. Developing and implementing a practical and understandable fertiliser plan is the next step.

In the past, a nutrient management plan was all too often a regulatory requirement which, at most, set out limits for overall fertiliser use and was little used for guiding fertiliser application.

Developing a fertiliser plan which is usable has been the key challenge in developing NMP Online.

Calculating overall maximum levels of fertiliser, which can be used on the farm, is a key part of any nutrient management plan, but it is only the start. NMP Online develops a series of outputs in tabular and map format

to support implementation of the plan.

The first area of focus is lime. Based on soil analysis, a field-by-field liming plan is prepared. The potential duration of the plan can be four or five years. This is supported by a map-based output, which identifies the plots to receive lime and the amount to be spread.

Getting the best value from organic fertiliser is the key to effective nutrient management planning. Allocating slurry on the basis of requirement rather than convenience is vital. Once the organic manures are planned for plots, maps can be prepared which are colour-coded for nutrient status and have organic fertiliser recommendations indicated.

Preparing the plan for chemical

fertiliser is based on two key sets of data – regulatory maxima and recommendations base on stocking rates from the Teagasc Green Book.

The focus is on applying the appropriate amount of chemical fertiliser for the needs of the farm while staying within regulatory levels and making appropriate allowance for the use of organic manures. This provides a plot-by-plot fertiliser plan and an overall summary of chemical fertiliser requirement.

In addition to these capabilities, NMP Online facilitates the development of other components of detailed nutrient management plans such as the calculation of slurry/farmyard manure and soiled water produced, calculation of total farm storage capacity.

What's in it for me?

'Every forest is different' is the usual response from a forester when farmers ask how much a forestry crop will earn for them. But Teagasc computer models allow an estimate of the annual value generated by a forest

John Casey and Tom Houlihan
Teagasc Forestry Development
Department

When you are considering the permanent land use that is forestry, it is important to look beyond the most common premium category of €510 per hectare (ha) available for the first 15 years.

Gaining an appreciation of the potential financial returns from thinnings and clearfell is crucial, with much depending on the tree species grown, crop productivity (yield class) and the management regime. Timber quality, prevailing timber prices, ground conditions, extraction distances and road access will also affect the net revenue generated.

Optimum and sustainable management of your forest will yield handsome dividends. One of the main opportunities to increase profit arises when forests are ready for thinning, provided that there are no undue crop stability issues or risk of wind damage.

Depending on the productivity of the site, trees may be ready for thinning at any time from years 14 to 20. Forests are thinned, on average, every four to five years. As the average size of timber removed in thinnings gets larger with each successive thin-



Yield class provides an indication of potential forest productivity



ning, the revenue from thinning also increases. The crop is then normally clear felled at the end of the rotation and replanted.

Figure 1 shows the estimated cash-flow for Sitka spruce, yield class 24 and a crop rotation of 35 years.

Yield class provides an indication of potential forest productivity. A yield class 24 forest has the potential to increase its volume by 24 cubic metres per hectare each year over its 35-year rotation.

As you can see from Figure 1, one of the biggest issues for farm forest owners is that the harvest income arrives at periodic intervals, rather than on an even annual basis.

Annual average

In contrast, a farmer can compare the annual average gross margin per hectare (€/ha) produced by the various farm systems over a number of years (Figure 2), when he or she is considering changing or adapting their farming enterprise.

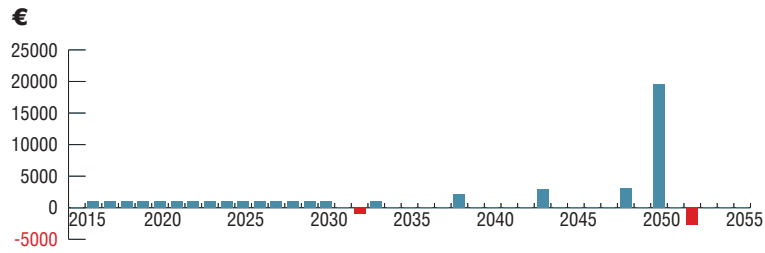
Figure 2 shows the comparable average gross margin per hectare excluding Single Farm Payment by farm system from 2012 to 2014.

Gaining an appreciation of the potential financial returns from thinnings and clearfell is crucial.



Figure 1

Estimated cashflow for 1ha of Sitka spruce



Source: Teagasc FIVE model

Figure 2

Comparable average gross margin (€) per hectare excluding Single Farm Payment by farm system, 2012-2014

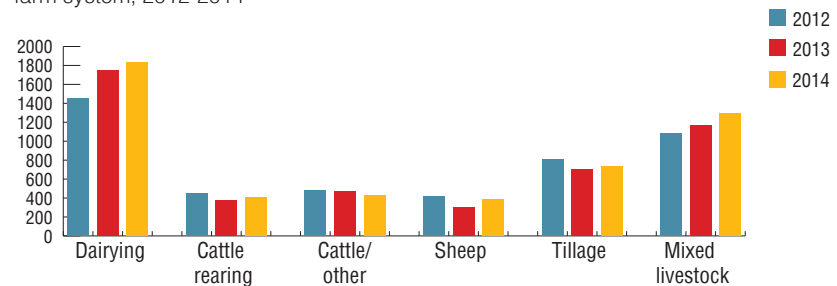


Table 1: Comparing timber crop value potential based on land-quality scenarios

Soil type	Grass/ rush wet, mineral soil	Less fertile rushy, peaty soil
Species	Sitka spruce	Sitka spruce
Growth rate (yield class***)	YC 24	YC 16
Crop rotation	35 years	40 years
NPV	€9,850/ha	€7,100/ ha
AEV**	€610/ha	€415/ ha

Source: Teagasc FIVE model



Can you directly compare potential forestry income with other farming enterprise incomes? **No**

Can you express the potential income from long-rotation forestry similarly to the annual income from traditional farming enterprise? **Yes**

Teagasc has developed the forest investment valuation estimator (FIVE) research tool, so that different forest crop rotations can be expressed on an annual per-hectare basis. This can be done by presenting the net present value (NPV)* of a forestry plantation as a series of equal cashflows over the forest rotation length, known as the annual equivalent value (AEV)**.

This indicative AEV figure (€) on a per-hectare basis can then be contrasted with the gross margin (€) per hectare per year for other farming enterprises. While this AEV can be used for indicative comparisons with gross margins, absolute comparisons are not appropriate.

The agricultural gross margins are historical figures while the forestry AEV is an indicative figure, based on a series of assumptions. Also, income from timber harvesting does not arrive on an annual basis.

Comparing potential forestry income from different land types

Even for a single tree species, the AEV figure will vary according to growth rate, rotation length, management history, etc. For example, the AEV for Sitka spruce at yield class 24 could be as high as €610/ ha, while the AEV for Sitka spruce at yield class 16 could be €415/ ha (Table 1).

These are indicative values and calculations are based on premium and timber sales revenues minus costs, including inspection paths, maintenance, insurance, roading and reforestation. These figures do not take into account that the Basic Payment Scheme entitlement payments continue to be available on eligible afforested land.

The largest financial returns arise where forestry replaces cattle systems on land that is limited for agriculture due to poor drainage but can produce

at least a yield class 18 Sitka spruce crop, and where sheep systems are replaced on land that is very limited from an agricultural perspective but can produce at least a yield class 14 forestry crop (Ryan et al, 2013).

Attitudes towards forestry are strongly linked with land quality and possible alternative land uses and income streams.

The AEV figure modelled by FIVE can aid a farmer in making indirect comparisons between more conventional land uses and the forestry option and can help him/her to make a more informed decision as to the best use of their land.

*Net present value (NPV) = total net value of timber crop over the rotation expressed in today's money.

**Annual equivalent value (AEV) = annualised value of timber crop in today's money.

Rain gardens

Given the weather we've had you could be forgiven for thinking that all gardens in Ireland are rain gardens but the name is a little misleading...

Donall Flanagan

lecturer at the Teagasc College of Amenity Horticulture in the National Botanic Gardens

These are gardens designed to allow the soak away of run off from hard paved areas. Instead of directing rain water to drains it is channelled in to these gardens, depressions where plants suited to (frequent) deluges and (occasional) dry spells, thrive. Imagine a car park with planted areas at a slightly lower level and you get an idea of the basic concept.

You expect to occasionally see water on the surface in these gardens from time to time but keep in mind they are not wetland or bog gardens, they can and should occasionally dry out. Plant selection can be native or "exotic".

Plants with deep fibrous roots will have a better chance of survival in this challenging growing environment. Many suitable ornamental plants happen to come from South Africa's Eastern Cape where they experience cool, wet winters.

Red hot poker, Montbretia and Kaffir lily are suited to all but the coldest parts of Ireland. Plants from closer to home include sedges, meadowsweet, bistort, flag iris etc. Native species are better at supporting biodiversity.

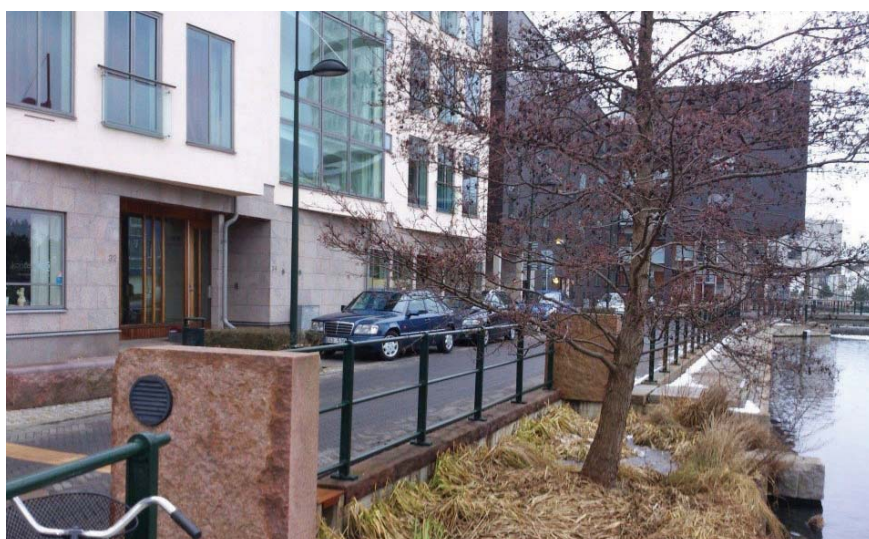
Bioswales

To you and me these are ditches but to planners these are "simple" systems to allow for water from streets and hard surfaces to be drained and cleaned.

Ornamental bioswales have a gentle incline from one end to another and are planted with grasses or short ornamental perennials. They help to



Award-winning apartments in Malmo, Sweden, use rain gardens in courtyards to drain water from hard surfaces.



Gardens are connected using bioswales that eventually discharge in to a canal.

trap sediment in the ditch as the water gently meanders along the length of its course before eventually joining with streams and rivers.

The swales have a gentle incline from the edge to the centre that allows for easier maintenance with mowers or strimmers at drier times of the year.

Constructed wetlands

These are manmade wetland areas that store and slowly release water to streams and rivers. Again, with water running off from hard surfaces and collecting in these basins are designed to expand as the level of rain increases and slowly allow sediment to settle and any nutrients to be used by plants growing in the margins. The scale could be from small garden ponds to the size of a football field or bigger.

Plants such as reed mace, reed canary grass, bulrush, water forget-me-not, water mint and flag iris etc. thrive in the margins and help to develop habitats for invertebrates, amphibians and birds.

These garden features can be used on their own or connected together to form a chain of treatment systems that can look attractive and can be low maintenance.

Teagasc is developing biodiversity features at many colleges and centres. As part of the expansion of the Teagasc Ashtown Campus students studying landscape construction and design from the College of Amenity Horticulture, Botanic Gardens, will be involved in the development of new gardens with biodiversity features. For further information on courses see http://www.teagasc.ie/training/courses/horticulture_courses.asp

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* *Mannheimia haemolytica*

GfK sales data July 2015

§ Anon 2014. AFBI/DAFM, All-island Animal Disease Surveillance Report 2013.

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