



Today's Farm

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



Why your grazing plan for 2017 starts now

24

Six possible pitfalls in your expansion plan

8

Safety: danger lurks in unexpected places

10

The future of your herd: healthy calves

12

How PastureBase can make you money

16

A country of two halves: winter feed planning

18

Producing cheese from sheep milk

21

Soil fertility for tillage

28

Planning is key to your business

30

Making your TAMS II payment claim

33

Adding value to farm and forestry produce

36

Courses in amenity horticulture: a modular approach

38

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4 Events

Dairying

- 6 National Dairy Conference 2016
- 8 Six possible pitfalls in your expansion plan
- 10 Safety: danger lurks in unexpected places
- 12 The future of your herd: healthy calves

Drystock

- 16 How PastureBase can make you money
- 18 A country of two halves: winter feed planning
- 21 Producing cheese from sheep milk

- 24 Why your grazing plan for 2017 starts now

Tillage

- 26 Focus on what you can control
- 28 Soil fertility for tillage

Farm management

- 30 Planning is key to your business
- 33 Making a TAMS II payment claim

Forestry

- 36 Adding value to forestry produce

Botanic gardens

- 38 Courses in amenity horticulture: a modular approach

COMMENT



Mark Moore
Editor,
Today's Farm

Seeing is believing

This summer, a dry spell exposed the weakness of the “sward” in my back garden. The percentage of fresh green grass had clearly dwindled. I decided to reseed. I stripped the “turf” from a rectangular area in the middle of the lawn, about 6m by 5m. I raked the heavy soil to create a seedbed.

Having limed, fertilised, seeded and irrigated, I watched anxiously as the “sward” emerged and established. I recently made my first ‘cut’ on the new patch. One run yielded three times as many fills of the mower as a comparable run on the pre-existing sward. Seeing first-hand the dramatic effect reseeding can have was an eye-opener. I can only recommend it!

Athnuachan: Taithí phearsanta

Thaispeáin seal triomaigh i rith an tsamhraidh cé chomh lag is a bhí an ‘bháinseach’ sa chúlghairdín agam. Ba léir gur raibh an céatadán d’fhéar glas úr tite. Chinn mé ar shíol féir a athchur! Bhain mé an ‘scaith’ de dhronuilleog thart ar sé mhéadar faoi chúig mhéadar i lár na faiche agus rinne mé an ithir throm a rácáil chun ceapach síl a chruthú. Leath mé aol ar an gceapach agus leasaigh mé í; ansin chuir mé an síol agus d’uiscigh mé é. Choinnigh mé súil inníoch ar an síol agus é i mbun fáis. Rinne mé an chéad ‘ghearradh’ ar an gceapach nua le deireanas. Bhain mé trí huair níos mó féir di leis an lomaire ná mar a bhaininn den cheapach chéanna roimhe sin. D’oscail sé na súile dom nuair ba léir dom tionchar ollmhór an athshíolaithe. Mholfainn é cinnte!

SOIL FERTILITY
Views on crop nutrition and production from the Teagasc National Soil Fertility Conference
>> 28-29



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Cover | Advisor Gabriel Trayers and Galway farmer Billy Gilmore discuss paddock management on Billy's sheep and cattle farm near Tuam.

Farm Hazardous Waste Collection Centres, Locations & Charges NOVEMBER 2016

Protect yourself, your family AND your farm!

Make your farm a safer place by using these low cost hazardous waste collection centres for the safe disposal of your farm hazardous wastes.

Milltown Mart, Kerry
Saturday, 12th November

Drumshanbo Mart, Leitrim
Wednesday, 16th November

Roscommon Town Co. Council Site (opposite Mart)
Saturday, 19th November

Delvin Mart, Westmeath
Tuesday, 22nd November

Ballybay Mart, Monaghan
Friday, 25th November


Drummonds Yard, Navan, Meath
Wednesday, 30th November


Collection centres will open from
9:30am to 3:30pm





For further information visit
www.epa.ie or LoCall: 1890 33 55 99

Guidance for farmers on handling, segregation, packaging & transporting

 **1.** Each waste must be clearly identifiable, segregated and packaged to avoid leaks during transport and off-loading at the 4 main operational areas:
A. Waste oils
B. WEEE & batteries
C. Hazardous waste
D. Empty containers.

 **2.** All needles and syringes to be delivered in a separate sealed container.

 **3.** Payment by cash, cheque or card required on the day.
All wastes will be rounded up to the nearest kilogram. Farmers will get a receipt and certificate of the transfer of the control of waste.

 **4.** Farmers are responsible for all their hazardous waste until the waste contractor confirms acceptance of the waste.

 **5. Wastes NOT ACCEPTED:**
a. Unidentifiable or mixed wastes
b. Silage wrap, fertiliser and feed bags, netting or twine (Recycle these by using your nearest IFFPG farm plastics recycling centre).

€2/KG (excl. VAT@ 13.5%)
- Pesticides and biocides
- Veterinary medicines
- Doses, dips, wormers
- Dry cow & mastitis tubes
- Needles and syringes
- Waste paints
- Aerosols
- Corrosives (acids, detergents)
- Oil and air filters
- Oily wastes
- Brake fluids
- Brake pads
- Antifreeze
- Adhesives
- Coolants
- Grease cartridges
- Creosote

FREE
Waste engine and hydraulic oil

FREE
- Waste Electrical & Electronic Equipment (WEEE)
- TVs
- Computers
- Fridges
- Freezers
- Power tools, kettles
- Fluorescent lamps & CFL's

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All batteries including tractor car, fence, portable

€4/KG (excl. VAT@ 13.5%)
All empty plastic & metal containers whether contaminated or not.

EMPTY TRIPLE RINSED PLASTIC CONTAINERS
Its cheaper to bring clean (triple rinsed) pesticides and dairy hygiene containers to your nearest IFFPG bring centre.
For more details go to www.farmplastics.ie or Tel: 01 4089966

**TECHNOLOGIES FOR SUCCESS:
TEAGASC NATIONAL DAIRY
CONFERENCE 2016**

• **Dr Tom O'Dwyer, head of Dairy Knowledge Transfer, Teagasc.**

The Teagasc national dairy conference 2016 takes place in the Rochestown Park Hotel, Cork on Tuesday 6 December and the Mullingar Park Hotel, Mullingar, on Wednesday 7 December.

See also article on page 6.

TEAGASC SCIENCE WEEK

- **Events run from 13 to 20 November 2016.**
- **Venue:** Teagasc locations nationwide.

A TASTE OF FOOD SCIENCE

The Teagasc Food Research Centre is hosting an open evening for the public on Thursday 17 November at their labs in Ashtown, Co Dublin.

- Free event.

- Register on eventbrite.ie
- See <http://bit.ly/tasteoffoodscience>

TALKING HARDWOODS

• **The Teagasc forestry development department is holding a hardwood marketing event on Tuesday 15 November, at The Manor Hotel, Abbeylax, Co Laois.**

Commercial broadleaf tree planting has been intensively carried out in Ireland since the early 1990s.

Many of these crops are now approaching harvesting. Quality is key in the production of valuable hardwood timber.

With this in mind, Teagasc is organising an event to bring together broadleaf growers and users of hardwood timber to help develop and stimulate the production of a hardwood market in Ireland. This will be a unique opportunity for both growers and the industry to participate in the development of the hardwood market.

During the event, the following issues will be addressed:

- The existing broadleaf resource.

- Producing quality timber.
- Harvesting practices.
- Existing and future markets.
- Market requirements.

This event will start with a demonstration of various hardwood uses from different industry users. Participants will have the opportunity to view quality Irish hardwood products.

It will be followed by short presentations from Teagasc and industry players on the management, uses and requirements of the hardwood industry.

There will be ample networking opportunities with hardwood organisations, users, contractors and timber buyers who will have a stand at this venue.

Teagasc looks forward to meeting you all on Tuesday 15 November.

Registration opens at 9.30am and the event will run from 10am to 2.30pm. This is a valuable opportunity to discuss hardwood uses.

The event is open to everyone with an interest in hardwoods. All are welcome to attend this free indoor event.

To find out more, contact Liam Kelly, Teagasc, on 087-909 0495. Visit: www.teagasc.ie/forestry/events.



The Teagasc forestry development department is holding a hardwood marketing event on 15 November.

TEAGASC NATIONAL DAIRY CONFERENCE 2016

Technologies
for success**Dr Tom O'Dwyer**

Head of Dairy Knowledge Transfer,
Teagasc Animal and Grassland
Research and Innovation Programme

The Teagasc National Dairy Conference 2016 will take place in the Rochestown Park Hotel, Cork on Tuesday 6 December and the Mullingar Park Hotel, Mullingar, on Wednesday 7 December.

While the tough spring challenged many dairy farmers, the good grass growth experienced on most farms for the remainder of the year has meant that most dairy farmers have managed through the low milk price. And, as the year closes, milk prices are at last moving in the right direction.

This conference provides an opportunity for farmers and agri-professionals to learn about new ideas, share information, get answers to questions, meet colleagues and, probably most importantly, be inspired to take action. Teagasc has organised a farmer-focused, practical conference and has invited a stellar lineup of speakers to take part.

“ This conference gives an opportunity to learn about new ideas, share information and get answers to questions

The theme of the conference is: “Technologies for Success” and each of the speakers will highlight important technologies that can be used on dairy farms by dairy farmers in an effort to manage that which they can control. Technologies which dairy farmers can use to improve their farm business performance are the focus of this year's event.

This year's conference follows the format adopted successfully at last year's event, with a mixture of lectures and workshop sessions.

In the morning, Dr Pat Dillon, head

of the Teagasc Animal and Grassland Research and Innovation programme will present the keynote address focusing on how Irish dairy farming is positioned, with a particular emphasis on future growth opportunities.

The second presentation will be by New Zealand dairy farmers, Pete and Anne Morgan. They will describe how they have built robustness into their dairy farming business. They are both enthusiastic about the sustainability of grass-based dairy farming.

The morning lectures will be rounded off with a panel discussion with three leading dairy farmers. They will discuss the critical success factors which are important to their farming businesses. For the Cork conference, the dairy farmers will be: Michael Gowen (Cork), Donald Bate-man (Tipperary) and John Phelan (Waterford). For the Mullingar conference the dairy farmers will be Eamon Fagan, Brian Reidy and Brian Gilsean.

Similar to last year, Teagasc is providing six workshops on both afternoons. Attendees can choose to attend three workshops, from a list of six, at the time of booking (see list, below right). The workshops this year again cover a range of topics with a great mix of Teagasc, other professional and farmer presenters. All of the workshops will be interactive, with plenty of time for audience involvement.

Further details about both events are available on the conference webpages at www.teagasc.ie. Spaces are limited by venue capacity on both days so book early. Attendees will be asked to indicate the workshops they wish to attend when booking.

The cost of attendance is the same as previous years: €60 for Teagasc farmer clients and ConnectEd members and €120 for all other attendees. Registration includes: entrance to the conference, including a choice of three workshops; morning/afternoon teas, lunch; and a copy of the conference proceedings.

If there is one thing you do before the end of 2016, make it that you attend the Teagasc National Dairy Conference. It will be worth it.

**WORKSHOPS**

Three sessions from the six listed below can be selected at time of booking:

- 1** What has clover to offer to Irish dairy farmers?
- 2** How can you retain more cash in your business in 2017?
- 3** What AI bulls should you use in 2017?
- 4** What steps can you take to reduce calf scour in spring 2017?
- 5** What are the causes and solutions to a herd lameness problem?
- 6** “Your health is your wealth”: are you looking after yourself?

Feedback on workshops

Ger Courtney leads one of the highly interactive workshops at last year's dairy conference.



The aim of incorporating workshops into the conference programme last year was to allow even greater interaction between participants and between participants and experts. To gain completely objective feedback on this initiative, Teagasc asked participants when leaving the conference to provide anonymous feedback.

The majority of comments about the workshops were positive and those asked felt that the sessions were a valuable addition to the conference



programme:

- "Breakout sessions very good and should be part of future conferences."
- "Afternoon workshops went well, good farmer participation and got a good chance to question."
- "Found the group sessions very interesting."
- "Break-out sessions were top-class."

How about a full day of breakout sessions for next year?"

So if you missed last year, or are coming again, you can look forward to this innovative component of the Teagasc National Dairy Conference.

THINKING 200 COWS OR MORE...

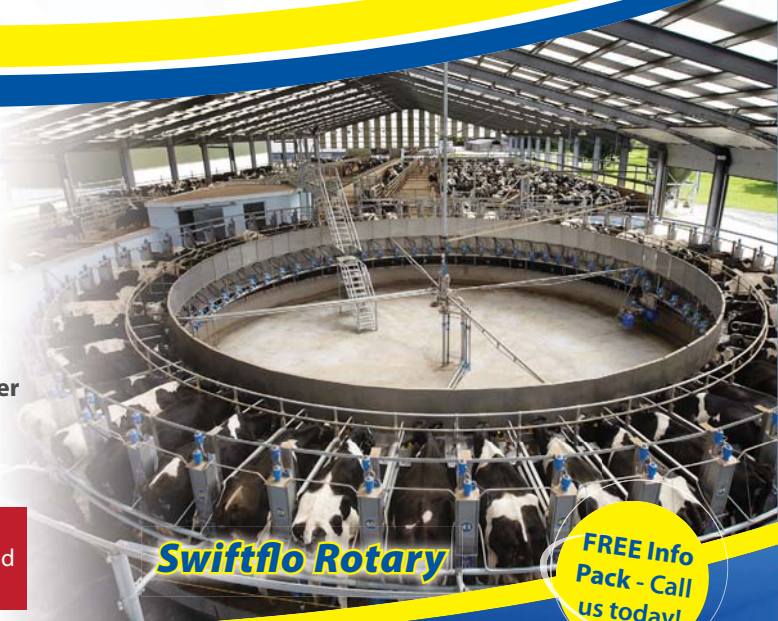


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Six possible pitfalls in your expansion plan

The Teagasc Dairy Expansion Service has developed over 120 business plans for new entrants and expanding dairy farms. Dairy specialist **Patrick Gowing** identifies some key areas to consider

No 1: Inadequate funds

Any expansion phase can be very hard on cashflow and it's a vulnerable time for the business. Take a suckler or dairy herd moving from 50 to 100 cows. There will be an increased replacement rate on farm to allow the herd to build numbers and there may also be a lower cull rate.

Invariably, there will be capital investment required to grow more grass for the increased stock number. Additional housing may be needed. There will be a time lag before the farm returns to full production after the expansion and this needs to be considered in a business plan.

An expanding dairy herd will have the cost of carrying additional heifers and a potential lower output per cow due to it being a young herd. A business plan which doesn't take into account a short-term reduction in performance during the expansion phase is unrealistic.

No 2: Getting from here to there

Farmers considering converting their farm to dairying should start the planning phase at least two years prior to the first cow milking. There are a lot of considerations in developing both your physical and financial farm plan.

Normally when we review plans,



An expanding dairy herd will have the cost of carrying additional heifers and a potential lower output per cow due to it being a young herd.

there is a good physical plan on how to develop the farm for conversion. So the farmer will know when and where reseeding has to take place, for example, or the positioning of the new parlour.

However, when we review the business plan, it often commences in the year that the parlour starts and does not show the likely cashflow on the farm in the conversion years.

This ignores the farm operating costs in the years prior to the cows actually starting to milk. This usually means the farmer over-values the stock he has on hand. Some of the value of the herd will be required to pay on-going bills. So a business plan should map the conversion phase right through the early years of the dairy enterprise.

No 3: Planning small

Most farmers I have met have a little-known disease called last shed syndrome. This disease can affect the judgement of farmers when deciding on the design and location of their yards. The normal response from farmers suffering from the syndrome is 'we will put it there because it's the

last shed I will build'. In a year or two, another last shed will be planned and the first last shed is now in the way! Some farmers I have met have built over 20 last sheds.

When planning your farmyard, consider how the yard may develop over time. Make sure your new development will have scope for future expansion if the opportunity arises.

Also, anticipate the cow flow of your yard with a larger herd size. Cow flow and good design are critically important in large herds. The same future potential needs to be considered when developing your grazing infrastructure.


Good planning rarely costs extra initial capital, but it can set your farm up to avail of new opportunities if you so desire.

No 4: Capital budget

An accurate capital budget is a core component of a farm business plan. While the large ticket items like the parlour and bulk tank are easily calculated, smaller items can be forgotten or overlooked.

The capital budget should be developed to reflect all investment required

Capital Costing for Expansion				Proposed Cows		320	Year				
				Loan			Capital Spend timeline				
Grazing	Amount	Unit Cost	Total	Yes/no	€		2017	2018	2019	2020	2021
Lime (t/acre)	600	25	15000	Yes	15000		15000				
P&K (per acre)	300	40	12000	Yes	12000		12000	12000	12000	12000	12000
Reseeding (€/acre)	300	270	81000	Yes	81000		60000	21000			
New farm road (€/m)	2000	15	30000	Yes	30000		30000				
Fencing (€/m)	20838	1.1	22921.8	Yes	22921.8		15000	7291			
Water €/cow)	320	100	32000	Yes	32000		32000				
Housing											
Cubicles €/cubicle)	200	300	60000	Yes	60000		60000				
Slurry storage (€/m3)	2145	30	64350	Yes	64350		64350				
Scrapers			0	Yes	0						
Silage pit m2	912	27	25000	Yes	25000		25000				
Calf housing			0	No	0						
Calf shed (spans)	6	6000	36000	Yes	36000		36000				
Milking Parlour											
Shed & yard (€/unit)	26	2500	65000	Yes	65000		57200				
Machine(€/unit)	26	2500	65000	Yes	65000		65000				
Feeders (€/unit)	26	500	13000	Yes	13000		13000				
Bulk Tank (€/l)	24000	dep	44138	Yes	44138		44138				
Milk Lorry Access (€/m)	250	10	2500	Yes	2500		2500				
Others											
Planning	1	5000	5000	Yes	5000		5000				
ESB	1	50000	50000	Yes	50000		50000				
Well	1	5000	5000	Yes	5000		5000				
Total			627909.8	Loan Req	722096.3		591188	40291	12000	12000	12000
Contingency		15%	94186.47	Grant	48,000						
Total			674,096	Net Loan	674,096						
Investment €/cow			2106.5508								



Notes:

<p>1: All prices VAT exclusive</p> <p>2: Grant based on receiving 60% under young farmers</p> <p>3: Contingency fund at 15% (€94,186)</p> <p>4: 2t/acre assumed lime requirement</p> <p>5: P&K figures based on build up from soil index 1 on all the farm</p> <p>6: Cubicle cost based on converting existing sheds</p> <p>7: Slurry storage based on 320 cows for 20 weeks in lined lagoon</p>	<p>8: Silage pit based on 4.5 month winter @ 1.3t fresh/LU</p> <p>9: Batch feeders</p> <p>10: Normal bulk tank</p> <p>11: Excludes stock purchase price</p> <p>12: 2km of internal farm road required</p> <p>13: 3,909m of pipe required for loop system</p>
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by your expansion plans.

Break down the capital budget into a number of headings. The headings we use are: growing grass, accessing grass, milking premises, housing and other.

Also create a timeline of when you will need to invest the capital.

Often the small items can increase the cost of the budget substantially, like three-phase electricity connection or a new well.

Build in a good contingency fund. Typically, we use 10% to 15% of the overall capital budget. Most capital projects overrun the budget. But stick to your capital budget as best you can. The add-ons during construction can easily drive up the capital required.

Any shortfall will have to be financed from cashflow. This will put increased strain on the cashflow of the overall business and may result in the farm running up expensive short-term debt.

No 5: Over-budgeting

Targets and goals for your farm are an essential management tool, but they should be realistic. Plans which are based on a high and consistent milk price have trouble built into them.

Be realistic in your business plan regarding the potential kilogrammes of milk solids output of your herd. Increasing the milk solids sold per cow will make the plan appear viable, but can it realistically be achieved?

Another key step is to do a sensitivity analysis of your plan. After you have expanded and finished developing your business, it should be in position to cope with a low milk price year. If not, your plan was poor.

The decision to expand your farm and invest in your business should leave your farm in a stronger position after the expansion phase, not a more vulnerable position.

No 6: Drawings

One of the largest costs on any farm is the amount of family drawings. This is an essential piece of information in any business plan. Most farmers can tell you how many tonnes of meal/cow they fed, but will struggle to know what drawings they take off the farm.

An accurate drawings figure is essential. Your accounts and accountant can help you establish the true figure. Finally the plan should be discussed with your accountant for any potential tax implications of what you are planning to do. An unexpected tax bill can also put financial strain on the business.

In conclusion, ambition for your business and family is a very good thing. An optimistic, but realistic, approach in your business planning will help you turn ambition into sustained success.

Figure 1

Deaths due to tractors and farm vehicles 2006 – 2015

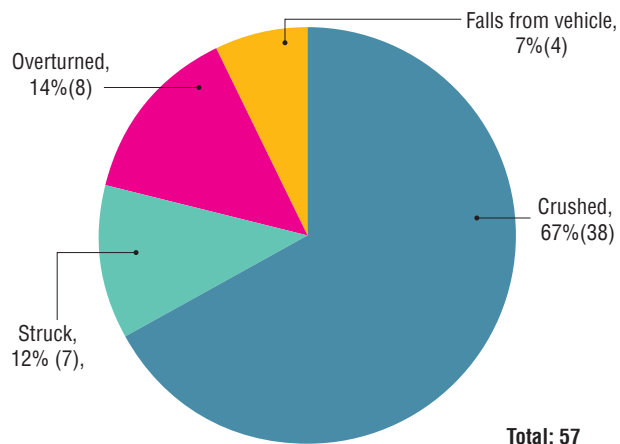
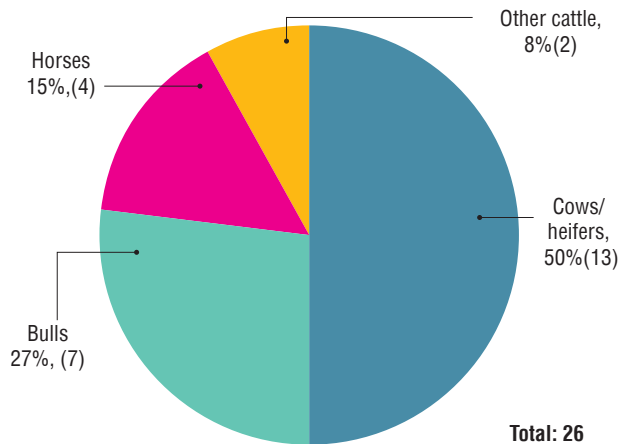


Figure 2

Deaths due to livestock 2006 – 2015



Deadly danger often lurks where you least expect it

John McNamara

National Health and Safety Specialist, Teagasc

In psychology, there is a term called “dread risk”. As humans, we dread catastrophic events and seek to avoid these. A good example is PTO entanglement which leads to gruesome injury. In contrast, who dreads the movement of a relatively slow moving vehicle? Or a usually placid cow? Both are key dangers.

Preventing death due to farm vehicles

Safety research conducted by Teagasc indicates that farmers predominantly see farm safety with tractors and machines as involving “PTO and machine entanglements” whereas in reality most fatal vehicle accidents occur due to being “struck, crushed or a fall”.

While keeping the risks of entanglement to the fore, we need to communicate the full range of causes of vehicle accidents among farmers.

Consistently, about 50% of accidents are attributable to machinery use.

Ten-year data show the following:

- For vehicles, being crushed (67%) is the most frequent cause of death followed by falling from the vehicle (12%), overturning (14%) and being struck (7%).

- For machinery, being crushed (38%) or struck (35%) are the most frequent causes of death followed by PTO (11%) and machine entanglement (11%) and falls from machines (3%).

The most frequent causes of tractor and machine deaths are: tractor crushing, being struck or falling from a vehicle. This happens most often in the farmyard and involves relatively slow moving vehicles.

With larger modern tractors, near-distance visibility can be reduced making it much harder to see persons near the vehicle such as children or older adults.

Safe parking is crucial to prevent accidents due to tractors rolling forwards or backwards.

The key steps in safe parking are:

- Park in a safe area.
- Apply parking brake.
- Place in correct parking gear.
- Lower attachments to ground.
- Switch off engine.
- Remove key.
- Dismount facing the tractor.

Vigilance

Safety vigilance is needed when in proximity to moving vehicles/machines as they have the power to kill by crushing. Of course, all revolving machines part need to be fully guarded where possible and always keep well away from rotating shafts.

Preventing deaths from cow attacks

Cow attacks now outstrip bull attacks as a cause of animal-related farm deaths (Figure 2). Extra vigilance is required when working near cows. Breeding for temperament can also play an important part in cutting the safety risk with cows.

In advance of calving, examine your calving pens to see what protection is provided. With a well-designed pen, the calving gate pivots from a pillar at the front of the pen beside the head-gate and provides protection to the farmer as it rotates inwards.

Genetic studies show that heritability of genetic factors controlling docility is in the 0.2 to 0.4 range (about the same as for milk yield), which allows considerable scope to breed for docility over a number generations. Cow aggression before or after calving is also a genetic trait that can be reduced through breeding. Breeding from aggressive animals should be avoided and such animals should be culled from herds.

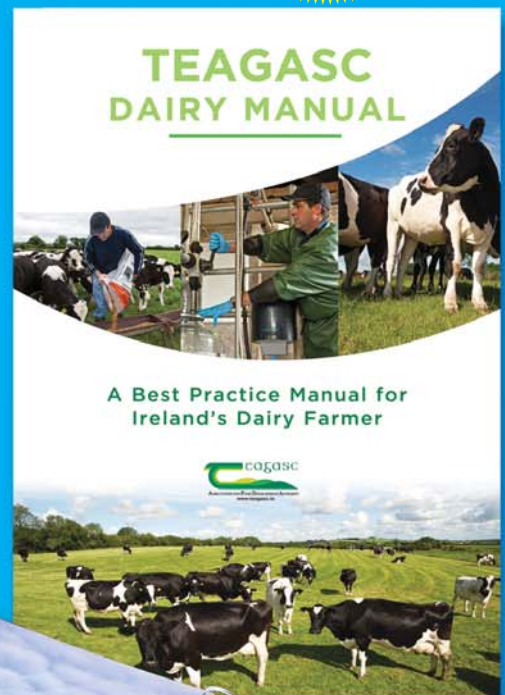
In conclusion, the alarmingly high number (30) of farm workplace deaths in 2014 sent shock waves through the sector. In 2015, fatal accidents returned to the average level (19). Up to 25 October 2016, 14 farm deaths have taken place. Please pay attention to all sources of danger; they may lurk in unexpected places.

TEAGASC DAIRY MANUAL

REVISED AND
UPDATED
FOR 2016

A comprehensive source of practical advice for any dairy business.

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



TEAGASC DAIRY MANUAL

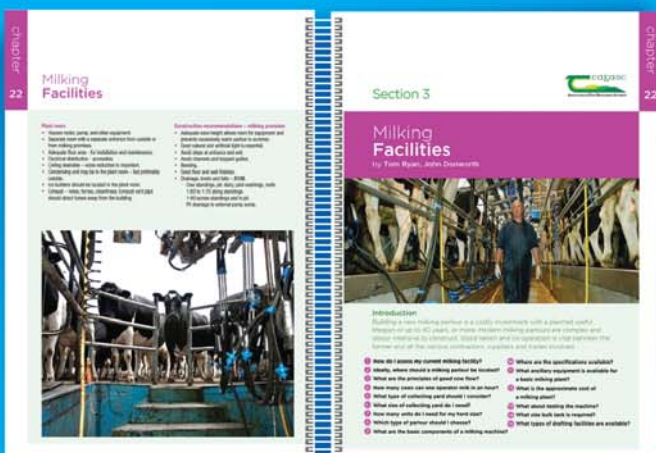
A Best Practice Manual for Ireland's Dairy Farmer



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

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

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



Makes an ideal Christmas gift

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

Healthy calves: future of your herd

Ríona Sayers & Emer Kennedy
 AGRIC, Teagasc, Moorepark,
 Fermoy, Co Cork



The 2016 application forms and information packs will be posted towards the end of March

Rearing healthy calves is fundamental to a successful dairying enterprise. Heifer calves represent the future of the herd and high mortality rates are detrimental to herd progress, both in terms of any planned expansion and genetic gain.

Neonatal calf diarrhoea is the most common cause of mortality in calves, with calf pneumonia also a serious cause of both morbidity and mortality. Both can be prevented and treated successfully if appropriate measures are implemented.

Neonatal calf scour

Scour in calves results from inconsistent feeding regimes or an infection. Infectious causes of scour are most common and Table 1 outlines common causes and when clinical signs are most likely to occur.

The most important ways to prevent scour outbreaks are:

- Ensuring an adequate volume (three litres) of good-quality colostrum is fed within two hours of birth. Aim for approximately 8.5% of birth body weight, i.e. three litres for a 35kg calf. Use only the first milk from the freshly calved cow – subsequent milkings (transition milk) do not contain enough antibodies to develop the calf's immune system adequately and, as a result, the calf cannot fight off infection.
- Optimal daily feed requirements post-colostrum and transition milk feeding are approximately 15% of calf body weight, i.e. six litres/day for a 40kg calf; below this will lead to reduced growth rates and increased



susceptibility to disease.

c) Practicing excellent hygiene of calf pens and feeding utensils. Keep calf pens clean and freshly top up with dry bedding. A damp, cold calf will be more susceptible to infectious pathogens in the environment. Feed buckets must be kept clean in order to prevent build-up of bacteria.

Treatment of calf scour

Treatment of neonatal calf scour will involve rehydration, correction of acidosis, and replacement of electrolytes (sodium (Na⁺), Potassium (K⁺), and Chloride (Cl⁻)). Initial treatment of diarrhoea using electrolyte solutions is predominantly carried out by farm personnel, often with little regard for the quality of the formulation or its acid buffering capacity.

Correction of the metabolic acidosis that accompanies episodes of diarrhoea is essential in achieving calf recovery. Some products, while assisting with rehydration and replacement of electrolytes, often fail to effectively correct acidosis, which is essential to recovery of the calf.

Products meeting these requirements will state that they are fit for the "stabilisation of water and electrolyte balance to support the physiological digestion". Products not conforming will state that they are "complementary feeds" only.

Therefore, it is important for dairy farmers to ensure that a product is

Treatment of neonatal calf scour will involve rehydration, correction of acidosis, and replacement of electrolytes.



appropriate to their requirements, i.e. that it will treat a calf with scour.

Neonatal calf pneumonia

Many of the underlying contributors to calf scour, such as poor hygiene and inadequate colostrum intake, are also implicated in outbreaks of calf pneumonia.

Additionally, inadequate housing with poor or excessive ventilation leads to increased susceptibility of dairy calves to pneumonic pathogens. Good husbandry will greatly assist in preventing outbreaks and housing/management inadequacies should be corrected prior to taking any further preventative action.

Calf pneumonia is a highly complex and multifaceted condition, so much so that in veterinary circles, it is referred to as calf pneumonia complex. Often, multiple viral and bacterial pathogens are involved, which leads to a worsening of the condition. Causative pathogens of calf pneumonia complex are included in Table 2.

Prevention of calf pneumonia is greatly assisted by ensuring you have high-quality calf housing. Good ventilation must be provided and this can be judged by the odour level in housing.

Very strong odours often indicate a build-up of ammonia (from urine) in the calf's environment. Ammonia will damage the protective mechanisms in the calf's windpipe, which

Table 1: Common causes of calf scour on Irish dairy farms with approximate times of occurrence

Cause of calf scour	Age clinical signs commonly appear
Cryptosporidium parvum	First week of life
Escherichia coli	First week of life
Rotavirus	1 to 3 weeks of age
Coronavirus	1 to 3 week of life
Salmonella species	2 to 6 weeks of age
Coccidia	3 to 6 weeks of age

Table 2: Pathogens of calf pneumonia complex

Causative agent	Type of pathogen	Likely contributor	Vaccine available*
Bovine respiratory syncytial virus (BRSV)	Virus	Very likely	Yes
Parainfluenza 3 (PI3)	Virus	Very likely	Yes
Coronavirus	Virus	Likely	Yes
Bovine viral diarrhoea virus (BVD)	Virus	Unlikely**	Yes
Bovine herpesvirus-1 (IBR)	Virus	Likely	Yes
Pasteurella multocida	Bacterium	Very likely	Yes
Mannheimia haemolytica	Bacterium	Likely	Yes
Mycoplasma bovis	Bacterium	Likely	No
Haemophilus somnus	Bacterium	Unlikely	No

* Based on Irish licensing by the HPRA (www.HPRA.ie)

**Due to implementation of the Irish national BVD eradication scheme

prevent the infectious pathogens listed in Table 2 from reaching the lungs.

However, achieving good ventilation is a balance and calves should not be held in a draughty environment. Provision of a deep straw bed and partial pen-roofing to prevent down-draughts will ensure calves can employ avoidance mechanisms to keep themselves warm and dry, essential elements in decreasing the susceptibility of calves to pneumonia.

Probably, more so than calf scour, good biosecurity plays an important role in the prevention of calf pneumonia. A closed herd policy will help reduce the risk of disease introduction to the herd as a whole, particularly in preventing viral introduction.

Vaccines have a very important role to play in preventing and controlling calf pneumonia complex. These vaccines boost the immunity provided to the calf from colostrum and ensure protection should the colostrum provided not contain the required protective antibodies.

Treatment of calf pneumonia

If a case of calf pneumonia is suspected, the calf should be immediately isolated in a warm and dry environment. Calf pneumonia will always require veterinary intervention and the sooner the intervention takes place, the better the prognosis for both the sick calf and the remainder of the calf group.

Pneumonia resulting from viral infections will not be improved by antibiotics. However, it is often prudent to administer antibiotics as secondary

bacterial pneumonias often follow an initial viral infection. These secondary infections are more severe and the prognosis in such cases is poorer.

Finally, it should be remembered that pneumonia is a painful condition. Calves in pain will reduce their feed intake, which will contribute to a worsening of the overall condition. Therefore, pain relief (e.g. an anti-inflammatory) should always be administered with antibiotic treatment.

If feed intake is reduced during the pneumonic episode, an electrolyte supplement will be required. Unlike calf scour, a formulation which corrects acidosis is not required in this case and correction of dehydration is most important.

If it is necessary to assist the calf with feeding, it is essential to remember that these calves may have difficulty swallowing, which may lead to milk/fluids entering the lungs, again detrimental to the calf's condition. If required, feed sick calves slowly and carefully to avoid/minimise aspiration of fluids into the lungs.

CONCLUSION

Good calf husbandry (clean, warm, dry, ventilation, vaccination) will go a long way in preventing serious outbreaks of calf scour and pneumonia. If treatment is required, ensure appropriate products are administered and try to maintain feed intake throughout the period of illness if possible.





Assessing Scouring Calves

Score	0	1	2	3	4
Demeanour	Bright, alert, responsive	Dull, possibly depressed, less responsive	Dull, depressed, less responsive	Dull, markedly depressed, markedly unresponsive	Unresponsive to any stimulation
Ears	Alert and mobile	Slightly drooped	Drooped	Drooped and limp	Drooped and limp
Mobility	Actively mobile and able to stand without assistance or intensive encouragement	Capable of standing and walking independently with a little encouragement	Capable of standing and walking independently but encouragement required	Capable of standing with assistance but unable to walk	Recumbent
Interest in surroundings	Interactive when approached	Interactive when approached	Uninterested when approached	Uninterested when approached	Uninterested when approached
Suck Reflex	Good suck reflex	Diminished suck reflex	Markedly diminished suck reflex	No suck reflex	No suck reflex
Feed intake	Feeding well	Slow to drink and may not finish what is offered	Reduction in feed intake (not finishing what is offered)	No feed intake (not taking any of what is offered)	No feed intake (not taking any of what is offered)
Dehydration	Clear bright eyes	Eyes slightly sunken	Eyes sunken	Eyes markedly sunken	Eyes markedly sunken
Action	None	Isolate for monitoring and treatment Monitor hydration status Continue milk feeding	Isolate for monitoring and treatment Rehydrate Correct blood acidosis and electrolytes Continue to offer milk	Isolate for monitoring and treatment Rehydrate Correct blood acidosis and electrolytes Continue to offer milk	Isolate for monitoring and treatment Veterinary assistance required

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Get with the program

PastureBase Ireland analyses grassland data gathered from Irish farms. Those who make use of the internet tool achieve better grass management and increased profit



Micheal O'Leary
Teagasc Animal and Grassland
Research and Innovation Programme

PastureBase
IRELAND

PastureBase Ireland (PBI) is an internet-based grassland management tool. In operation since 2013, it offers farmers grassland decision support and stores a vast quantity of grassland data from dairy, beef and sheep farmers in a central national database. At the moment, the vast majority of farms recording grass measurements on PBI are dairy farms. Drystock farms account for just 10% to 15% and our aim is to greatly increase participation by cattle, dairy and sheep farms.

What PBI is telling us is that farmers must have a good handle on current grass supply in order to manage grass well. If you don't know your farm covers, grass demand and grass growth, it is virtually impossible to operate a high-output grass-based system. A key factor in the profitability of any farm is to make use of the feed resource produced inside the farm gate. Relying on imported feed leaves you very exposed in the current volatile environment.

Grass Dry Matter (DM) production on all PastureBase Ireland farms

There is huge variation in grass DM production and utilisation on Irish farms. High grass DM production can be achieved on all farms with good grazing and soil fertility management, regardless of where they are in the country. This is one of the key findings from PastureBase Ireland.

Differences in stocking rate, soil fertility and grazing management practices all contribute to this variation. Most farms have the potential to increase their DM production substantially. Data from 2014 showed that increasing grass utilised by 1t DM/ha increased net profit by up to €181/ha on dairy farms, while 1t DM/ha extra

Breaking new ground – PastureBase Ireland & AgriNet Grass

At the National Ploughing Championships, the formal merger of these two grassland software packages was launched. There is now one grassland package for 2017: PastureBase Ireland.

The merger offers Irish farmers world-leading grassland software to aid decision-making on their farm. It will also mean that Irish grassland data will be stored in a national database for the benefit of Irish farmers.

The merger brings together all commercial farm grassland data in one system and will leverage the knowledge base of both organisations to develop and improve the system. Ireland as a nation is well ahead of our international competitors in this area and this merger will allow us to build on this advantage.

utilised on a drystock farm is worth €105/ha.

Dairy farms in PastureBase Ireland have grown between 12t and 14t DM/ha/year over the past three years (2013-15); drystock farms using the system have grown between 10.5t and 12.3t DM/ha/year for the same period. An important aspect of the grass production data is that the highest-producing farms have little variation between paddocks. Less-productive farms tend to have much greater variation between individual paddocks.

The number of grazings from each paddock is key driver of success. PastureBase Ireland has highlighted that every extra grazing achieved per paddock is worth 1,385kg DM/ha. A high proportion of drystock farms have too few paddocks and too many large paddocks.

As a result, livestock are grazing these paddocks for too long (up to two weeks). The productivity of these paddocks is then significantly reduced. Where regrowths are not protected, they are being continually regrazed, nitrogen application is not up to date and rotation length is non-existent.

PastureBase Ireland has identified that one new paddock on a farm will give five extra grazings on the farm for the year. Sub-dividing a farm into paddocks of appropriate area means the number of grazings and DM production will increase.

Key components in producing high quantities of grass:

- Rotational grazing system – paddock system.
- Good farm infrastructure, i.e. appropriately sized paddocks and roadways.
- Maximising spring grazing – early turnout and finishing the first rotation on time.
- Addressing any soil fertility deficits annually.
- Recording farm covers regularly (totalling more than 25 farm walks/year).
- Making decisions weekly based on the information generated after each cover measurement.
- Achieving a high number of grazings per paddock per year – top farms are achieving more than 10 grazings per paddock per year.

CASE STUDIES James Barber, Co Laois, & Peadar Kearney, Ardee, Co Louth

James Barber has been exploiting the advantages of PastureBase Ireland. The Laois dairy farmer won a Stephen Cullinane scholarship with Macra which took him to New Zealand and he was first introduced to grass measuring and budgeting when working on a dairy farm there:

“Spring and autumn planners, budgets and grass wedges were the norm in New Zealand at that time. Farmers who were measuring and managing grass were always profitable, even in a low milk price year. From there, I have a clear focus on growing and utilising as much grass as I can on my own farm.”

James walks his farm every Monday, which typically takes one and a half to two hours. He then enters the covers on to PastureBase Ireland. “Managing grass isn’t simple, there can be too much or too little. PastureBase helps me manage what I have today and what I need to do over the next five or six days. After entering the figures, only about 10 minutes are required to plan for the week ahead.”

This year, James has recorded 37 farm covers on PastureBase Ireland. “The length of the grazing season is a big key performance indicator for me,” says James. “The more days that cows are out grazing, the lower my costs of production are going to be.”

Last year, cows were grazing for an impressive 287 days on James’ farm. This includes both on/off grazing at the shoulders and out-grazing day and night. It is no surprise that James grew over 14t of grass DM per hectare in 2015 and is on target to exceed 14t this year.

“PastureBase is a great way of creating discussion, especially when our group meets up once a month,” says James. “We can see all the figures, it’s great for benchmarking where my farm is compared with other members in the group.”



County Louth sheep BETTER farmer Peadar Kearney is also seeing the benefits of measuring and recording farm covers on PastureBase Ireland. “After walking the farm and entering the covers on PastureBase, I see a snapshot of current grass supply,” says Peadar. “The three figures

I always keep an eye on are growth, demand and number of days ahead. The system calculates these for you in seconds!”

The Ardee man joined the BETTER farm programme in 2014. “The first thing I needed to implement was a rotational grazing system which you cannot do until you have paddocks and more importantly, the correct size of paddock for your group of stock.”

Peadar now has his home farm divided into 14 permanent divisions. During the summer, temporary fencing is used to divide paddocks further to manage grass when growth rates are high. “PastureBase has helped me identify paddocks that were not performing on the home block. After looking at the paddock summary report, it was clear that two paddocks needed investigation. Both paddocks were soil tested and subsequently reseeded earlier this year.”

As farmers enter weekly grass covers, this information is saved in the national database. This is a huge asset for the whole grassland industry to have and is the first of its kind in the world.

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CONCLUSION

It is clear that Ireland has incredible potential to increase annual DM production with a better focus on grazing management. The Food Wise 2025 target is for grass utilisation to increase by 2t DM/ha on all Irish farms.

More importantly, individual farmers can potentially increase their incomes by managing grass and using PastureBase Ireland.

PastureBase Ireland is a free online grassland management decision tool available to all farmers in Ireland. To get more information or to sign up, email pasturebaseadmin@teagasc.ie.

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A country of two halves

Aidan Murray, beef specialist, Teagasc Animal and Grassland Research and Innovation Programme.

The summer of 2016 will be remembered by farmers in the West and Northwest as being mild but one of persistent rain. The facts confirm farmers' perceptions. Although soil temperatures have been typical for the time of year September recorded 28 wet days with 95.5ml of rainfall compared to 13 wet days in September 2015 with a total of 26.2ml of rainfall.

The persistency of the rain in these areas was in stark contrast to areas in the south and east of the country where drought was more the issue. The continuous rainfall prevented ground from drying out and led to delays in silage cutting. Stock were unsettled; damaged ground and had to be housed in August or September. It was frustrating to house stock while grass was blowing in the wind but could not be utilised.

The consequence of all this is that there are farms in these areas that have been feeding stock inside for the last 4-6 weeks. Silage stocks will be depleted going into the winter and some silages will have low dry matter and low digestibility.

What can be done?

It is not that long ago since we faced into feed shortages in 2013 but fundamentally the problem then was in the spring when a lot of the forage was already eaten. Now most farms will have a good level of forage available and with a bit of planning will have more options. We basically need to look to what needs to be done immediately and what planning is needed to get through the winter.

Current grass covers

With good grass growth in September and October and reduced stocking rates, with a proportion of stock housed, grass covers were good on farms. These covers should still be grazed off to 4cm in rotation to have the farm set up for grass next spring. Don't leave heavy covers on fields going into the winter.

Individuals have weaned calves a

few weeks earlier than normal and turned the weanlings or yearling cattle back out to graze the grass in a bid to minimise any ground damage. Others have used ewes or lambs to achieve the same goal.

Weaning cows

With earlier housing of suckler cows and calves there has been an opportunity to get calves eating concentrate and so calves can be weaned. This has reduced the demand on the cows and will prevent them losing condition going into the winter. Their silage intake after weaning will drop to about 1.2% of bodyweight (a 650kg cow will consume 7.8kg DM or 39kg freshweight). This will in effect help conserve silage stocks.

Cows that have been weaned and identified for culling can be given silage plus 6-7kg of a finishing concentrate for 6-8 weeks. The target is to have them finished before the end of 2016 or early 2017. This will help to reduce silage demand because your average suckler cow would consume 1.4t of fresh silage/month.

Get your silage tested

The delay in cutting and the poor drying conditions will impact on the quality of silage. By testing silage now you will get a handle on what you are actually feeding. You can supplement accordingly whether you are trying to spin-out supplies or maintain animal performance.

Planning:

Steps Needed to Deal with a Potential deficit in Winter Feed:

1. Calculate the feed available on the farm

Count the number of round bales of silage on the farm. Typically a 20%DM 4 x 4 roundbale of silage will contain about 880 kg of fresh silage.

Measure any pits of silage (length x breadth x average settled height) to get m³. Multiply this figure by .77 to get the volume of typical 20%DM silage. So a farmer with a pit 20m x 10m x 3m = 600m³ (600m³ x 0.77 = 462t fresh silage). If silage is wetter at 18%DM then you need to multiply by 0.81 or multiply by 0.68 if it is drier 25%DM silage.

Other bales of fodder such as hay or



straw should also be counted to give an overall assessment of feed on the farm.

2. Calculate your winter feed requirement

What stock numbers do you intend to carry over the winter? The number of animals in each category to be retained over the winter should be calculated and you need to make a judgement on what you expect as your length of winter.

The table below will help with your calculations.

Animal Type	Pit silage(t) needed per month	Bales needed per month
Suckler Cow	1.4	1.6
In Calf Heifer	1.3	1.4
Weanling	0.7	0.8
Store Cattle	1.3	1.4

So a farmer with a five-month winter carrying 40 suckler cows, 30 weanlings, 8 in calf heifers and 20



store cattle will need 567t of pit silage or 645 round bales.

3. Calculate if you have a surplus or deficit

We know from Step 1 that the farmer has 462t of fresh silage available but with current stock numbers his likely demand is 567t a potential deficit of 105t of fresh silage or almost 120 round bales. Although potentially short of silage the farmer still has over 80% of his forage requirement on hand.

4. What options to consider

Buy Extra Forage: Any farmer with over 50% of his forage requirement on hand could get away without buying extra forage. The key questions to consider if you go down the route of buying extra forage are: Do you have any idea of the quality? And secondly: Is it value for money?

Unless you know the source of the silage then the risk is that the dry matter could well be low due to the wet year and quality will be below average because of the delay in cutting.

Buy Concentrates: This option may well be the most viable for farmers

who have a small deficit to make up. It would be favoured for several reasons. Most concentrates are competitively priced and represent good value where good ingredients are used.

This leaves the risk of variability much lower than when buying in silage.

Feeding a given amount of concentrate can help reduce silage demand. Most rations will be well balanced for vitamins and minerals.

Our theoretical farmer mentioned earlier could restrict the silage intake of suckler cows to 30kg/day and offer 1kg of concentrate/day for the next four months reducing the demand for silage by almost 77t or ¾ of the deficit.

If the forage intake of the cows were to be reduced below this there would have to be a corresponding increase in concentrates given. For example, if silage was limited to 20kg/day concentrates would have to increase to between 2.5-3kg/day.

If you plan to ration out silage using concentrates speak to your advisors and work out a specific plan for your farm and what stock groups to target.

What is good value in concentrates?

On the energy component of the ration, home grown cereals and maize offer the best value.

Protein sources offering the best value this year include distiller's maize, rapeseed meal, soya and native beans if available.

If you want to include a good source of digestible fibre soya hulls are again good value this year. But always compare prices at time of buying.

Reduce stock numbers

In our example if the farmer was to offload the 20 store cattle now he would save 130t of silage which would solve the deficit problem. But often it is not as clear cut as this.

It would certainly ease cashflow but it will reduce your stocking rate for next year.

Before you plan to sell extra stock, check with your accountant if there is any tax implication.

The key message is that if you feel you may be short on fodder this winter do a feed budget now and you will leave yourself with more options.

For many of you buying extra ration will be the most effective way of stretching forage supplies.



Trying to build suckler cow numbers while ensuring there is enough winter feed

Martin Donaghy lives and farms part-time outside the village of Burnfoot, Co Donegal. His is a dry farm, but some fields are on sloping ground and after high rainfall they can be easily cut up.

Martin is a young farmer and is building up his suckler herd. At present he has 10 suckler cows and has plans to build his numbers to 20 over the next 3-5 years. Martin stated that he wants to build his cow number off a good base of maternal genetics. The typical cow in this herd at the moment has mainly Simmental and Limousin cross breeding. The herd is sired by AI and a teaser bull is used to help detection.

The main AI bulls used in 2014 and 2015 were Limousin (OZS) and Simmental (S1624). These bulls are bulls with high reliability for both replacement and terminal, and have high Euro values for both.

Knowledge sources

Martin is participating in the BDGP scheme and is also a member of a local young farmer discussion group. With the recent August evaluations of herds under BDGP, the herd showed up very positively.

The reference number of animals that calved in 2014 was 12, currently Martin has 15 females in the herd that are 4 or 5 star on the replacement index. Martin is extremely happy with the scheme and states that it's another tool to use to help aid key decisions.

Participating in a discussion group is another source of on-farm practi-



cal information. The group is a young farmer group formed for the purpose of getting like minded farmers together to discuss and view new ideas.

Stock performance

Young stock on the farm this summer didn't thrive as well as other years, however over the last six weeks Martin noticed that stock started to thrive well again. The lower thrive was predominantly down to high rainfall and very low dry matter in the grass. With less sun the energy content in the grass will also be lower. See below a table of weaning performance over 2016.

Current winter feed

This winter Martin plans to house 10 cows, one teaser bull, five maiden heifers and two weaning heifers. At the moment Martin has eight weaning bulls that he plans to sell at Milford mart .

Martin has 158 bales of silage made. The bales are good quality and half of them were saved in the third weekend in July. "The weather was excellent that weekend with four good dry days but ideally the silage would have been cut 18 days earlier," says Martin.

See Table 3 for this year's winter feed budget plan.

Using the winter feed budget, Martin requires 155 tonne of silage. Converting this into bales (using a bale weight of 800kg), Martin needs 194 bales, a short fall of 36.

Actions required

1. Straw into the diet now.
2. Substitute some concentrates into the diet.
3. Sell off under performing stock.
4. Buy extra bales / pit silage.

Tommy Doherty
Drystock advisor, Ballybofey

Table 1: Main AI bulls used in 2014 and 2015

	Replacement	Reliability	Terminal	Reliability
Limousin-OZS	€96	91%	€111	97%
Simmental- S1624	€202	71%	€122	87%

Table 2: Performance of young stock 2016

Tag	Last weight date	Weight (kg)	ADG (kg since birth)	Breed code	Date of birth
194	19/10/2016	485	1.22	LMX	23/10/2015
195	19/10/2016	430	1.06	LMX	23/10/2015
196	19/10/2016	495	1.27	LMX	30/10/2015
197	19/10/2016	480	1.21	LMX	25/10/2015
200	19/10/2016	415	1.25	SIX	29/12/2015
203	19/10/2016	310	1.08	LMX	16/02/2016
204	19/10/2016	250	0.94	LMX	16/03/2016

Table 3: 2016 winter feed budget plan

	Stock numbers	No. of months	Tonnes / month	Total tonnes
Suckler cows	10	7	1.4	98
Teaser Bull	1	7	1.4	9.8
Maiden Heifers	5	7	1.1	38.5
Weaning Heifers	2	6	.7	8.4
Total Tonnes Required				154.7

Sheep prove their versatility in Tipp

'First find your market' is the rule for sheep milk producers in the Premier county, writes **Claire Mooney**, Teagasc drystock advisor, Nenagh

The Golden Vale is synonymous with lush grass and highly productive dairy cows. Michael Crosse is a local but also a rarity: a sheep milk producer. Michael has a leased farm where his 400-ewe flock supplies Cashel Blue Cheesemakers, whose 2015 Crozier Cheese won the Super Gold Cheese Award in France.

"Virtually all of our milk is processed into Crozier Blue, which is a premium cheese," says Michael.

"The key thing to know about sheep milk production is that there is no co-op waiting to buy your milk. Before you produce a litre, you have to know who is likely to buy it from you.

"Continental producers mostly keep their sheep indoors where they are fed largely on concentrate. Our advantage, as for dairy cows, is our ability to produce milk from grazed grass. That's a better message in terms of the environment, animal welfare, etc. As with dairy cows our sheep are continental breeds where ewes have been bred for milk production."

Michael uses the Friesland and Lecaune breeds. The Friesland is the Holstein Friesian of sheep and the Lecaune is the Jersey cow equivalent. 250 ewes are lambed down in January and a further 150 in mid-March. In 2016, all ewes were bred to AI following a synchronisation programme which resulted in an 80% conception rate. Rams mopped up the remainder.

"Lambs remain with the ewes for four days after which they are grouped together in pens of 20 and are fed whole milk with a teat feeder for a week, after which they move on to milk replacer on an automatic teat feeder," says Michael. "Some of the ram lambs are sold as pets and the remainder are fattened for slaughter



Michael Crosse with Teagasc advisor Claire Mooney.

at 12 to 16 weeks of age. Ewe lambs are retained as replacements for the dairy flock.

"Lactation length is on average 220 days, where ewes have access to the best grass. Grass is managed in a paddock system. We take cattle in on a B&B basis while we are increasing sheep numbers and there is land available. Each ewe will eat 1kg of meal per day (totalling about 250kg annually). As for dairy cows we want to produce milk from grass rather than concentrates and we aim to reduce our meal bill."

The milking parlour is a 24-unit parlour consisting of 12 clusters at either side of the pit. Every second ewe is milked and then when she is finished clusters are moved to the ewe next to her. Milk recording also takes place on

this farm. Ewes are noticeably more placid around people than conventional sheep due their greater interaction with people in the parlour.

"Accessing new and high-value markets is vital," says Michael. "Our aim is to ultimately develop extremely high-quality products for national and international markets. For example, we are currently investigating with MTL at Teagasc Moorepark whether we could work with them and their facilities to develop a dried sheep milk powder product.

"The low volume of production compared with dairy cows makes this a challenge in terms of cost but we may be able to develop a niche either here or overseas. The key thing is to develop the market before producing the milk."

Continued on p22



Cheese from sheep milk

Located near the shores of Lough Derg in the very north of county Tipperary, Barry and Lorraine Cahalan have been milking sheep since 2013. Leaving University College Dublin in 2010, the pair decided to come back home and farm.

In 2012, Barry's parents Paddy and Anne had decided to retire from their tillage and drystock farm. Barry and

Lorraine were interested in dairying but found that the setup costs were prohibitive, so they looked to diversify. Eventually, Cáis na Tíre, a hard cheese made from sheep milk, was born.

"We had worked and forged a friendship with Marion and Haske Roeleveld, who produce Killeen Farmhouse Cheese at their farm in

Portumna, Co Galway,” says Barry.

“Marion agreed to produce a cheese using our milk.” The cheese is based on the Tomme recipe from France.

Twice weekly, the Cahalans’ sheep milk is delivered to Marion and made into cheese. After three to four weeks, the cheese wheels are returned to the Cahalans’ farm, where it is matured in a dedicated store where temperature and humidity are carefully regulated. The maturing process lasts for six to twelve months depending on the flavour that is required. Each cheese wheel must be turned and wiped on a weekly basis.

“We are currently milking 200 Friesland sheep,” says Lorraine. “The top 60 milking ewes are bred to Friesland rams and the remainder of the flock is bred to Charollais or Beltex rams. Charollais and Beltex are used to increase the meat value of the lambs.”

The diet is predominantly grass-based, with 1kg/day of meal fed for the lactation. The couple have invested a lot in establishing pad-dock systems to help with grassland management.

They had a new shed constructed which includes milking parlour, housing, meal store and cheese store. Their parlour is a 20-stall parlour, with 10 ewes being milked at any one time.

“Milking takes 1.5 to 2.5 hours depending on whether there are one or

two people milking,” says Lorraine.

There is no co-op for sheep milk in Ireland, so finding a market for their product was critical to the success of their farm. Cais na Tire is sold mainly to local markets, cheese shops, hotels, restaurants and also to Sheridans Cheese Mongers.

Cáis na Tire has won a number of awards since its establishment, including a silver British cheese award, and also two bronze Irish cheese awards. Another independent cheesemaker also purchased some of the milk in 2016.

“There are some unique challenges,” says Barry. “The breeding pool in Ireland is relatively small and bringing in new rams or ewes can be highly expensive. Also, some pest control products are not registered which means ewes may have to be shorn several times in a year.”

Despite the challenges, Barry and Lorraine are enthusiastic and aim to develop and grow their business over the coming years and would eventually like to be in a position to make the cheese themselves.

“The business is a challenge but a cheesemonger in Settle, in the UK, just asked to double his order and when things like that happen you can have confidence in your product and future,” says Barry.

Further information on Cáis na Tire is available on www.caisnatire.ie facebook and twitter.

HISTORY

In the Middle Ages sheep were valued exclusively for their wool. By the twentieth century wool and mutton were prized here and in the UK. Germans preferred pork and finding grain for their pigs proved a strategic problem during WW2. Now the circle has turned again and sheep are valued not only for meat and wool but milk too.

Sheep milking facts

- Average milk yield is 1.5 (peak of 2.4 l/day)
- Average Yields per Ewe 300kg/year
- Lactation Length 220- 240 days
- Average Fat 6.5 to 7.5%
- Average Protein 5.5- 6%



Barry in the milking parlour.



The cheese maturing process can be as long as a year.

Why your grazing plan

To maximise grass utilisation next year you need to be closing paddocks now

Gabriel Trayers
Teagasc Drystock advisor, Tuam

G rass is unquestionably the cheapest feed for beef or sheep production. It is eight to 10 times more expensive to achieve a kilo of liveweight gain indoors than outdoors. Making the maximum use of grazed grass in the diet of cattle over their lifetime is key to improving margins in beef production.

Average utilisation of pasture during the grazing season on drystock farms is relatively poor at 58%. By addressing farm soil fertility, focusing on better grazing management practices and developing simple grazing infrastructures, higher grass production and utilisation is possible on any farm. Implementing a grassland plan for 2017 that will deliver a long grazing season to ensure a high level of cattle performance of 0.90kg to 1.0kg/liveweight/day should start now.

CASE STUDY Billy Gilmore, Cortoon, Tuam, Co Galway

Billy and his son Martin farm in partnership in Cortoon, just 10km outside Tuam in Co Galway. The 55ha farm is fragmented, totalling 11 parcels of owned and rented land. "The fields are relatively dry but 20ha could be described as heavy and liable to some flooding in winter/spring," says Billy. "In the past 18 months, the farm system has changed from a suckling to a weanling system to purchasing replacement heifers that are sold in-calf in the following September."

In 2016, 150 ewes were carried with 200 ewes planned to lamb in 2017. The stocking rate for the farm is well above the average at 1.97LU/ha. The financial performance on the farm is impressive at with a gross margin of €1,395/ha (2015 profit monitor). In 2009, the gross margin on the farm was just €539/ha.

So how was that improvement made? "We focused on a low-cost, grass-based system in order to keep variable costs low," says Billy. Maximising the length of the grazing season by improving soil fertility, introducing temporary paddocks and walking the entire farm at least once a week has increased grass utilisation to 80% at 8.6ton/ DM/ha in 2015. The average of most beef farms by contrast is 4.5t/DM/ha/yr.

Looking to 2017

The primary objective now is to have adequate grass to facilitate early turnout in spring 2017. The grass that will be grazed in early spring next year has been grown in October. In relation to animal performance; one day in spring is equivalent to two days in the autumn. The key is to have a plan in place, i.e. start grazing off part of farm in early October, close this area and do not be tempted to graze this area again in November/December.

"Our priority animals are the ewes and they started grazing dry, silage ground on 6 October," says Billy. "These fields had been closed since August and received one and a half bags of 10.10.20



Anne and Billy Gilmore.

for 2017 starts now



Billy Gilmore says grass management is crucial to high output per hectare for both sheep and cattle.

per acre in early September to help build covers and address low P and K levels.”

The sheep were grazing excellent quality grass covers of 7.5cm to 8cm in height. These fields were selected as they are dry, closest to the farmyard and will be first to be grazed by ewes and newborn lambs in late February/early March 2017.

“We divided the silage fields into four- to five-day paddocks in a fairly simple way with three strands of temporary electric fencing and mobile water trough,” says Billy. This allowed the paddocks to be grazed out to an ideal 4cm, which will allow light into the base of the sward to encourage autumn/winter tillering (thickening) and ensure good quality dense swards for following year.

“An advantage of the extra divisions is that the ewe flock were only ‘forced’ to graze hard for one day and then move out to the next paddock,” says Billy. This ensured that animal performance was maintained.

Luckily, the weather since the beginning of October has been dry allowing paddocks to be grazed out easily and these paddocks are now closed and will not be grazed again in November/December.

“We’ll put slurry on this area in late January and it will also receive a half bag of urea in early February. The silage ground will then be grazed in

Key messages

- Don't be tempted to regraze fields that you have closed (this grass is twice as valuable in spring).
- On “cattle only” farms, you should have had 60% of your farm closed by the first week of November.
- Aim to have the remaining 40% grazed and closed by the first week in December.
- Don't let stock “roam” around fields during the winter.

March/April before closing up for silage,” says Billy. “Grazing tightly and removing residual grass before closing has consistently helped deliver high-quality silage of 70% DMD+.”

FARM FACTS

- Gilmore farm size: 55ha.
- Stocking rate: 1.97LU/ha.
- Closing date: 6 October.
- Late October: 20% (grazed in early March) – 40% closed by mid-November (grazed in mid-March).
- 60% closed late November (grazed in late March).
- 80% in mid-December (grazed early April).

Simple plan for closing up the farm

To ensure that grass remains in the diet for priority stock for as long as possible this year and to set paddocks are set up for spring, the simple rule is to start closing paddocks in rotation from 6 October, so that 60% is grazed and closed by late November and 80% by mid-December. On heavier farms, you should start closing at least a week earlier.

MANAGEMENT

Billy Gilmore believes that farm management is not just about technical issues such as grass management. He has also managed his farm succession very skilfully. Having offered all of his five children the possibility of taking over the farm Martin emerged as the one who was interested.

Over the next five years or so, Billy aims to steadily increase Martin's

input into the farm (though Martin also runs a substantial tiling business) with the objective of retiring. “I'd like to continue working on the farm and help Martin but he will be the farmer,” says Billy.

Martin currently lives on the outskirts of Tuam. Martin and Billy are considering doing a house swap whereby Billy and his wife will eventually move into Martin's house and he will move to the farmhouse.

Dealing with dire returns

There are no easy answers but it's vital to focus on what you can control in cereal production

John Pettit,
Tillage advisor,
Johnstown Castle

What do you pay for rental ground?

Where possible, negotiate rental agreements to get the landowner to share risks and benefits. Extra land helps spread fixed costs, but only if it makes a margin. Do you know your costs per hectare?

How much do you spend on equipment?

In good times, machinery purchases are sometimes driven by what is left in the current account at the end of the year. This policy is fine providing the current account yields the same or a larger surplus in subsequent years when repayments fall due. Ruthlessly review every machine and consider future options for reducing costs such as extending machine life, machinery sharing/partnership, contractor use etc.

What do you measure?

Do you do a Teagasc eProfit Monitor? This can be a chastening experience in the current climate, but it can help you identify areas where efficiency gains can be achieved. It can also help you make a good estimate of your cost/tonne. This will always be an estimate before you harvest due to the influence of crop yield, but it's a very useful metric.

How do you sell your grain?

Forward selling can help you manage volatility, but is not a cure-all. Deciding whether an offer to sell forward is worth accepting is helped enormously if you know your costs per tonne.

Input buying

Fertiliser price: Forward buy where appropriate; soil test to optimise P+K; using urea may help to reduce N cost. Choose resistant varieties and avail of that resistance to reduce fungicide spend and only apply products and at timings that will give a return.

CASE STUDY



The four farmers featured in this case study farmed a total of 592ha. Each grower in the case study sows crops based on the crops' capacity to yield a potential margin per hectare.

Winter wheat costing €91/t to produce when sold for feed will yield a higher margin per tonne when compared with spring barley costing €111/t to produce when sold for feed. The average yield of winter wheat is also greater than that of spring barley. This results in a significantly higher margin per hectare.

These growers are operating from a position of knowledge. Each grower forward sold grain when they received an acceptable margin over the cost of producing that tonne of grain. The combination of focusing on crops that yield higher financial returns and forward selling grain has proven to have a signifi-

cantly positive effect on the net profit on each farm.

Each grower has evaluated the contribution of individual blocks of rented ground to net profit. In the case of spring barley at 7.22t/ha it cost €111 to produce a tonne on owned land. If grown on rented land costing €500/ha, the same tonne of grain would cost €180 to produce, inclusive of rent.

The growers understand the benefits of scale but, to facilitate scale, rented land must come at a price that increases the potential for the crop to contribute positively to net profit.

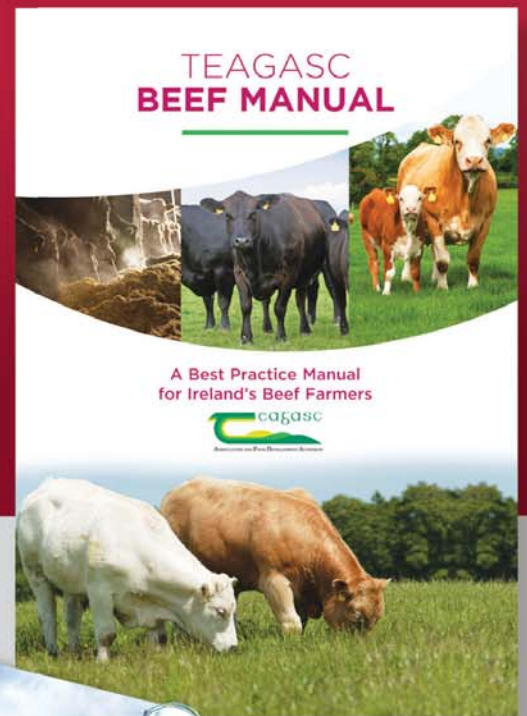
Each grower has limited the number of machines with borrowings and limited the term of loans associated with machinery.

This was achieved by having a planned machinery replacement policy.

Table 1: The physical and financial performance of four cereal farmers averaged over three years (excluding land rent).

Crop	Yield	Production cost/hectare	Straw value/hectare	Production cost/tonne
Spring Barley	7.22	916	118	111
Winter Barley	8.94	1083	148	105
Spring Oats	7.06	924	99	117
Winter Oats	8.10	914	123	98
Spring Oilseed Rape	3.21	882	0	275
Winter Oilseed Rape	3.85	1144	0	297
Winter Wheat	11.21	1201	185	91

TEAGASC BEEF MANUAL



A comprehensive source of practical advice for any beef business.

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



**REVISED AND
UPDATED
FOR 2016**

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

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

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

**Makes
an ideal
Christmas
gift**



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

Alternatively, contact Therese Dempsey on (059 9183422) who will send you a copy by post (p&p €7.50 extra)

Soil fertility for tillage

Mark Plunkett and David Wall
Teagasc Crops, Environment and Land Use Programme,
Johnstown Castle, Co Wexford

In October, a large cross section of the tillage industry attended the Teagasc National Soil Fertility Conference. A wide range of interesting topics related to soil fertility and crop nutrition were addressed at the conference, including:

Potassium

– Mark Plunkett

Potassium (K) has many roles in cereal production from improving straw strength to playing a role in plant resistance to mildew. Maintaining adequate soil K is crucial for both winter and spring barley crops. Spring barley showed a yield of response of 2.3t/ha when grown on a very low index 1 K soil compared with an index 2 K soil without K fertiliser.

Applying sufficient K proved very important in reducing the level of straw brackling (breakdown). Levels of brackling were steadily reduced as the rate of K fertiliser was increased up to the optimum level for the crop.

Which type of fertiliser K is most suitable for cereal crops – muriate of potash (MOP) or sulphate of potash (SOP)? Results presented for winter barley (two-row and six-row) indicated no difference between K fertiliser type for the two-row barley, while there was a significant yield response of 0.4t/ha in favour of MOP compared to the SOP in the six-row barley. This may be due to the effect of chlorine increasing the plant's resistance to disease infection compared to the SOP.

Urea

– Leanne Roche

Urea has been viewed as an unreliable fertiliser N source for cereal crops due to the risk of N loss through volatilisation. Leanne reported from her PhD studies comparing

urea and protected urea (NBPT) with CAN for spring barley production. She reported that N loss was more variable with urea depending on weather conditions while protected urea (NBPT) had lower N losses and similar performance to CAN.

Overall, grain yields were similar regardless of N fertiliser type used, despite differences in crop N uptake of 149kg/ha for protected urea (NBPT), 136kg/ha for CAN and for 131kg/ha urea. These results provide reassurance about the role of protected urea (NBPT) for spring cereal production. It produced similar grain yields to CAN while reducing costs and providing environmental benefits.

Nitrogen

– Richie Hackett

There has been much debate as to the number of N splits and most effective timing for the first N application for winter barley. Richie Hackett presented results from trials conducted over the last three years at Teagasc Oak Park Research Centre. Richie concluded that maintaining optimum tillers through effective N management is critical to realising yield potential in winter barley.

Applying first N in mid-March gave similar yields compared to late February/early March, for crops that reached GS 30 in late March/early April. This indicates that there is flexibility regarding the first application of N for winter barley crops. Generally, there was no yield difference between two or three splits. Richie said a third split reduced the risk of N loss through leaching and should be applied by GS 37.

Soil phosphorus

– Karen Daly

Karen Daly, a researcher on soil P dynamics at Johnstown Castle, explained the different soil P pools and what the soil test actually measures. Recent research has shown the importance of other soil properties such



Fertiliser spreaders will differ in their ability to spread evenly, so it is very important to look at spread patterns from independent sources and choose bout widths carefully.



Overall, grain yields were similar regardless of N fertiliser type used



correct crop balance of N, P, K as fertiliser.

Fertiliser programmes including poultry manure produced the same grain yields and proteins as bagged fertiliser programmes. Whether poultry manure was ploughed down or incorporated into the top soil produced similar yields to bagged fertiliser programmes only. Where poultry manure is effectively used to replace fertilisers in spring barley production, significant cost savings can be made with the bonus of adding valuable soil organic matter.

Lime

– PJ Browne

The Fertiliser Association of Ireland's president PJ Browne launched technical bulletin number two, *Soil pH and Lime*. This is very timely technical guidance bulletin on the effective use of lime for both grassland and tillage soils as a large percentage of Irish soils require lime.

Green book

– David Wall

Teagasc has completed the review of the Teagasc Green Book and David Wall, researcher at Johnstown Castle, presented the main changes. Since the 1940s, researchers at Johnstown Castle have developed and delivered nutrient advice for productive agricultural and horticultural crops.

David showed examples of nutrient advice booklets/manuals published since the 1950s and similar issues were being addressed then as today. The Green Book contains a number of new sections, for example:

- Major soil types, nutrient cycling and efficient nutrient management.
- Information on fertiliser ingredients available in Ireland.
- Information on our new fertiliser planning system in NMP Online.
- Nutrient advice for energy crops.

Revised sections:

- New and improved information on soil pH management and liming products.
- Updated organic manure values and efficient use of organic manures.
- New grassland advice for beef systems, sheep and horses.
- Updated cereal N advice timings.
- New advice for potato crops and nitrogen management.
- New N advice for winter oilseed rape crops.
- New and revised advice for horticultural crops.

as soil pH, organic matter and soil type on the availability of soil P. Soil types which contain high levels of aluminium (Al) will lock up or "fix" P rendering it unavailable for plant uptake.

This may explain why it is particularly difficult to build soil P levels on certain soil types. Karen explained new soil testing/scanning techniques being developed at Johnstown Castle for rapidly analysing soil properties such as soil texture, aluminium, iron, calcium and organic matter, which will help to give more complete farm soil analysis at least cost.

Spreading urea

– Dermot Forristal

Dermot Forristal, Teagasc Oak Park, warned that spreading urea evenly presents challenges for wide bout

widths due to the relatively low density of urea. Dermot recommended selecting a urea type with good particle size and strength.

Fertiliser spreaders will differ in their ability to spread evenly, so it is very important to look at spread patterns from independent sources and choose bout widths carefully.

Poultry manure

– Martin Bourke

Martin Bourke, Teagasc tillage advisor, Wicklow, presented trial results on the efficient use of manure from layers in spring barley production. The manure is dried to 89% dry matter and contains a good balance of major and minor nutrients. Martin reported that it is essential to test the manure before application in order to adjust manure rates and apply the

Think, Plan, Do

Save tax while planning your business

Fintan Phelan
Head of Farm Management and Rural Development, Knowledge Transfer Department

Business planning is a good way to plot your way forward and refine your business goals. These are increasingly demanded by people looking at your business from the perspective of a lender. The process also allows you to complete preliminary checks, to spot any pitfalls in the plan and to examine alternatives.

It is far better to identify any mistakes in the planning phase rather than realising they were made at a later stage when costs have already been incurred. This article will outline the new requirement to complete a business planning workbook to avail of some existing and new tax reliefs.

Farmers should not be afraid of business planning and it should become a regular part of the efficient running of the farm. In most cases, the only time that a farmer comes into contact with the concept of formal business planning is when applying for new loans and sometimes, during a credit review, a financial institution will look for a business plan.

Of course, all farmers have a business plan, but this is seldom written

down – it may be just to keep doing what we have been doing or to make alterations to enterprise mix or stock numbers. When asked for a business plan, the farmer generally contacts their advisor and/or their accountant to do the job. This is where we have identified a problem, as, in most cases, this is where the farmer loses ownership of the business plan – it is no longer the farmer's plan, but the advisor's or accountant's plan.

While these plans may do the job that is required, they can fall down when the farmer is asked to explain them. In addition, the work that is done in preparing them is lost, as the farmer does not use or review the plan once credit has been secured. To make progress on this "ownership" issue, Teagasc has developed a workbook, called *My Farm My Plan – Planning for my Future*, that is designed for completion by the farmer with input from their family as the first step to a more formal business plan.

The workbook is divided into three main sections, which are:

- Thinking about where I am going.
- Thinking about what I have to do.
- Extra costs, extra revenues and extra risks.

There is also a fourth section, which outlines the next step after completing the workbook, which is a full physical and financial plan. It is important to involve all of the people affected by the farm plan in its development.

This may include parents, spouse or



My Farm, My Plan - Planning



children, depending on your stage of life. They may have other goals that are not in line with your own, so it is important to scope these out. An example of this is a dairy farmer may want to expand to pass on a larger business to their successor, but the successor may not be interested in dairying – it is important to have these conversations, but also remember that circumstances and opinions can change over time.

The workbook, as previously stated, was designed for use by the farmer. There is no problem if you make a

mistake, as it is your document. We have made it available on the Teagasc website, so you are free to download and print out as many copies as you wish. The big change with this type of business planning is that it gives you a format to come up with your own plan.

The most important question, included in section one 'Thinking about where I am going', is 'why am I farming?' Some answers to the question may include maintaining or increasing income, to build

a bigger farm business, to match input price inflation, for retirement, to cope with volatility in sale prices, for farm transfer/succession, to employ labour/free-up time, for family life, etc. Too many people start with the what, then the how and leave out the why until last, or ignore it altogether.

So you have worked through the book and have done the most difficult part, the thinking part of a business plan. You are now in a strong position to go to your advisor or accountant to develop a full physical and financial business plan. At this stage, some of your plans and assumptions could and should be challenged, with a resultant alteration to the plan – this may involve a phased roll-out of the plan to reduce the initial borrowing, financing and risk involved.

In the end, though, it is your plan and should at all stages be informed by the answers to your "why" question as discussed above. When the full business plan is completed, you should be in a strong position to explain and defend it to any outside person.

In a survey of farmers completed as part of his Walsh Fellow Masters study, *An analysis of the use of financial planning tools by dairy farmers and advisers*, John Greaney surveyed a selection of farmers who completed the cash plan programme. This was a programme that was supported by the Department of Agriculture in 2014.

The programme highlighted the importance of managing risk around farm development planning and cashflow management. It was targeted at recent entrants to dairying, i.e. those who commenced supplying milk on or after 1 April 2008 and involved the completion of three relevant tasks:

- Complete *My Farm, My Plan-Planning for my Future* strategic planning workbook.
- Record the monthly cashflow for 2014.
- Prepare a monthly cashflow budget for 2015.

In his survey, most of the farmers spoke positively about the financial planning book, with 72.4% of all respondents believing the book was of benefit to their business.

As part of the rules to claim some tax reliefs, it is now a requirement to complete a *My Farm My Plan*. Teagasc has been requested to issue certificates to farmers outlining that

SURVEY QUOTES

"Had it in my head, but to write it down focused my mind. Only realised when I had it on paper how much I wanted to improve roadways and water troughs."

"I had suckler cows and went in with my father before taking over the herd of cows. Booklet is good – it reiterated I needed greater numbers of replacements to get to where I wanted to be. Hard to get a lot of replacements on the ground so focusing on buying more in may be my only option. If I had filled out the book two or three years ago, I might not have made the same mistakes."

"Very good, puts things into perspective. We've a young family and they are a big part of what's going on here at home. Family life is very important."

"Eye-opening I suppose more than anything. It hits the basic points on the head, giving you a clear road map. I often look back on it, relevant at the minute as I look to see whether I want or need a shed and whether I'll go for the TAMS scheme."

"It's a simple book. Completing a SWOT analysis should be done for every farm, weaknesses always exist. In relation to our own farm, we're probably stocked to the limit as it is. We need to decide whether to purchase land in the next few years or continue to just rent parcels."

the workbook has been completed. The reliefs are:

1. Stock Relief for Young Trained Farmers. This relief is available to young trained farmers in the first four years after first setting up in their own right as farmers. It allows them to claim full relief from tax for the increased stock value during the year for those first four years, while they are establishing themselves as farmers.

2. Young Trained Farmer Stamp Duty Relief. This is again for young, trained farmers under the age of 35 years who purchase or receive a gift of land. The normal rate of stamp duty is 2%, but this relief allows the farmer pay no stamp duty on the transaction.

3. Succession Farm Partnership Tax Credit. This is a new tax credit that was announced in last year's budget and should be available early next year. These are a particular type of partnership and the tax relief is against income tax.

farm management

Some of the requirements to avail of the credit are:

- Form a registered farm partnership.
- Have a certificate of completion for the *My Farm My Plan* business planning workbook.
- Complete a succession agreement.

The income tax credit available is up to €5,000 per annum for five years – amounting to a maximum potential €25,000 saving in income tax. This is shared between both parties in the partnership in the same ratio as the profit share agreement in the partnership.

The succession agreement is a legally binding agreement where at least 80% of the farm assets must be transferred within three to 10 years after registering the new agreement. Great consideration is required before signing up to avail of this tax credit as penalties of up to €125,000 will apply where the farm assets do not transfer as specified in the succession agreement.

After the farm asset transfer, the partnership can continue for as long as the partners desire. It is important to state that this is an additional option open to partnerships from now on, but is not a requirement. Existing partnerships or new partnerships formed are not required to avail of this option. Further details of this new type of farm partnership will be included in future editions of *Today's Farm*.

There are further conditions that must be adhered to in order to benefit from these tax reliefs – consult your accountant for further details.

While the tax incentives will drive farmers to complete the *My Farm My Plan* business planning workbook, it will only be of long-term benefit to your business if you put some thought into it. All businesses in a development phase should complete a business plan and the workbook provides the vehicle to get this process started in a real way.

Any business plan is only as good as the assumptions made. In this time of volatile prices and risks to external markets, it is important to review the plan regularly and update it as required with new assumptions. So the business plan, once completed, is not set in stone, but a live document that is adapted over time. remember that:

*“A goal without a plan is just a wish” –
Antoine de Saint-Exupéry*

To get a copy of the workbook, go to Teagasc.ie/rural-economy/farm-management



Where am I now?

Stock

Breeding stock numbers (cows, sucklers, ewes)		
Output milk, beef, sheep (kg milk solids, kg beef, etc)		
No. of replacements	(0-1)	(1-2)
No. of cattle	(0-1)	(1-2)
No. of replacement ewe lambs		
No. of animals (and value) to sell to finance plan		

Land

Land – owned (ha)		
Leased land and length of lease(s)	Ha	yrs
Conacre land (< 5 years) and length farmed	Ha	yrs
Share farmed land and length of agreement	Ha	yrs
Whole farm stocking rate (LU/ha)		LU/ha
Milking platform - dairy (ha) & stocking rate	Ha	LU/ha

Soil Health (tick)

	Unknown	low	avg.	high
% farm soil sampled in last four years				
Soil P, K, pH status				
Soil type / drainage requirements				
% farm reseeded in last four years				

Facilities & equipment (tick)

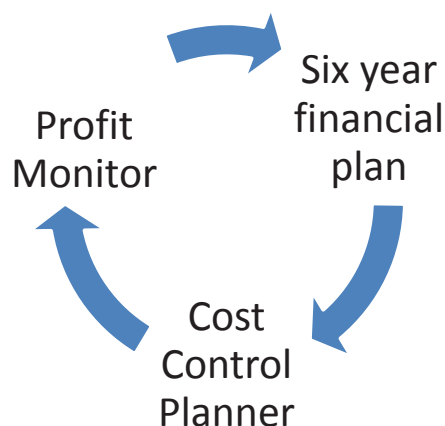
	short	ok	excess
Housing for current stock			
Slurry storage for current stock			
Dairy - Parlour for current cow numbers			
Handling facilities for stock on farm			
Grazing infrastructure			
Machinery & equipment			

Labour and farm information

Number of years you will continue farming	
Labour units on the farm	
Discussion group member (Yes/No)	
HerdPlus member(Yes/No)	
Annual cash flow budget/monthly recording (Yes/No)	
Teagasc Profit Monitor completed (Yes/No)	
Written action plan(s) completed (Yes/No)	

Financial

What is current total cost of production per unit?	
How much cash is available for future investment?	
What is current and future level of direct payment?	
Current farm repayments per year and finish date?	
What is current debt per hectare?	





Make your claim

The nuts and bolts of making a TAMS II payment claim

Tim Hyde
Teagasc Crops Environment and Land Use Programme

All Targeted Agricultural Modernisation Schemes (TAMS) applications and payment claims must be made online through www.agfood.ie

To date, over 4,250 approvals have been issued for the different TAMS II schemes. When submitting an online TAMS II payment claim to the Department of Agriculture, Food & the Marine (DAFM), it is important that the correct documentation is uploaded. This will help to ensure that TAMS II payment claims can be processed by DAFM in an efficient and timely manner. Submitting poor quality or incorrect documentation will lead to a delay in the processing

TAMS II approvals to date

TAMS II scheme	Approvals to date
Animal Welfare, Safety and Nutrient Storage Scheme	1,127
TAMS II – Young Farmer Capital Investment Scheme	887
Dairy Equipment Scheme	1,537
Low Emission Slurry Spreading Equipment Scheme	419
Pig and Poultry Investment Scheme	65
Organic Capital Investment Scheme	250

*DAFM data (21 October 2016)

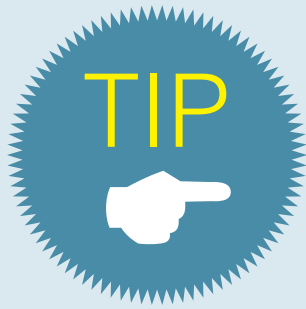
of the payment claim. In the case of a partnership, documentation submitted can be in the name of the partnership, or in the name of at least one of the partners.

The DAFM letter of approval to the farmer to commence investment work outlines the terms and conditions in relation to claiming payment for the investment. The approval date is listed on the letter and all items invoiced or delivered, purchases or payments made before this date are not eligible for grant aid. If work commenced prior to the grant of written approval, no grant aid will be paid. Claims for payment for completed investments must be made within three years from the approval date. The com-

pleted dimension of works completed under TAMS II; are required when submitting your claim.

The documentation that accompanies your TAMS II payment claim to DAFM will depend on the investment applied for. Applicants should familiarise themselves with the documentation requirements of the Terms and Conditions relevant to the scheme that was applied for. A full list of the terms and conditions for each TAMS II scheme can be found on DAFM's website at <http://www.agriculture.gov.ie/farmerschemespayments/tams/>

» Continued on next page



TOP TIPS

The following list highlights some of the main areas where applicants should pay particular attention to when uploading documentation with their TAMS II payment claim.

- Educational qualification certificate(s).
- Evidence of completion of Teagasc farm safety code of practice or equivalent.
- Evidence of ownership of land (copy of folio and maps) for each site. If registration has not been completed, copy of stamped deed of transfer and property registration authority dealing number.
- Evidence of leasehold title (copy of valid lease including maps) for each site.
- Marriage certificate in the case of a lease to a spouse;
- An Electronic Tax Clearance (ETC) cert in the case of a partnership or a joint venture (multiple names on a herd number).
- Quality certificates (electrical, slats, concrete, protection of steel work, CE certificates, welding cert etc). See list of certificates below:

Cert No	Cert
1	Slat/slab certificate.
2	Concrete Manufacturer's Specification Certificate and Factory Production Control Certificate.
3	ETCI Completion Certificate & Supplementary Electrical Agricultural Certificate
4	ETCI Completion Certificate & Supplementary Electrical Agricultural Certificate OR Certificate of Installation of mechanical/electrical equipment.
5	Protection of Structured Steel Certificate.
6	Factory Production Control Certificate and Declaration of Performance OR Welding Certificate.
7	Factory Production Control Certificate and Declaration of Performance for concrete blocks.
8	Factory Production Control Certificate and Declaration of Performance for purchased fill material.
9	Contractor's Certificate of compliance with S123A (Mass Concrete Tank Extension) .
10	Contractor.s Certificate of compliance with S122 (circular overground store).
11	Contractor's Certificate of compliance with S126 (geo membrane lined store) .
12	Lighting survey for poultry housing upgrade S152.
13	Insulation certification for poultry housing upgrading S152.
14	Lighting survey for pig housing upgrade S146.
15	Insulation certification for pig housing upgrading S146.
16	Certificate of installation and testing of new milking equipment (S.103 and S.106)
17	IS 436 fencing post-certificate.



1 Receipts

- All receipts should be original, on headed paper and should at least include the name, address and VAT number of the supplier/contractor (if registered).
- All receipts must be signed, dated and marked paid by an employee/agent of the supplier/contractor.
- The name and address on the receipt must match the name and address on the TAMS II application.
- Receipts must be legible and contain the following information:
 - The name and address of applicant.
 - The invoice number and date, where applicable.
 - The details of purchase in an itemised form specifically referencing serial number, where applicable.
 - Actual cost of each item excluding VAT.
 - The total VAT paid.
 - The amount of discount, if any.
- In the case of receipts comprising both goods and service (supply and fit), there must be a breakdown between the categories.
- Claimed costs must be divided up individually per investment item and detailed individually on the accompanying receipts. A receipt can be distributed between one or more completed investments.

2 Ownership/lease documents

- Where investments are carried out on owned land, Land Registry folios must have the correct map (called file



To date, over 4,250 approvals have been issued for the different TAMS II schemes



EXAMPLE

Q. How is the grant amount calculated?

A. Factors that influence grant calculation include:

- Lowest of the reference cost/proposed cost/receipts per investment item.
- Lesser of the approved/completed dimensions/quantities.
- That investments are completed to the relevant specifications.
- That receipts of supporting documentation are to the required standard (points 1-6).
- The application of any penalties that may arise.

An example of a grant calculation for 40% grant rate is shown in Table 1.

The grant is calculated as €12,096 (based on 240m² completed/found and adjusted proposed cost (240/250) of cost of €30,240 at 40%).

Inaccuracies or omissions in the payment claim and supporting documentation may result in non-payment, part payment or penalties being applied. No changes can be made to the claim after it is submitted.

Table 1: Example of grant calculation for 40% grant rate

Loose house	Reference cost	Proposed cost	Receipts
Approved area 250m ²	€32,175	€31,500	Not applicable
Completed/found area 240m ²	€30,888	€30,240	€32,050

plan); associated with them and the map must be legible and include the relevant folio number. The website www.landdirect.ie will allow folios and file plans to be accessed. The certified copy/folio plus map costs €40.

- The land folio should be in the name of the TAMS applicant.
- Where investments are carried out on leased land, all leases must be accompanied by a map outlining the land leased. The term or residence of the lease must cover a minimum of five years from the date of final payment in respect of the investment item being grant aided.
- Leases must be verified by Revenue (watermark on lease) or the lease accompanied by a certificate to show that the stamp duty has been paid. This does not apply in the case of a lease to a spouse.

3 Certificates

- **eTax Clearance (eTC):** In the case of an individual or a company, the eTC should be submitted to the DAFM AES office that issued the TAMS II approval. When the DAFM has this cleared, then the online application will no longer request this information to be submitted. In the case of partnerships and joint herd numbers, the eTC should be uploaded on the TAMS II online claim system.
- When an applicant employs a contractor, where the total receipts exceed €650, the contractor must have a current C2 certificate or a tax clearance certificate from Revenue

with a date not preceding the date of approval for the investment.

- eTax Clearance details for contractors should be emailed to TAMSIIcontractors@agriculture.gov.ie

4 Safety training

- It is mandatory that all applicants have completed a farm safety course within the previous five years of the date of application or the submission of their claim for payment. Only the courses listed below are considered acceptable for TAMS II:
 - Half day farm safety code of practice.
 - FETAC Level 6 Advanced Certificate in Agriculture (Green Cert).
 - In the case of a registered farm partnership or a company, the course must have been completed by the young farmer
 - Claim for payment will not be processed until evidence of completion of the course is provided.
 - Contact your local Teagasc office to register for the next available course

5 Electrical certificates

- The individual signing the Certificate of Installation of Mechanical/Electrical Equipment must be certified as trained.
- The name and address on the electrical certificates must match the name and address on the TAMS II application.
- Where required, a fully completed

ETCI completion certificate and Supplementary Electrical Agricultural Certificate and/or Certificate of Installation of Mechanical/Electrical Equipment must be submitted.

6 Own labour/machinery

All works carried out by the applicant or a family member can be claimed. Under each main investment, claim a facility to include either own labour or the machine employed is available. The DAFM rates are a standard hourly rate for own labour of €12.40. To complete this section, the hours, start date and end date of the employed labour or machinery must be declared.

Conclusion

Payment claims submitted correctly and meeting all the requirements under the relevant scheme will be processed for payment by DAFM. Full details on submitting a TAMS II payment claim can be found in the "User manual for TAMS II", which can be found on DAFM's website at the following link: <http://www.agriculture.gov.ie/farmerschemespayments/tams/>

Teagasc wishes to acknowledge DAFM for its contribution to this article.

Queries of a technical nature relating to the specifications should be submitted by email to the following email address: tams@agriculture.gov.ie or contact the DAFM helpline number on 0761 064452.

Adding value to farm and forestry produce

Tom Houlihan, Forestry Advisor
Teagasc Crops Environment and Land Use programme, Killarney.

Fashion products and cosmetics from milk casein, computer casings derived from wood or decking from meadow grass may sound unlikely. However, such commodities are now being developed in Europe and are examples of an ever-growing range of outputs from the bioeconomy.

The bioeconomy

The bioeconomy concept represents a vision for future society to become less reliant on fossil resources such as petroleum. That future is approaching faster than many realise.

The bioeconomy seeks to provide energy and added-value products (food, feed, fibres, fuel, industrial fine chemicals and health products) through a sustainable use of our bioresources.

The concept of a thriving bioeconomy is critical, with a predicted 70% increase in world food demand by 2050. This demand will be driven by a predicted world population increase to over 10 billion people in the same period. The EU recognises an urgent need to reduce greenhouse gas emissions, increase resource efficiency and move to a low-carbon economy by 2050.

Biomass side-streams

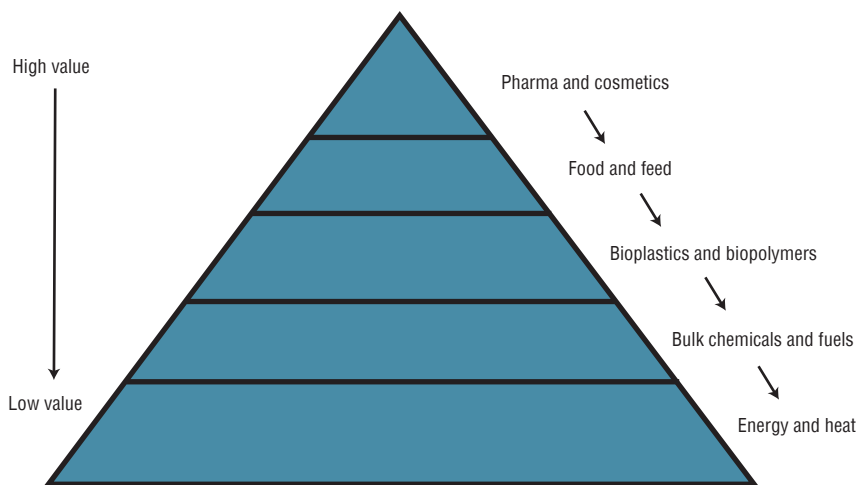
AGRIFORVALOR is an EU Horizon 2020-funded project with a focus on developing the potential of the bioeconomy and bringing added value (valorisation) to biomass side-streams from agriculture and forestry.

Biomass is a renewable resource that has a steady and abundant supply. Side-streams include residues, byproducts and waste. Agricultural biomass covers a range of resources, such as residual stalks, straw, grass, leaves, roots, nut or seed shells and manure from animal husbandry.

Forestry biomass side-streams can include wood chips, bark, sawdust, timber brush (top and branches), as well as mill scrap. Such biomass types are of increasing interest for the production of renewable products, such

Figure 1

A cascading approach sequentially exploiting products, initially those of higher values



Source: Peter Westermann, Copenhagen Institute of Technology

as biochemicals and biomaterials.

The EU produces approximately 900 million tonnes of waste paper, food, wood and plant material per year. While much of this is currently in use in industrial applications or for energy generation, it may be possible to use this resource more efficiently and economically using a cascading approach.

This means that high-value products are first extracted from biomass, what remains is then further processed or reused in bulk materials, with the lowest-value materials used for production of biofuels and power (Figure 1).

The AGRIFORVALOR approach

Agriculture and forestry biomass can be a key resource for the development of regional bioeconomies. The identification of existing and emerging technologies, processes and innovations suitable to create and add value to Irish side-streams is a key challenge.

AGRIFORVALOR will meet this challenge by facilitating engagement between farmers or forest owners and stakeholders from bio-industry, research, academia and innovation agencies in order to bridge the

research and innovation divide and stimulate market uptake of biomass resources into added-value products

Farmers and forest owners will have an important role to play as potential suppliers of side-streams. There may also be future opportunities to become active partners in biomass value chains as well as gaining both knowledge and support in exploiting emerging research and exploring business development.

The AGRIFORVALOR project is establishing three biomass innovation design hubs in Ireland, Spain and Hungary. In Ireland, the hub partners include organisations such as the Institute of Technology Tralee (hub manager), the Irish Farmers Association, the Irish Forest and Forest Products Association (IBEC) and Teagasc.

Each hub will support a national network of farmers and forest owners, together with suitable partners and technology stakeholders, to identify opportunities for the development of bio-products and new value chains.

This will be achieved via the sharing of identified innovations and best practice within and across the hubs and providing the follow-up business development supports required.

The Irish hub welcome network is

Launch of Irish Innovation Design Hub

The Irish Innovation Design Hub will be launched at the Citywest Hotel, Dublin, on Wednesday 23rd November, commencing at 9.30am (registration from 9am).

The morning session will provide an insight into actions of the AGRIFORVALOR project and highlight some best practice examples of bio-energy production in Ireland.

The afternoon session will focus on the bioeconomy, new biomass value chains and opportunities for the production of value-added products from biomass.

This will highlight international best practice from companies which are already developing innovative added-value products, such as platform chemicals and biopolymers, from biomass side-streams across the agriculture and forestry sectors.

For more information and to gain access to research results, please register on www.agriforvalor.eu or contact Tom Houlihan, Teagasc, Killarney (087-618 4353) or Barry Caslin, Teagasc, Roscommon (087-137 5070).



Plate 1: ARBOFORM Mouldings from Lignin (source: www.tecnaro.de).



Plate 2: Textiles from milk casein (source: www.qmilk.eu).
INSET: Plate 3: QMILK Cosmetics from milk casein (source www.qmilk.eu).

open to all with an interest in adding value to biomass. Individuals can join by registering at <http://agriforvalor.eu/register>. This will provide members with access to the extensive knowledge and expertise base of the EU-wide AGRIFORVALOR team. In addition, members will be notified of all upcoming events and support opportunities.

To date, AGRIFORVALOR has identified 25 good practice examples of valorisation of agricultural and forest biomass side-streams in Europe and beyond. Project partners have also identified 48 examples of state-of-the-art agriculture and forestry biomass side-stream research. These examples, along with future findings, will be accessed via the project website www.agriforvalor.eu, specifically in the project's interactive side-stream value tool.



AGRIFORVALOR has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 696394

Added-value examples from Europe

Example 1: Lignin is a major component of wood and can also be extracted from tree bark, sawdust and straw. The German company TECNARO GmbH produces high-quality thermoplastic materials for the plastic processing industry (Schweizer, 2015). For example, the patented and award-winning product ARBOFORM® is based on lignin, a byproduct of the pulp industry, combined with natural additives and natural fibres (e.g. flax, hemp). TECNARO converts this material into mouldings, sections or panels on conventional plastics processing machines in just the same way as a petrochemical thermoplastic material.

ARBOFORM® shows very little shrinkage, allowing precision products to be manufactured which conform stringently with manufacturers tolerances. This allows a range of

commodities such as computer, television, mobile phone or watch casings to be manufactured from wood-based side-streams (Plate 1 above).

Example 2: Each year in Germany, almost two million tons of surplus milk is produced which cannot be traded or used as food. The company Qmilch GmbH has developed an innovative process to produce a textile fibre from this milk casein. In extrusion, the casein is kneaded in a continuous process and pressed through a specially shaped spinneret. Since the process temperature is under 100°C, the special properties of milk can be maintained. The main product, a bio-degradable fibre (QMILK®), offers great development potential. This bio-fibre has excellent functional characteristics for clothing, including antibacterial and skin sensory properties (Plates 2 and 3 above). Therefore, it offers considerable potential in areas such as home textiles and textile equipment, as well as in the production medical technology without the addition of chemicals.

Why a modular approach might suit you...

Horticultural courses in the Teagasc College at the National Botanic Gardens Dublin

John Mulhern
College Principal

This year, we have seen a significant upsurge in demand for part-time courses in horticulture. Let me clarify what I mean by a full-time course and a part-time course – a full-time course is where a student attends a course completing all the modules and therefore attends full time. A part-time course is where a student elects to complete one or two modules within a course and therefore attends part time.

Currently, we have 50 students attending our full-time FETAC Level 5 and 6, while 110 students are completing part-time Level 5 and 6. This is a trend that is also evident in other institutions and other countries.

People are electing to do specific modules with us because they are working in that particular area or would like to in the future. A good example of this is where part-time students are completing two modules with us at Level 5 every Friday, namely fruit and veg production and plant protection. Both of these modules are popular with part-time applicants because they are complementary. They run every Friday for the full day through the academic year.

In the fruit and veg module, the learning involves explaining key factors affecting fruit and vegetable production, pollination, fruit and vegetable nutrition, common problems of fruit and vegetables and controls and also the range of skills involved in the production cycle.

In plant protection, the learning includes describing the characteristics of common plant pests and disease-causing agents, reviewing the effects, reproduction, spread and control of weeds, describing the range, formulations and uses of pesticides in horticulture, identifying a range of horticultural pests and diseases, pest and disease control measures and legislative control practices and, finally,



applying pesticides with a knapsack sprayer.

This module also covers the students' requirements for the sustainable use directive (SUD).

Direct entry into Level 5 is facilitated through a simple application process direct to the college. The full list of courses in the college is as follows:

Major awards list

- Level 5 Certificate in Horticulture
- Level 6 Advanced Certificate in Horticulture Sports turf
- Level 6 Advanced Certificate in Horticulture Nursery stock
- Level 6 Advanced Certificate in Horticulture Food Production
- Level 6 Advanced Certificate in Horticulture Landscape Design and Construction
- Level 7 WIT Degree in Horticulture

Minor awards (component module) list

- Level 5 Plant ID and Use
- Level 5 Fruit and Vegetable Production
- Level 5 Plant Propagation
- Level 5 Landscape Construction and Maintenance
- Level 5 Plant Protection
- Level 5 Hort Mechanisation
- Level 6 Sports turf Science and Maintenance
- Level 6 Nursery Stock Production
- Level 6 Food Production
- Level 6 Landscape Design and Construction
- Level 6 Ecology and the Environment
- Level 6 Tree and Shrub Management
- Level 6 Garden Centre Operations

So, depending on your interest, we can provide you with a wide variety of choices in either full-time or part-time mode.

Level 6 courses are geared towards people who are working in a specific

sector. Take sports turf science and maintenance as an example. This module runs over the winter months of November to March on one to two days per week, depending on site visits.

Staff from golf courses and other turf grass facilities are participating in this part-time module because it suits them time-wise. These are people who are refreshing their knowledge and upskilling themselves in the more technical areas of sports turf management.

For specific entry into a Level 6 module, we look for at least three years' employment in the relevant sector, an interview and a letter from the current employer. If a person has completed a full-time Level 5 in horticulture, they may be admitted to this route also.

Lots of people are working in the horticulture sector, but may not have recognised qualifications. We all need continuous learning to make us better as individuals and more efficient employees. All staff need knowledge to be refreshed from time to time and this is equally as important in the horticulture sector as anywhere else.

Now there is a model for getting this done in a way that gives a validated qualification. All interested members of the public should contact the college directly to enquire more about the different courses. Our next open day is on 9 March 2017.

Contact: John Mulhern, Principal, Teagasc College of Amenity Horticulture, National Botanic Gardens, Glasnevin, D09 VY63. Office phone: 01-804 0205. Mobile phone: 087-961 3860. Email: john.mulhern@teagasc.ie. Website: www.teagasc.ie; www.facebook.com/teagascshortcollegeNBG; www.twitter.com/TeagascHortNBG



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