



TEAGASC

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# Today's Farm

Business, production, environment and countryside issues [www.teagasc.ie](http://www.teagasc.ie)



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1. Irish cattle lepto vaccine. 2. GfK Kynetec: Vet Trak Veterinary Sales Statistics. MAT Nov 2014.  
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Editor: Mark Moore | Editorial team: Alison Maloney, Joanne Carroll & Eric Donald  
 Group production editor: Garrett Allen  
 Sub-editor: Regina Horan  
 Cover design: Design at DBA | Imaging: Owen McGauley  
 Printing: Boylan Print Group, Drogheda, Co Louth | Advertising: Frank McGouran  
 All Media Matters (01) 4941071 086-8111567 sales@allmediamatters.com

All editorial enquiries to: Teagasc, Oak Park, Carlow  
 Tel: (059) 9170200 Fax: (059) 9183498  
 e-mail: mark.moore@teagasc.ie | web: www.teagasc.ie

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**Cover** | Nigel Bailey uses a refractometer to measure the level of immunoglobulins in a sample of colostrum. Immunoglobulins are a good indicator of the level of antibodies in the colostrum. These antibodies protect the calf against disease and are vital for its survival.

## COMMENT



**Mark Moore**  
 Editor,  
 Today's Farm

## Reader satisfaction

Reader feedback is always vital and we regularly conduct independent surveys of reader satisfaction with *Today's farm*. Results from the latest survey were excellent. Another measure of quality is how we compare with other publications. We were therefore delighted that a *Today's farm* article won the technical category in the Guild of Agricultural Journalists Awards last November. The article featured sheep breeding in Mayo and was written by local Teagasc adviser John Noonan and others. While there are never grounds for complacency, it is nice to know that independent judges rated the article so highly against stiff competition.

Cuirimid fáilte is fiche roimh aiseolas ó léitheoirí i gcónaí agus gach cúpla bliain, iarraidimid ar thaighdeoirí margaidh neamhspleácha taighde a dhéanamh ar cé chomh sásta is a bhíonn léitheoirí le *Today's Farm*. Rinneamar ceann de na suirbhéanna seo le déanaí agus bhí na torthaí go hiontach. Is é ceann de na bealaí eile a dhéanaimid caighdeán an fhoilseacháin a mheas ná trína chur i gcomparáid le foilseacháin eile sa tionscal. Is mór againn dá bhrí sin gur bhuaigh alt de chuid *Today's Farm* sa Chatagóir Theicniúil i nGradam Chuallacht na nIriseoirí Talmhaíochta i mí na Samhna seo caite. Bhain an t-alt le pórú caorach i Maigh Eo agus scríobh duine de chomhairleoirí áitiúla Teagasc, John Noonan, agus daoine eile é. Cé nár chóir dúinn éirí bogásach ar chor ar bith, is mór an mhaith gur mheas moltóirí neamhspleácha gurbh é an t-alt ab fhearr é as na hailt iontacha uile a bhí san iomaíocht.

## New GLAS planning service available to Teagasc clients

Teagasc will be providing a Green Low-Carbon Agri-Environment Scheme (GLAS) planning and support service through its advisory office network as soon as the Department of Agriculture, Food and the Marine (DAFM) opens the new scheme. This service will be provided under a new partnership arrangement with the National Co-Op Farm Relief Services Limited (NCFRS) and will allow Teagasc to continue to provide clients with a top-quality agri-environmental planning and support service as previously done for the Rural Environment Protection Scheme (REPS) and the Agri-Environment Options Scheme (AEOS).

### Why is Teagasc doing this?

Teagasc is adopting this approach because it does not have enough advisers available across the country to complete and support this work over the next five years. By 2015, Teagasc will have approximately half the number of advisers it had in place when the REPS scheme closed in 2008.

### How to deal with Teagasc for GLAS

Once the scheme is opened by DAFM, clients will be able to work through their local Teagasc office as usual to avail of the GLAS service. Teagasc will ensure that a qualified planner (provided by NCFRS) will be available

to clients who have applied to Teagasc to assist them with a scheme application. The planner will visit them on farm and meet them in the Teagasc office when required. Payments for plans will be made to Teagasc.

### When will the new scheme open?

DAFM is awaiting final approval for GLAS as part of Ireland's new Rural Development Plan, which will run for the next five to seven years. It is hoped that approval will be announced in early 2015 and, once this happens, Teagasc will be in contact with clients to advise on the services we can offer.

### What's the new scheme about?

The scheme is designed to build on the success of REPS and AEOS, which encouraged farming in an environmentally-friendly manner.

- GLAS will be a five-year scheme with a maximum payment of €5,000 annually for up to 50,000 farmers, with an expectation that 30,000 will be accepted in the first year.

- To qualify for payment, farmers will have to undertake specified environmental actions based on a plan prepared by an approved planner. A nutrient management plan is required.

- Access will be on a priority basis.

See <http://www.agriculture.gov.ie/farmerschemespayments/glas/>

## Teagasc secures research funding

On 10 December, the Minister for Agriculture, Food and the Marine, Simon Coveney, TD, announced awards of €20.8m for agri-food and forestry collaborative research projects being undertaken by researchers from institutions across Ireland.

The awards arise from a Call for Proposals launched in March this year under the three competitive, research programmes operated by the Department, namely, the Food Institutional Research Measure (FIRM), the Research Stimulus Fund (RSF), and the Programme of Competitive Forest Research for Development (COFORD).

Teagasc researchers were involved in 54 full applications submitted to the call, leading 41 of these, and being a collaborator on the other 13. Of these, 26 were funded with Teagasc leading 18 and involved as a collaborating partner in the other eight. This is an overall success rate of 48%, an exceptional outcome.

The total value of funding awarded to Teagasc is €7.6m. These results include the full sensory food net-

## BOOK REVIEW

### A Buzz in the Meadow

By Dave Goulson (Jonathan Cape, 2014)

This is the story about a professor of biological sciences buying a 33-acre derelict farm in France and turning it into a haven for wildlife. Dave Goulson, being an entomologist, has a lot to say about insects (of which there are about 10 million trillion on the planet) and the reader will be astonished by the sex lives of some species and amused by the dry humour with which the author communicates this branch of his knowledge.

There are also interesting accounts of butterflies and houseflies and Goulson's enthusiasm for tiny and often despised insects is remarkable.

The final part looks at the growing

threat to pollinators, especially bees, and the tone becomes more serious when the effects of neonicotinoid insecticides – some of which have been temporarily banned by the EU – are considered.

It is not just bees that are at risk of disappearing and Goulson reminds us that the extinction of insects is something we ignore at our peril. Ecologically speaking, we couldn't live without them and yet more attention is devoted to creatures like pandas because we like the look of them. A rare moment of cynicism is expressed by the author when he observes that the disappearance of pandas would mean little other than 'there would perhaps be a tiny bit more bamboo in a forest in China'.

A Buzz in the Meadow is €20 from [www.book-depository.com](http://www.book-depository.com) (including postage to Ireland).

– Sean Sheehan





The funding will cover forestry collaborative research projects being undertaken by researchers from institutions across Ireland.

work application, which arose from a pre-proposal to the FIRM 2013 call and a subsequent full proposal. The Food Sensory Network Ireland grant was awarded earlier this year. In addition, Teagasc (Niall Farrelly) is a partner on a pre-proposal for a virtual centre on long-term forestry research which is led by

UCD. This consortium has been invited to develop a full proposal.

Among the many projects funded across all Teagasc programmes, three received funding of over a million euros. These are:

- "The Virtual Irish Centre for Crop Improvement", led by Dr Dan Milbourne;

- "Long-term sustainable breeding strategies for consistently superior health in cattle," led by Dr Donagh Berry;
- "Multi-breed sheep genetic and genomic evaluations" also led by Donagh Berry. Each project includes a number of university partners and/or ICBF.

## Kildery Cheese launched on German market

Last year, Kildery Cheese was launched to market in Germany to be sold under the prestigious Kerrygold brand. Kildery was developed at the Teagasc Food Research Centre, Moorepark, in collaboration with Tipperary Co-operative Creamery Ltd and the Irish Dairy Board.

Kildery may be broadly considered to be a Maasdammer-style cheese with its associated large, round, lustrous eyes, but Kildery is differentiated in part, by its more intense and mature flavour, in contrast to conventional Maasdammer-style cheeses.

The cheese has already achieved success, winning the 2013 silver medal in the continental cheese category at the Global Cheese Awards, prior to its commercial launch, and this was

followed up by winning the 2014 gold medal in the same category just after its launch to market.

Manuel Rodriguez-Eicke, marketing director of Kerrygold in Germany, says: "Kerrygold Kildery cheese complements our existing range of Kerrygold cheddars and Butterkase cheeses and brings Kerrygold into the Maas-

**“** Kildery is differentiated in part, by its more intense and mature flavour, in contrast to conventional Maasdammer-style cheeses

dam category, which is the largest branded cheese category in Germany. The launch of Kildery Cheese in 2014 moved Kerrygold from being a specialty cheese player to a mainstream cheese brand in the German market."

Cheese has been targeted as a vital end-product for the increased milk pool likely to arise as quotas go by Teagasc and the Irish Dairy Board. Demand for cheese is growing worldwide.

Surprisingly, cheese has not historically been a major component of the Irish dairy product mix and its share in milk utilisation has always lagged well behind that of European competitors.

– TResearch

# upcoming events

## TEAGASC/AHI CALF CARE OPEN DAYS

Teagasc, Animal Health Ireland, Volac and Glanbia are teaming up to run calf-rearing farm walks on commercial farms. The simple "1-2-3 of calf rearing" will be highlighted at the events, while messages around colostrum management, calf nutrition, calf performance and biosecurity will be covered. All events will take place between 11am and 1pm, with last group entry at 12pm. See Table 1.

## TEAGASC SPRING DAIRY LEVY SEMINAR SERIES

"Managing through 2015" is the theme for a series of nine dairy levy seminars taking place around the country in January and February. The seminars will run from 7pm to 10pm and aim to provide dairy farmers with strategies to manage through 2015. Teagasc researchers will present relevant research findings and Teagasc dairy advisers will facilitate a workshop on cashflow budgeting at each event. See Table 2.

## DAIRY EXPANSION SEMINAR

Animal health problems can be disastrous at farm level and issues around milk quality can be devastating in the market place. This seminar will look at animal health issues particular in relation to expanding dairy farms, and will discuss the risks related to expanding through buying in stock. The seminar will also assess how our industry stands in relation to diseases that have the potential to be problematic from an international marketing point of view, and if the risks associated with these are likely to increase as expansion occurs. The event will take place on Friday 23 January in the afternoon in the Horse and Jockey Hotel.

## HILL SHEEP CONFERENCE

The Castlecourt Hotel in Westport is the venue for this year's Teagasc Hill Sheep Conference, which will take place on Wednesday 28 January. The conference, which is sponsored by MSD and Mullinahone Co-op, starts at 6pm. The Hill Sheep Conference qualifies under year three of STAP, with registration for STAP beginning at 5pm.

The topics on the agenda include fattening of hill lambs, nutrition of hill sheep systems, marketing of lamb, results from the regional veterinary laboratory, external parasites and the

**Table 1:** Teagasc/AHI calf care open days

Dates	Venue
Friday 16 January	Nigel Bailey, Clough, Gorey, Co Wexford
Tuesday 20 January	O'Keefe farm, Churchclara, Co Kilkenny
Wednesday 21 January	Tintur dairy farm, Cappoquin Estate, Co Waterford
Thurs 22 January	Tommy Cahill, Tullore, Ballyroan, Co Laois

**Table 2:** Teagasc spring dairy levy seminar series

Date	Venue
Tuesday 20 January	GAA Complex, Carrigoon, Mallow, Co Cork
Thurs 22 January	Ballyroe Heights Hotel, Tralee, Co Kerry
Mon 26 January	Springhill Court Hotel, Co Kilkenny (to be confirmed)
Tues 27 January	Inchydoney Island Hotel, Clonakilty, Co Cork
Wed 28 January	Ardboyne Hotel, Navan, Co Meath
Thurs 29 January	Ballykisteen Hotel, Co Tipperary
Tues 3 February	Errigal Country House Hotel, Cootehill, Co Cavan
Wed 4 February	McWilliam Park Hotel, Claremorris, Co Mayo
Thurs 5 February	County Arms Hotel, Birr, Co Offaly

**Table 3:** Spring tillage seminars

Date	Venue
Tues 13 January	Silversprings Hotel, Cork
Thurs 15 January	Mount Wolseley Hotel, Tullow, Co Carlow
Tues 20 January	Clanard Hotel, Athy, Co Kildare   7.30pm
Tues 20 January	Ferrycarrig Hotel, Co Wexford
Thurs 22 January	Kettles Hotel, Swords, Co Dublin
Mon 26 January	Teagasc, Dundalk, Co Louth
Mon 26 January	Munster Arms Hotel, Bandon, Co Cork
Tues 27 January	Teagasc, Navan, Co Meath
Tues 27 January	Teagasc, Dungarvan, Co Waterford
Mon 2 February	Teagasc, Kilkenny
Tues 3 February	Teagasc, Athenry, Co Galway
Wed 4 February	Teagasc, Clonmel, Co Tipperary
Wed 4 February	Teagasc, Letterkenny, Co Donegal
Thurs 5 February	Bel Air Hotel, Ashford, Co Wicklow
Mon 9 February	Teagasc, Nenagh, Co Tipperary
Wed 11 February	Ballyroe Hotel, Tralee, Co Kerry
Wed 11 February	Tullamore Court Hotel, Co Offaly

experience and findings of recording of hill sheep in Northern Ireland.

[www.teagasc.ie/events](http://www.teagasc.ie/events) or call your local Teagasc office. See Table 3.

## SPRING TILLAGE SEMINARS

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

Topics covered will include:

- Latest on Greening and GLAS
- Break crops including beans
- Crop margins and varieties
- New sprayer regulations (SUD).

Seminars start at 8pm. All are welcome. For more information, visit

## NATIONAL TILLAGE CONFERENCE

The Teagasc National Tillage Conference will take place in the Lyrath Hotel, Kilkenny, on Thursday 29 January. The Department of Agriculture will provide an update on CAP reform, greening and GLAS. Other topics will include cover crops, cereal diseases control, break crops, and a spring barley guide. Conference begins at 10.30am and registration is at 9.30am.

**Table 4:** College open days

Date	Time	Location
Wednesday 4 March	10am to 2pm (tours ongoing)	<b>Mountbellew Agricultural College</b> Mountbellew, Co Galway Principal: Tom Burke   Phone: 0909 679205 Email: tvburke@iol.ie
Friday 13 March	11am to 2pm (tours ongoing)	<b>Clonakilty Agricultural College</b> Teagasc, Agricultural College, Darrara, Clonakilty, Co. Cork Principal: Majella Moloney   Phone: 023 8832500 Email: clonakilty.college@teagasc.ie
Wednesday 18 March	10.30am to 2pm (tours ongoing)	<b>Gurteen Agricultural College</b> Ballingarry, Roscrea, Co Tipperary Principal: Mike Pearson   Phone: 067 21282 Email: info@gurteencollege.ie
Thursday 19 March	2pm to 4.30pm (tours ongoing)	<b>College of Amenity Horticulture</b> Teagasc, National Botanic Gardens, Glasnevin, Dublin 9 Principal: John Mulhern   Phone: 01 8040201 Email: botanic.college@teagasc.ie
Thursday 19 March	10am to 3pm (tours ongoing)	<b>Ballyhaise Agricultural College</b> Teagasc, Agricultural College, Ballyhaise, Co Cavan Principal: John Kelly   Phone: 049 4338108 Email: ballyhaise.college@teagasc.ie
Friday 20 March	10am to 1pm (tours begin at 10am and 11am)	<b>Kildalton Agricultural and Horticultural College</b> Teagasc, Ag & Hort College, Piltown, Co Kilkenny Assistant Principal Agriculture: Tim Ashmore Assistant Principal Horticulture: Ciaran Walsh Phone: 051 644400   Email: reception@kildaltoncollege.ie
Thursday 26 March	10am to 2pm (tours ongoing)	<b>Pallaskenry Agricultural College</b> Salesian Agricultural College, Pallaskenry, Co Limerick Principal: Derek O'Donoghue   Phone: 061 393100 Email: info@pallaskenry.com

### TEAGASC NATIONAL SHEEP CONFERENCE 2015

The sheep conference takes place at two venues; on Tuesday, 3 February in the Malton Hotel, Killarney, Co Kerry and on Wednesday, 4 February in the Knightsbrook Hotel, Trim, Co Meath. Both conferences begin at 3pm and topics covered will include: lambing difficulty and mortality, vaccination and quarantine, lameness in sheep, making the most of grazed grass, late pregnancy nutrition and nutritional effects on parasite burdens. The conference is sponsored by MSD and Mullinahone Co-op and qualifies under year three of STAP, with STAP registration beginning at 2pm.

### COLLEGE OPEN DAYS

Second-level students thinking of attending agricultural college will have an opportunity to visit the Teagasc and private agriculture and horticulture colleges in March.

What you will get?

- Information on all further and higher level courses in agriculture, horticulture, horses and forestry.
- An outline of careers in agriculture, agribusiness, amenity and production horticulture, forestry, horse breeding and career profiles of graduates.
- Guided tours of college teaching and recreational facilities and visits

to the colleges' modern farming and horticultural enterprises. Who you will meet?

- Talk to college teaching staff and educational experts.
  - Meet students currently attending courses.
  - Hear from potential employers of course graduates.
- See Table 4.

### FORESTRY INFORMATION MEETINGS

New Forestry Programme 2014-2020 Meetings start at 7.30pm. All are welcome.

A nationwide series of information meetings on the new Forestry Programme 2014-2020 will take place providing landowners with new opportunities including attractive forest establishment and support grants.

Teagasc encourages anyone considering establishing a forest or who has a forest to attend as important changes to the forestry grant structure have been introduced.

Topics covered will include:

- New afforestation scheme
- New native woodland schemes
- New annual forestry premium payments
- New road construction scheme
- Differences with previous schemes

Don't miss your chance to get answers to your forestry questions  
See Table 5.

**Table 5:** Forestry information meetings

Date	Location
19 Jan	Teagasc, Mallow
19 Jan	Teagasc, Mullingar
19 Jan	Teagasc, Ennis
20 Jan	Teagasc, Tullamore
20 Jan	Teagasc, Killarney
20 Jan	Teagasc, Mohill
20 Jan	Teagasc, Dungarvan
21 Jan	Teagasc, Midleton
21 Jan	Teagasc, Roscommon
21 Jan	Teagasc, Ballymote
21 Jan	Teagasc, Thurles
21 Jan	Teagasc, Tinahely
22 Jan	Ballykisteon Hotel, Limerick
22 Jan	Teagasc, Letterkenny
22 Jan	Teagasc, Athlone
22 Jan	Teagasc, Portlaoise
26 Jan	Teagasc, Macroom
27 Jan	McWilliam Park Hotel, Claremorris
27 Jan	Teagasc, Longford
27 Jan	Teagasc, Newcastlewest
27 Jan	Teagasc, Skibbereen
27 Jan	Inishowen Co Op Carndonagh
27 Jan	Ballyhaise College
28 Jan	Teagasc, Enniscorthy
28 Jan	Teagasc, Navan
28 Jan	Teagasc, Kilkenny
28 Jan	Teagasc, Navan
29 Jan	Teagasc, Monaghan
29 Jan	Teagasc, Naas

Apologies if delayed delivery means an event has taken place before you receive *Today's Farm*

# Create a cashflow budget

The falling milk price will challenge farmers in 2015. Creating a cashflow budget is vital to “taking charge” in the face of such a financial challenge

**Dr Tom O'Dwyer**  
Head of Dairy Knowledge Transfer,  
Teagasc

**D**airy farmers survived low milk prices in 2009 (and to a lesser extent in 2012), by thinking carefully about where cash inflows or receipts can be improved and cash outflows reduced.

The lesson of these earlier difficult spells was that the “lawnmower approach” of simple, across-the-board cost-cutting is not the answer. Tactics and choices will be unique to each farm business. But every business needs a detailed cashflow budget, which will force you to examine expenditure decisions for 2015, e.g. urea versus CAN or compounds, number of AI straws, area to be closed for silage, and so on.

Once a budget is created, it is vital that actual cashflow is monitored throughout 2015. There is plenty of help available from Teagasc to assist you to create a cashflow budget and our re-designed budgeting templates on [www.teagasc.ie](http://www.teagasc.ie) offer a useful starting point.

## Preparing a budget

Remember that the best time to complete a cashflow budget is now and that ‘two heads are better than one’.

• Start by reviewing your receipts and expenses for 2014. These figures can provide a basis for your 2015 budget.

- Write down your plans for milk and livestock production for the year. For example, your aim may be to milk 80 cows, supplying 32,000kg milk solids and to rear 20 replacements.
- Take an inventory of all livestock on hand at the start of the year. Estimate likely births, purchases, sales and deaths in 2015. The number of livestock on hand at the start of the year will influence your sales for the year. The number of cows (and their calving pattern) will determine your milk supply pattern.
- Estimate the likely winter feed requirements for all stock for next winter. This will influence your decisions around silage area for 2015.
- Estimate the quantity of purchased concentrates/feed required. Can you grow more grass on your farm by adjusting your fertilizer programme? This will allow you to include more grazed grass in the diet and reduce your use of expensive concentrates.

Now, you are in a position to start your cashflow budget. Begin by completing an annual budget before allocating receipts and costs on a quarterly, or monthly, basis. Remember, budgeting isn't an exact science but in most cases a “best estimate” is better than “no estimate”.

• First, estimate your cash receipts for 2015. The main ones will be milk and livestock sales, direct payments and other income (farm and non-farm). Bear in mind the predictions on milk price (Teagasc economists estimate a 10c/litre drop). If you have time you could also calculate milk receipts for a range of prices slightly above and below the current estimates.

• Next, estimate your farm production expenses. A summary of last year's expenses can help you arrive at likely figures for the coming year. Remember, if you do what you always did, you will get what you always got, so you may need to take a different approach in 2015.

• Allow for any stock purchases or on-

farm investments to be made during the year. 2015 may not be the best year for on-farm investments but if some are planned it is important that they are budgeted for and, ideally, funded from borrowings. If the capital expenditure is to be financed by a bank loan, you must include the new loan under the Receipts section (“New Loan into Bank Account”). If you are going to buy livestock, how much will they cost and when will they be purchased?

• Include all loan repayments to be made during the year. The details of all loan repayments should be known at the start of the year (include both interest and principal payments).

• Include your estimate of all personal expenses – living expenses, pension contribution and tax payments. This should be discussed with your partner and other family members. Look at last year as a guide but remember to allow for changing family circumstances, e.g. a child starting third-level education and inflation. You will have to make tax payments in October – talk to your accountant about your likely tax bill and budget for it. Will the lower milk price forecast for 2015 mean a lower tax bill?

• Finally, calculate your annual cashflow surplus or deficit.

Having completed the annual budget you can now move on to creating a quarterly or monthly budget. This involves allocating the annual receipt or payment amount to either a quarter or a specific month.

Having taken the time to prepare a cashflow budget for your farm, don't file it away and forget about it. The cashflow budget must guide all your decisions during the year. Record all your actual cashflows on a monthly basis and compare the actual position with the budgeted position at the end of each month. Developing problems will be easier to spot and you'll be in a better position to take corrective action.





Remember, by planning where you are going financially, you will improve your chances of arriving there safely.

### Examining personal spending

The drawings or living expense figure is often the single biggest cash outflow for farm households. Living costs vary greatly between families. Have you taken the time to examine your family's living costs? Are all of the costs incurred in 2014 likely to be incurred again in 2015? Where can savings be made?

Separate farm and household bank accounts by setting up a standing order from the farm to the household account to cover bills. The amount to be transferred should be agreed between the farmer and his/her partner:

Non-farm income should be lodged to the household account. Farmers who have adopted this strategy say that the distinction between farm and household spending is clearer, as a result.

Finally, drawings could be under pressure in 2015 if no cash reserve exists. Talk to family members to let them know that 2015 could be a tight year. Ask for their help in identifying areas for potential savings.

### After completing a budget

By now, you'll have worked out whether you are expecting a cash surplus or deficit. So, what are the implications for your business and your family?

If your budget anticipates a surplus, great;

you need to ask yourself how you will use it. If your budget shows a deficit, don't ignore or hide it; you need to let others know and figure out how you are going to deal with it. The following guidelines may help you to deal with a budgeted deficit:

- Examine all costs, question every expected expenditure item and prioritise "must-have" costs. Spend time "shopping around" for the best value in inputs, especially on some of the bigger expenditure items. Avail of discounts and genuine special offers. For example, can you avail of night rate electricity for milk cooling?
- Prioritise spending towards those costs that will maximise pasture growth and utilisation. Match stocking rate to expected pasture growth.
- Soil test so that P and K fertilizer isn't wasted. Use slurry/soiled water to replace some purchased nitrogen, especially in spring.
- Eliminate all discretionary spending.
- Consider the sale of surplus/non-performing stock to both generate cash and reduce farm expenses for the year. Only consider selling such stock if it will not adversely affect your business in the future.
- Aim to optimise milk price throughout 2015. This means optimising protein and butterfat levels and avoiding all penalties.
- Keep in touch with your bank manager, accountant and Teagasc adviser throughout 2015.
- Do you need to review your budget paying particular attention to the assumptions you made? Were you overly conservative?

While this article deals with managing through a low milk price year, it is just as important that dairy farmers "manage" a high milk price year. This could include building fodder and cash reserves, spending to improve P, K and pH levels, addressing necessary farm maintenance and so on.

Teagasc is organising a series of events at nine venues in January/early February to provide dairy farmers with strategies to manage through 2015. Teagasc Moorepark researchers will present relevant research findings and Teagasc dairy advisers will facilitate a workshop on cashflow budgeting at each event.

All seminars run from 7pm to 10pm. These events are part of the Dairy Levy Update Series. See upcoming events on page 6 for a list of dates and venues.

## 5 STEPS for 2015

Teagasc's five steps to manage well through 2015.

- 1** Assess the current 'financial health' of your business. Complete a Teagasc Profit Monitor analysis, review your bank balances, study your most recent farm accounts and talk to your financial adviser.
- 2** Consider the options available to you for 2015 and create a plan (number of cows, level of production, etc) and a cashflow budget.
- 3** Do what you can to deliver on the plan while monitoring actual cashflow throughout 2015.
- 4** Prioritise good grassland management – grass is the cheapest feed – and base all feeding decisions on ensuring that cows are maintained in good condition. Don't carry too many stock – match your overall farm stocking rate to the ability of your farm to grow grass. High stocking rates (between 2.25LU/ha and 2.5LU/ha overall) cost money. Sell surplus and/or unproductive stock to reduce costs and generate cash.
- 5** Talk with your wife/ partner, other family members, farm staff, your bank manager, your accountant and your Teagasc adviser and keep them up to date on what is happening with your business. If there is no cash reserve, cash will be tight and others need to know that 2015 will be a "tight year". Ask for, and use, their support.



With thanks to: Seamus Kearney, Fergal O'Mahoney, Richard O'Brien, Kevin Connolly and George Ramsbottom (Teagasc) and Finola Colgan (Mental Health Ireland).



# farm management

## Farm profile

### Managing for volatility

Tom and Anne Hogan, who farm at Clooneen, Cloughjordan, Co Tipperary, are in the Arrabawn catchment area but also supply Lakeland. They have 220 cows and a milk platform of 75ha. Over the last two to three relatively profitable years, Tom has been investing heavily in soil fertility and sward productivity. "Our two biggest bills are for concentrates and fertilizer and our overall strategy is to raise our production and utilisation of grass and reduce our use of concentrates," he says.

Outlay on P, K, N and lime reached a massive €750/ha in 2014. Tom believes that building phosphate and potash levels in "good" years is one way to counter milk price volatility and represents an investment in the future. "We have managed to get many of the fields up to index 3, so we have some scope to ease back in a tough year. We also try to do a bit more reseeding when times are good." A total of 15% of the farm was reseeded in 2014 against a long-term average of 10%.

Michael Hogan, Tom's Teagasc adviser, says the aim for more production from grass is strategically important. "Tom knows that there is a range of performance from his paddocks: the best paddock yields about 18t/ha and the worst around 7t/ha to 8t/ha. So, he knows there is scope to increase milk from grass from

the present average of 12t to potentially between 13.5t and 14t of dry matter.

"The key is to match grass production and stocking rate. The target for 2015 on this farm is to have a maximum of 2.5 livestock units per hectare. If stocking rate gets ahead of grass production, it can get very expensive because cows are eating extra concentrate. In a low milk price year, it might be better to have a few cows less.

"Tom is not a heavy user of concentrates (at 600kg/cow) but, with better grass production, he aims to go lower and there is scope to reduce the €48,000 spent on concentrates in 2014 by about one-third, targeting a level of 400kg or less."

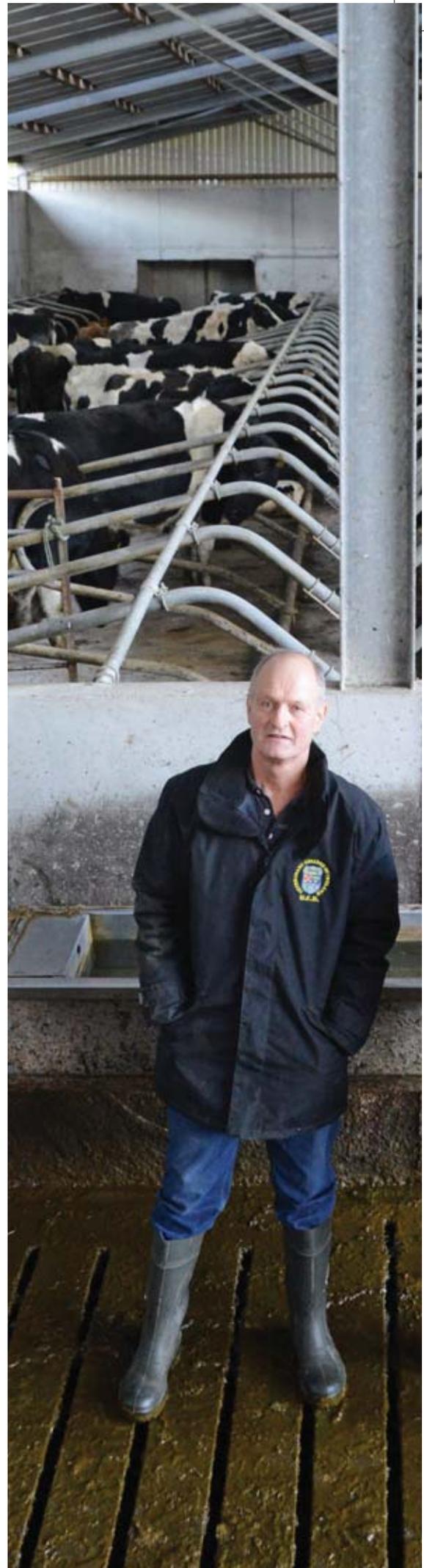
Tom says culling and replacement rates, genetic merit and the length of the grazing season will all be part of the "mix" in the post quota world. "We have 64 replacement heifer units coming through (these are reared on a block of land away from the home unit) and we will genotype them to ensure we are only bringing the very best animals into the herd," says Tom.

"With no quotas to worry about in 2015, it's possible we might not dry off until later into the autumn/winter – milking for 270 days rather than our current 240. One thing we are sure of is that whether the milk price is good or bad, we're better off increasing our production and use of grass.

"To be honest, the possibility of a super levy has been a concern for a number of years (sadly likely to be a reality this year)," says Tom. "So, we've had to have a contingency for that. I think it will be prudent to continue to try and generate a financial contingency fund in the good years and only draw on it when times are seriously challenging."



LEFT: Teagasc adviser Michael Hogan and Tipperary dairy farmer Tom Hogan.





The carefully designed parlour and holding yard are kept spotlessly clean.



Tom Hogan, Michael Hogan and Anne Hogan discuss strategic planning.

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# Land, labour and price challenges in New Zealand

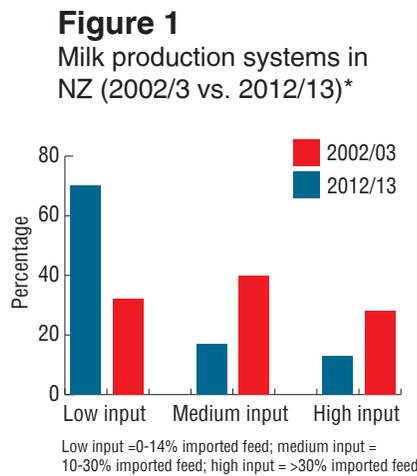
A group of Teagasc dairy advisers visited New Zealand dairy farms last November to observe trends in milk production there following a period of high milk price in a quota-free environment

**George Ramsbottom**  
Dairy Specialist,  
Teagasc Animal and Grassland  
Research & Innovation Programme  
With input from colleagues in the advisory group\*

Many New Zealand dairy farmers have adopted higher input systems of milk production. According to DairyNZ, the percentage of dairy farms operating medium and high-input systems has more than doubled over the past decade at the expense of the more traditional low-input systems of milk production.

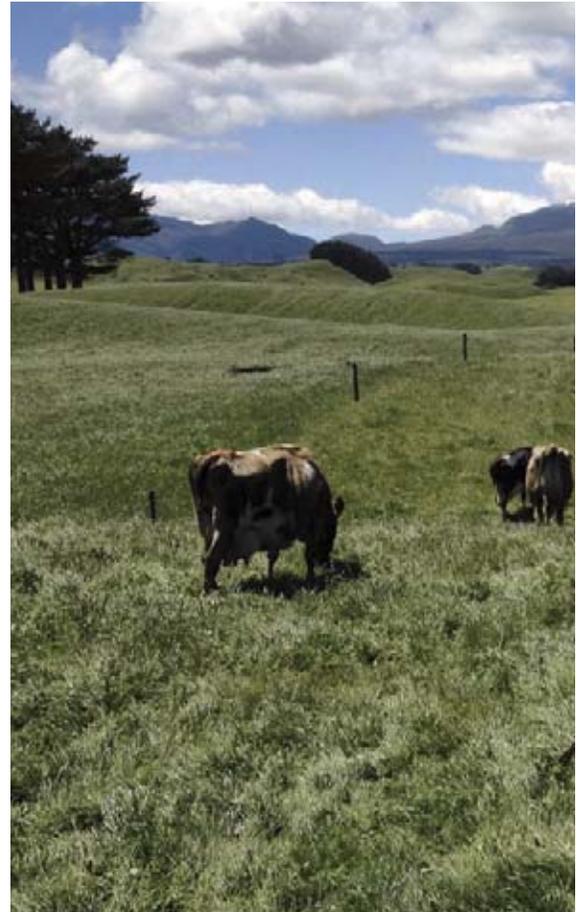
There are three key factors behind this trend:

- Increasing intensification (more cows) has not been matched by a corresponding increase in grass production, resulting in more supplement being purchased to support the rise in stocking rate. This usually takes the form of summer supplement or, increasingly, off-farm winter grazing which is counted as an imported feed;
- The one-million cow increase in the national herd size that has occurred over the decade has pushed dairying



into more marginal areas of the country. These areas are characterised by poorer quality land or longer winters;

- The price of dairy farm land has risen substantially. High-quality dairy farms are selling for at least \$NZ50,000/ha (€30,000/ha). Land is often valued based on its peak production (the year it produced the highest milk solids yield per hectare) and this is driving farmers to maximise production per hectare.



## Case studies

### Medium-input dairying

Liam and Clare Guiney contract milk 800 spring-calving cows on a 240ha milking platform (220ha irrigated) near Fairlie on the South Island. This is non-traditional dairy land in need of irrigation in the summer. Due to its altitude (450m above sea level), it is at risk of winter snow and late spring frost.

As 300kg DM per cow of supplement is fed in mid-summer and cows spend 10 weeks off-farm over the winter (approximately 750kg DM per cow of winter grazing), the farm is classified as operating a medium intensity dairy system. Approximately 20% of total feed is "imported".



**Liam Guiney contract milks 800 spring-calving cows in total.**

Last season, the couple estimated that they grew over 15t and utilised over 14t of grass dry matter per hectare. The stocking rate on this farm is 3.7 cows/ha on the irrigated

**Table 1:** Comparison between Irish and New Zealand dairy industries

	Ireland	New Zealand
Dairy farm (,000's)	18.0	11.9
Dairy cows	1.1m	4.8m
Herd size (cows per farm)	61	402
Milk yield (kg milk solids/cow)	380	370
Milk composition	3.94% fat 3.39% protein	4.82% fat 3.69% protein
Stocking rate (LU/ha)	1.9	2.8
Dairy breeds	> 95% Holstein/British Friesian	37% Holstein/NZ Friesian 43% crossbred 12% Jersey



Cows grazing in Taranaki on tough Lahar country, with rolling hills. Only 20% of the farm could be mowed for silage/hay. Lahars are lumps of mud and stone that flowed down from Mount Taranaki during the last eruption in the 1700s, making the pastures more challenging to manage than the flatter farms of the East Egmont plains in south Taranaki.

land, with an average of approximately 390kg milk solids produced per cow (1,430kg milk solids/ha). The costs of production on the most efficient of such farms are approximately 14c/litre (this includes a charge for own labour) but is before bank interest or principle is repaid.

### High-input dairying

The Poole farming partnership milks 750 cows (250 autumn calving) near Te Awamutu in the heart of the Waikato on a 220ha milking platform (3.5 cows per ha). This highly fertile, free-draining farm is not irrigated and, like many in the region, was badly affected by severe summer droughts in the past two seasons. This prompted the family to reduce the herd size by 50 cows from the 800 milked at peak in the 2013/14 season.

Despite the drought, the Pooles estimate that the milking platform grew a respectable 14t and that they utilised 12t of grass dry matter per hectare in 2013/14.

That year, cows averaged 450kg of milk solids per head (1,600 per hectare).

» Continued on next page



Many New Zealand dairy farmers have adopted higher input systems of milk production

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On average, 1.5t of dry matter is fed per cow (mostly in the form of palm kernel and maize silage). This means that approximately 30% of total feed is imported to the farm.

A recently purchased “run off” grows maize silage, grazes the replacement heifers and allows the family to winter half of the herd off the milking platform. Costs of production on the most efficient of such farms are approximately 20c/litre.

The trend towards higher milk production costs systems will result in many Kiwi dairy farms operating at or below the expected 2014/15 milk price. Last year's record milk price was the equivalent of 39c/litre, while the price expected this year will average 21.5c/litre.

The potential effect of such a price reduction was only beginning to hit home during our visit. More recently, Rabobank's December Rural Confidence Survey indicates that dairy farmer expectations for their farm business performance and willingness to make further investments this year at their lowest since 2009.

While exports for the six months to November were 4% higher than in the previous year, full season production levels are likely to be moderated and earlier culling of cows is already starting to take place. Our interviews with the rural lenders suggest that they will support working capital requirements next spring (June to September 2015) when the effects of the lower milk price have their greatest effect on dairy farms.

The level of indebtedness varies hugely. The bankers we interviewed said that 20% of their client base owed 80% of the money borrowed. On average, the interest paid by New Zealand's dairy farmers is the equivalent of \$1.50/kg milk solids (approximately 7c/litre).



Pick of the type of Kiwi cross cows that Enda Hawe likes best – note the amber tail paint – black and amber.

## Breeding and genetics

We were hugely impressed by the milk composition being achieved at peak yield on the dairy farms we visited. Enda Hawe, formerly from Co Kilkenny, now sharemilking at Oxford, about an hour's drive north of Christchurch on the South Island, is typical. His 760 cows, receiving 2kg of meal on grass, were yielding 2.48kg milk solids in fewer than 30 litres of milk per day.

He was adamant that the optimum cow for his system was the F12 (that's a three-quarter Friesian, one-quarter Jersey). To obtain that mix, he uses Friesian AI on first cross Jersey X Friesians and crossbred AI on the more pure Friesians and Jerseys. Weighing animals six times a year, he estimates average liveweight at 480kg and he produced 512kg milk solids per cow last year.

Superb breeding management underpins the performance being achieved on this farm.

At the end of last year's 13-week breeding season, Enda had only four cows not in calf (0.5% empty rate) and this allowed him to maintain the herd size with a replacement rate of 8%.

The in-calf rate to first service was 63% and the six-week in-calf rate was 83%. The breeding programme on the Hawe farm involves:

Tailpainting and heat recording start three weeks before the breeding season begins. He checks the cows once daily at morning milking. Non-cycling cows are scanned and treated with CIDRs.

During the breeding season, cows are checked once daily – at morning milking (which starts at 3.30am). Enda mans the breeding platform each morning for the first six weeks of the breeding season. It's a stand beside the 50-unit rotary that allows him to monitor tailpaint. Where paint has been removed, cows are drafted for insemination. This year's three-week submission rate was 86%.

On the Hawe farm, all replacement heifers are artificially inseminated, following a two injection prostaglandin synchronisation breeding programme. This is unusual in New Zealand where stock bulls are normally run with the replacement heifers,

Last year, 87% of the heifers held to first service and they started to calve a week ahead of the main herd.

Over 40 AI-bred heifers are reared on the farm per 100 cows – the animals are in the top 10% for breeding worth nationally and command a premium.

**\*Advisory group: Sandra Hayes, Thurles; Padraig Costigan, Moorepark; Brendan Garry, Ballina; Eoin Horgan, Newcastle West; Veronica Ryan, Ballymote.**

## LABOUR

With an average herd size of over 400 cows, most dairy farmers have one or more workers employed. With large-scale dairying, labour management is a more important skill than grassland or breeding management. We observed varying levels of success. Recruiting and retaining the right people are just as big a challenge in New Zealand as they are in Ireland. With larger numbers of staff on farms, the dynamic of having multiple employees working together can be a challenge in itself. No farm we visited ran more than 150 cows per full-time labour unit.

## OTHER ISSUES

Lots of dairy farmers were selling surplus replacement stock. Black and white replacements were making from \$900 to \$1,200 (€540 to €720) per head for export to China, depending on age and weight.

Environmental legislation is being formulated, with regional councils responsible for establishing their own rules and regulations. There seemed to be variation in the rules laid down by different councils and much debate about what should, and what will, be introduced. The Pooles in the Waikato constructed an effluent separator last year – it cost €350,000 with liquids spread on half of the milking platform.

## IMPLICATIONS FOR IRELAND POST-QUOTA

In New Zealand, we learnt that successful expansion is underpinned by a combination of:

- Continued efficient farming – especially cows and grass;
  - Careful planning and monitoring – particularly financial and physical;
  - Learning new skills – with managing staff the most important of all.
- “Successful farmers are those who can ‘breath in and out’ with the milk price – no massive investment in infrastructure.”



**ABOVE:** Cows should go to grass as soon as they calve or from late January where ground conditions allow.

# Early grazing cuts costs

Grass is key but prudent concentrate and fertilizer usage is also at the core of cost-effective production

**Grainne Hurley**  
Business & Technology Dairy Adviser,  
Teagasc, Clonakilty, Co Cork

**I** recently asked John Burchill about his philosophy on spring grazing. “Flexible plus sensible equals possible” was his reply. John will milk 186 cows this spring on a 64ha milking block just outside Bandon, Co Cork. John believes that with pressure on prices and a superlevy looming, grass utilisation is more crucial than ever.

With grazed grass by far the cheapest feed, the first question to ask yourself when considering your strategy is: When can you let cows out? Should it be based on the calendar or condi-

tions? The answer is that cows should go to grass as soon as they calve for spring-calving herds or from late January where ground conditions allow. Grazing will be delayed maybe until early February in more northern areas or on heavier soils.

For John, cows go to grass two days after calving, which starts in the last week of January. A fresh block of grass is given after morning milking and again in the evening. For the evening grazing, cows are allowed out for three hours then housed with the best grass silage he has. “I’ve been milking cows on OAD for a couple of years to reduce spring labour and improve herd fertility,” says John.

» Continued on next page

# dairying

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“I give them enough silage, so that it is all eaten by 1am,” says John. “Usually, cows get 2kg of concentrate in the morning, but when cows are on OAD milking until mid-March we don't feed meal in the evening.”

## Grass availability

There's a common misconception that you should postpone grazing start date if you think that there will be little or no grass available. But even farms that have high grass demand in spring do not run out of grass if basic grass budgets are in place.

Take the example of a milking block stocked at three cows/ha and with an evenly spread compact calving pattern of 80% within six weeks. Daily grass demand per hectare will only hit 10kg/day by the third week of calving, where 3kg of concentrate is also fed per cow. By rationing grass, sticking to a grazing plan in the first rotation and getting appropriate fertilizer/slurry out early, you will not run out of grass.

The first paddock that you should target to graze should not be the one with the heaviest grass cover but a light cover of about 1,000kg DM/ha. If you start grazing your heaviest covers with only a small number of freshly-calved cows, they will be very slow to get through these covers.

Intake is quite low post-calving and they will do a poor job in cleaning out. You will most likely not have the opportunity of going back into these paddocks to graze out better as cows would inevitably damage the ground. And if paddocks are not grazed out well in the first rotation, it reduces subsequent grass growth and grass quality.

“I believe that most poaching is caused because cows are out longer than necessary for them to eat their allocation of grass,” says John Burchill. “This might be just one extra hour. We try to avoid poaching by backfencing paddocks, having plenty access points, using plenty of white wire and steel poles and putting up single line cow paths down long fields. On very wet days, when paddocks are more prone to poaching, we will graze paddocks that are earmarked for reseeded.”

## Spring rotation planner

So as not to run out of grass, stick to a simple grass budget or spring rotation plan. The principle of the spring rotation planner is to ration grass on the farm from the start of grazing until you finish the first rotation. “I do a farm cover and measure what grass we have at key target dates through-



## Key messages

- All dairy farmers are facing a severe cashflow squeeze this year. Putting a plan in place to maximise the use of our cheapest feed source – grass – is a good start to dealing with this situation.
- As part of your overall budget set out the number of tonnes of concentrate required during the first rotation.
- Get a cost for this concentrate from your suppliers and monitor the use of that feed ensuring, at all times, that the herd is fully fed with a combination of grazed grass/good quality silage and concentrate with good quality energy ingredients, as required.

out the spring and “space out what grass I have,” says John.

The key targets and dates are: graze 33% of the farm by 1 March, 66% of the farm by 17 March and 100% of the farm by “magic day”, somewhere between 5 and 12 April, depending on stocking rates, grass growth and soil type. John will not finish his first rotation before 1 April, but he states that it is critical that he gets cows out early in the spring so the first paddock has enough regrowth on it when he starts his second rotation.

Push all of these dates out by one week on colder soils up the country or heavy soils. If you graze too fast, you will be too tight on grass in your second rotation as you didn't leave enough time for grass to regrow. If you are not hitting these targets, your second rotation will start too late and your grass covers will get too high for subsequent rotations and reduce grass quality.

If you stick with these targets AND apply nitrogen early, you will not run out of grass. John stresses that his second rotation must be a minimum of 21 or 22 days, so that he is without



All grazing ground must get a minimum of 70 units of nitrogen/acre in the first rotation.

fear of running out of grass. If you have fertilizer out but you find that you are grazing more ground than your budget allows, move cows into heavier covers to slow them down.

### Concentrates

If this still doesn't slow the budget, you may need to increase supplementation or silage. Research from Teagasc Moorepark has shown that freshly-calved cows need 3kg to 4kg of meal six weeks post-calving to fill their energy deficit.

Keep the diet as simple as possible. Where cows are on grass, feed a 16% crude protein concentrate, where the top three to four ingredients are high in energy (target a UFL content of 0.94 minimum on a fresh basis). Be careful not to push cows too hard on excessive protein diets, which can have detrimental effects on cow condition and fertility.

Cows don't need silage in the diet, unless there is a shortage of feed, which is more common on more highly stocked farms, especially in the early spring.

Where 15kg of grass plus 3kg meal

(approximately €260/t) is fed, the cost per day is €1.98/cow. Where cows are on silage (12kg) and concentrate (6kg) the cost is €3.48/cow/day.

In an 80-cow herd, this is a difference of €840 in one week without even considering other financial benefits, such as increased milk price through increased solids, reduced slurry storage and slurry contracting costs, etc.

"We were in winter milk until 2008," says John. "It's a challenge to adapt to increasing grass utilisation, improving grass budgeting skills and increasing grass tonnage. By working hard at that, we've reached 418kg milk solids/head from our spring-calving Jersey crossbred herd. Our output came from grazed grass and just 397kg of meal in 2014.

"I would say, however, that I am a lot braver with my spring grazing management when I know I have a good reserve of silage in the silage pit to allow for a year like 2012."

### Early grazing needs early nitrogen

When you consider that your farm has not received nitrogen for three to four months, you are only fooling

yourself if you think you can grow enough early spring grass without early applications of fertilizer. All grazing ground must get a minimum of 70 units of nitrogen/acre in the first rotation, whether this is in the form of chemical urea, CAN, compound fertilizers or slurry.

Starting in mid to late January (or early February in colder soils) spread half a bag of urea (23 units nitrogen/acre) across two thirds of the farm. Spread 2,500 to 2,800 gallons of slurry per acre on the remainder of the farm, where the lower grass covers are. Six weeks later, spread the second round of spring fertilizer.

Apply 2,500 gallons/acre of slurry after paddocks that have been grazed out and follow with another 30 units nitrogen/acre; otherwise, spread a bag of urea/acre. If you know your soil fertility status and your ground is low in phosphorous, you should spread 50% of your total phosphorous requirement as a compound fertilizer (N:P:K) in your second fertilizer application and the remaining phosphorous throughout the summer/autumn.

# Hygiene and colostrum key to calf care

On rare occasions, a cow or heifer will produce poor quality colostrum but if calves fail it's usually because they don't get adequate colostrum soon enough. **Mark Moore** reports.

**W**hile it appears like a device for navigating the high seas, the refractometer Wexford dairy farmer Nigel Bailey is holding up to the light is actually measuring the concentration of immunoglobulins, an indicator of the level of antibodies in a sample of colostrum.

"I first came across this useful little device when beet producers were using it to determine the sugar concentration present in a beet sample and was intrigued to learn that it has an equally useful application in calf rearing," says Nigel. The degree to which light is "refracted" as it passes through the colostrum sample indicates the concentration of immunoglobulins/antibodies present.

It's the antibodies which make colostrum such a vital factor in the early life of the calf. A newborn calf's defences against disease are poorly developed and it cannot yet produce its own antibodies. So, it relies on a transfer of antibodies produced by the mother, and present in the colostrum, to fight disease. The calf starts to lose its ability to absorb these antibodies from colostrum after just two hours. This is why it's so vital to get a good feed of colostrum into the calf early and often. Colostrum, or beestings, is literally a life saver for the calf.

"Our target is to get three and a half litres of first-milking colostrum into the calf within two hours of birth," says Nigel, who milks 135 cows near Gorey.

Assumptions are dangerous and, occasionally, a cow or heifer's milk will not contain adequate antibodies so that even if it receives colostrum early in its life the calf may fail to thrive or even die. "It's extremely rare but we have we have had a couple of cases

## Key messages

### Labour for calf-rearing

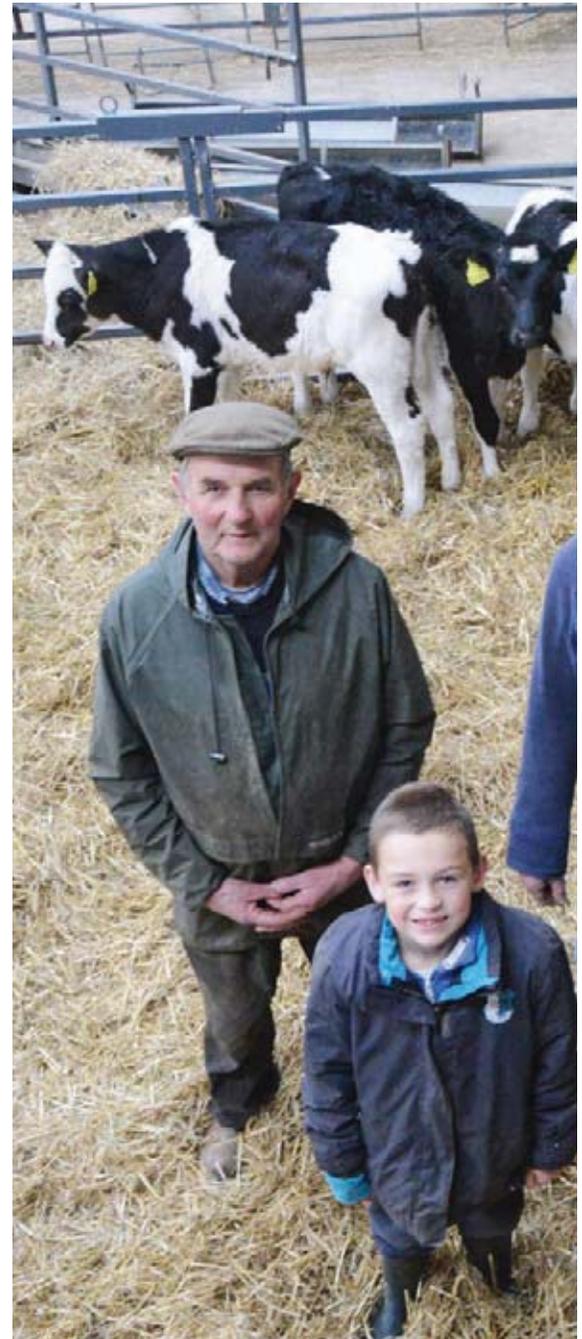
Feeding adequate colostrum and providing proper nutrition will reduce the labour associated with calf rearing.

Calves can be:

- Group fed once adequate colostrum has been provided and they are drinking properly;
- Fed once-a-day from three weeks of age;
- Turned out to grass at three to four weeks once drinking properly and suitable weather conditions are experienced.

Investment may be required if either facilities or labour are inadequate.

**Nigel Bailey uses ear tags with chips, which can potentially identify individual calves to an automatic feeder.**



where we felt we had done everything right and, yet, the calf was lost," says Nigel's brother, Damian. "So, we routinely measure the level of IGs/antibodies using the refractometer, which was recommended to us by a vet. Of course, you have to write down the reading, so that you will know that the calf was getting enough IGs/antibodies.

"There's no pattern or easy way to tell when an animal is going to produce insufficient antibodies. It doesn't matter what age the animal is, or whether she was



Nigel Bailey with his father Chris (left) and sons Craig and Aaron.

## REDUCING THE WORKLOAD

In a Teagasc Moorepark labour survey, calf-rearing accounted for 6% of the annual workload but 15% of the workload (two and a quarter hours per day) in March. This high labour demand can be even worse if disease strikes or facilities are poor.

Some labour saving tips:

- Reduce disease risk through attention to hygiene and by feeding of plenty of colostrum. Disease multiplies the work.
- Organise facilities so it's possible to clean all calving boxes and calving pens mechanically.
- Calves can be fed whole milk or milk replacer once-a-day from three weeks of age; this doesn't have to be at morning or evening milking but could be at the more suitable time of mid-morning. Check calves again in the evening.
- Calves can be turned out to grass from three to four weeks of age. Once they are outdoors, make sure that they have shelter and a dry lie. Watch the weather forecast; avoid turning calves out into poor weather.
- Calves can be group-fed once adequate colostrum has been provided and they are drinking properly.
- Set up a system to pump or mechanically move milk from the dairy to the calf house. Carrying buckets takes too long and you can injure yourself.
- If you don't have a beef enterprise, sell all beef calves at the earliest opportunity; feeding six litres per day of whole milk or milk replacer will allow these calves to look healthier at a younger age.
- Calf rearing could be contracted out or additional labour hired in. In both cases you must communicate clearly with the calf rearer what you expect in terms of calf-rearing; ideally, agree a written protocol.
- You must invest in appropriate calf rearing facilities if your current facilities are inadequate; the investment will be returned many times over the years.

producing good colostrum in previous years, she might still produce poor quality colostrum so you have to check each time. Readings usually fall in the range from zero to 30. The lowest we have recorded is 15 and many cows produce a reading of well above 30 but 22, or greater, is adequate.

As well as assessing the colostrum, the Baileys follow Teagasc and AHI calf-care recommendations. They ensure that all calving pens and cow housing are clean to minimise disease risk; they observe virtually all calvings but only intervene when necessary; and are especially vigilant in the "golden hour" after birth. They remove the calf immediately after birth to a clean area to reduce disease pressure on the calf.

In the past, Nigel used an automatic feeder for older calves with each getting 13% to 15% of calf birthweight in whole milk or high-quality milk replacer, depending on the milk price. "Calves would wear a neck band for identification, but that system is a bit outmoded. I haven't bought a new system yet but I'm planning to, and all calves are given chip tags so that a future system can identify them."

While a good start is more than half the battle for a newborn calf, there's a lot more to calf-rearing. Teagasc is offering a series of calf-rearing events in the coming weeks. See our events pages for further details.

Also, for more information on these issues, consult the calfcare leaflets on [www.animalhealthireland.ie](http://www.animalhealthireland.ie)

# Foundations of crop yield

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

**F**ertilizers are the single biggest input cost in tillage. Expenditure ranges from €300/ha to 425/ha, depending on soil fertility levels and crop type (winter or spring cereals). Good nutrient management – from liming to delivering the correct combination of nitrogen (N), phosphorus (P) and potassium (K) – will optimise crop potential and pay dividends at harvest time

A good place to start is with your 2015 Farm Fertilizer Plan. Update this in conjunction with your adviser. The plan will help identify fields that need lime and indicate rates and type of lime to use. Organic manures should be factored into the fertilizer plan at this early stage and targeted based on field/crop demand in order to exploit their maximum nutrient value.

Soil tests will identify fields that may benefit from an application of organic manures due to low soil P and K levels in advance of crop planting. Tests will also provide information on the soils pH status and show the rate of lime needed to correct soil pH levels for optimum crop production.

Where soil test results are not available, or are more than five years old, fields should be sampled as early as possible.

## Soil pH and lime requirement

Maintaining soils in the optimum pH ranges for the crop rotation on your farm is critical as soil pH has a large effect on the availability of major and minor soil nutrients (N, P, K, Mg, Cu, Mn and Zn). Only apply lime based on the soil test report. Excessive application of lime can “lock up” such

**Table 1:** Crops and target soil pH levels

Crop type	Soil pH
Beet/beans/peas	7.0
Cereals/maize	6.5
Potatoes	6.0

**Table 2:** Available N, P K values for a range of organic manures (units/1,000 gallons)

Manure type	N	P	K
Cattle slurry	6	5	30
Pig slurry	19	7	20
units/tonne			
FYM	3	2.4	12
SMC	3	3	16

Cattle slurry 8% DM, pig slurry 4% DM



The Farm Fertilizer Plan will help identify fields that need lime and indicate rates and type of lime to use.

nutrients as phosphorus, manganese and zinc.

On very acidic soils (a pH of less than 5.5), it is best to apply half of the recommended amount in the first year and the remainder in year three. Never apply more than 7.5t/ha (3t/ac) at one time. Use Mg lime if appropriate. For spring crops, you should ideally apply lime to ploughed/pressed soils and incorporate before sowing.

## Soil P and K levels

Phosphorus is required in the early stages of crop development as it is the key driver of both rooting and tillering. Potassium is important in the establishment phase but peak demand occurs after tillering. For spring barley on very low to low P soils (Index 1 and 2) combine drill P at sowing. Tillage crops remove significant levels of nutrients, with the majority of the P removed in the grain and K in the straw. Nutrients removed need to be replaced annually to maintain soil levels.

Building soil fertility to the desirable Index 3 can be a slow and costly process with soil P levels generally slower to increase than soil K levels. Fertilizers such as 0-10-20/0-7-30 are

suitable or MOP (50% K) in replenishing soil P and K levels.

## Organic fertilizers

Organic manures are a cost-effective way to supply/replenish soil nutrient levels. Intensive livestock farmers may require additional lands to apply slurry in order to keep within legal limits. Organic manures are a valuable source of organic matter which will help feed the bugs and improve the rate of nutrient recycling in tillage soils. Slurry should be well agitated, applied evenly and incorporated rapidly to reduce N losses after application.



## Key messages

- Review and update the Farm Fertilizer Plan for 2015.
- Soil sample fields that have not been sampled in the last five years.
- Correct soil pH before building soil P and K levels.
- Prioritise low fertility fields for organic manures.
- Tailor fertilizers to crop needs.

# TEAGASC MANUAL ON DRAINAGE - and Soil Management



A Best Practice Manual  
for Ireland's Farmers

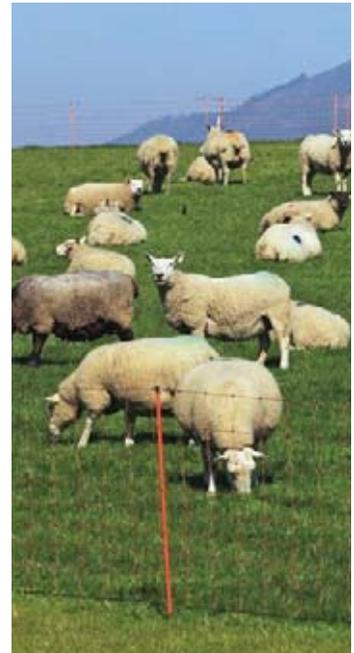


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# Buyer beware



**Michael Gottstein,**  
Head of Sheep Programme, Teagasc Animal & Grassland Research Innovation Programme, reports on what to look out for when purchasing sheep concentrates

lambling). The result is an expensive concentrate bill or stunted lambs. Where this is happening year after year, move the lambing date back a few weeks to coincide with the onset of grass growth. This will greatly increase grass availability during early lactation.

As the year progresses and grass growth rates increase, it becomes more difficult to keep on top of the grazing so that the grass remains in a high-quality leafy state.

Stemmy grass results in poor lamb thrive and a greater need to supplement with concentrates during the finishing period. On most farms, a certain amount of concentrate will always have to be fed, particularly to “tail-end” and later finishing lambs. However, the emphasis should still be to try to maximise performance off grass.

Dr Philip Creighton, who runs the Teagasc research demonstration farm in Athenry, recommends that paddocks should be no larger than two hectares (five acres) per 100 ewes in the grazing group.

There should also be the possibility to split these paddocks using electric netting/reels during the grazing season.

### Rating your concentrate feed

Concentrate feeds are sold with names like super, intensive, hi-energy etc. There is no legal stipulation as to what constitutes a super, intensive or hi-energy feed, so it is up to each individual to assess the quality of the concentrate based on the list of ingredients and the analysis provided.

The main components of a concentrate feed are:

**H**ighly-productive ewes in late pregnancy often struggle to eat enough high-quality forage to meet the demands of their rapidly growing unborn lambs. Feeding concentrate helps to bridge the nutritional gap. Profit Monitor results show that the average sheep farm spent €25 per ewe (and her lambs) on concentrates, which equates to one third of the total variable costs per ewe. Managing concentrate costs is therefore key to profitability.



As sheep farmers, our aim should be to maximise the potential of grazed grass

### Maximise grazed grass

The challenge is to have enough grass in the early spring when grass growth is slow and to maintain grass quality in the summer when grass growth rates are high.

Experience from the Teagasc BETTER sheep farms has shown that, on many farms, there is enough grass at lambing time but it can run out too soon. This leaves the lactating ewe short just when milk yield is reaching its peak (three to five weeks after

Experience from the Teagasc BETTER sheep farms has shown that, on many farms, there is enough grass at lambing time but it can run out too soon.

Table 1

High energy	Medium energy	Low energy
Cereals (maize, barley, oats, wheat)	Maize gluten	Pollard/wheatfeed
Pulps (citrus and beet)	Soya hulls	Palm kernel
Soyabean meal	Rapeseed meal	Sunflower
Distillers' grains		Oatfeed
Peas and beans		Cottonseed
Molasses (<5%)		
Oil (small quantities)		



**Key messages**

As sheep farmers, our aim should be to maximise the potential of grazed grass. This may require changes to lambing dates and additional fencing, but the long-term benefits in terms of reduced supplement feed costs will greatly outweigh any of these costs. That said, a certain level of concentrate supplementation will always be required. It is important that when selecting concentrates, purchasers look beyond the name on the label or the price per bag/tonne. Always investigate the actual quality of the feed by assessing the ingredients, protein source and mineral inclusion.

**Energy**

There is no legal requirement for the energy value to be listed and the only way that the energy value of a concentrate feed can be established is by looking at the ingredients. Table 1 can be used as a guide when assessing the energy content of a feed. Significant quantities of ingredients in the low (red) category should be avoided or heavily discounted.

**Protein**

Growing sheep need 13% to 14% crude protein in the total diet. Twin-bearing ewes in late pregnancy require between 130g and 200g of crude protein per head per day. The higher level is required in the final two weeks of pregnancy. Ewes suckling twins will need approximately 400g of crude protein per day, or 16% total dietary protein.

The percentage of crude protein required depends on what forage is being supplemented. Ewes being fed on hay or maize silage will need considerably higher levels of protein in the concentrate than ewes being fed high quality silage. Table 2 outlines the percentage of crude protein for various options.

It is also important to assess the

quality of the protein. Protein that is digested in the sheep's intestines is called rumen undegradable protein (RUP) or bypass protein. There are significant benefits if the protein is digested by the animal in the intestine rather than the bacteria digesting it in the rumen. The best source of RUP is soya or protected soya or rape that has been cooked. For pregnant ewes, aim to have at least half of the protein in the concentrate feed from soya or a protected protein source.

**Minerals**

This is a complex area and is best left to professional nutritionists. However, there are a few basic guidelines:

- Where concentrates are being fed for longer periods or are a significant part of the animal's daily intake (greater than 30%), then mineral supplementation is required.
- Minerals and vitamins need to be bound in loose mixes to avoid separation during transport and storage. This will require molasses in the mix.
- Oral mineral drenches/boluses are not a substitute for a concentrate feed that is correctly balanced for mineral and vitamins.
- For lambs being intensively fed, ammonium chloride should be included in the ration to avoid urinary calculi.

Including extra salt (sodium chloride) instead of ammonium chloride is not recommended.

- Never feed minerals formulated for cattle to sheep.

**Concentrate feeding guidelines**

- Feed little and often: As ruminants, sheep are not designed to digest large quantities of rapidly fermentable sugars and starch.
- Introduce concentrates gradually (a maximum of 200g in a single feed) and build up the sheep over a period of time (increase by 200g every three days) until you have reached the desired feeding level.
- If changing concentrates or introducing different ingredients, do it gradually over a period of time to avoid animals "going off their feed".
- The maximum quantity of concentrate to be fed in a single feed is 0.5kg pre-lambing and 1kg post-lambing. Separate feeds by at least eight hours.
- Aim to have at least 7% crude fibre in the concentrate.
- Coarse feeds should contain a significant quantity of unprocessed grains, which will reduce the risk of digestive upsets.
- Allow enough trough space to ensure that "shy feeders" have an opportunity to get their share.

**Table 2**

Forage	% CP pre-lambing	% CP post-lambing	% CP finishing lambs
Hay 8% CP	20%	24%	16%
Maize silage 8% CP	20%	24%	16%
Average grass silage 11% CP	17%	22%	16%
Extra grass silage 13% CP	15%	20%	14%
Spring grass 21% CP	None required	None required	None required

# Organic farming – more profitable than you might think

Organics is not just a scheme. It is a system of farming carried out according to a set of standards derived from EU legislation

**Dan Clavin**  
Teagasc Rural Economy and Development Programme, Athenry

There is a perception that organic farming is difficult, involves a lot of red tape, is labour-intensive and returns are low. The reality is quite different. The best organic farmers, using good husbandry and management skills, can achieve stocking rates up to 170kg N/ha and healthy profits. In terms of paperwork, detailed record keeping is now common to all types of farming. Organic is a realistic option but if considering conversion be diligent in your research:

- Talk to organic farmers, take an organic farming course, attend information meetings/farm walks and engage in family discussion.
- Assess how organic conversion can be achieved on your farm and calculate the economic implications. Be absolutely committed to working to, and abiding by, organic standards.
- Pre-plan the conversion process so as to have the confidence and knowl-

## Further Information

**Teagasc:** Contact local Teagasc office [www.teagasc.ie/organics](http://www.teagasc.ie/organics)  
**Certification Bodies:** Organic Trust, 2 Vernon House, Vernon Avenue, Dublin 3. Tel: 01 8530271.  
 Irish Organic Farmers and Growers Association (IOFGA), 16A Inish Carrig, Golden Island, Athlone, Co Westmeath. Tel: 090 643 3680.  
 Demeter: Paul Bell, Newtown, Stamullen, Co Meath. Tel: 086 6007740  
 DAFM: Organic Unit, Department of Agriculture, Food and Marine, Johnstown Castle, Co Wexford 053 9163400. [www.agriculture.gov.ie](http://www.agriculture.gov.ie)

edge required to implement the plan. Land, crops and animals must be managed under organic standards for a 24-month conversion period before full organic status is attained.

- Be prepared for possible scepticism of family, friends and neighbours.

### There are two parts to the organic payments: A) Scheme of grant aid, B) Organic Farming Scheme

#### A) Scheme of grant aid

- 40% grant assistance on pre-VAT price for organic capital investment with 60% for young trained farmers.
- Maximum payments: on-farm = €60,000, off-farm = €500,000.
- Scheme due to open in early 2015.
- Consult [www.agriculture.gov.ie](http://www.agriculture.gov.ie) for further details and updates.

#### B) Proposed Organic Farming Scheme 2015

A new Organic Farming Scheme is scheduled to open in early 2015. The proposed payment rates of the scheme are as follows:

**Table 1: Proposed Organic Farming Scheme 2015 payment rates**

Payment Rates	In conversion	Maintenance
*Horticulture only holdings (1ha-6ha)	€300/ha	€200/ha
*Horticulture only holdings of >= 6ha -60ha	€220/ha	€170/ha
**Tillage area <= 20ha	€260/ha	€170/ha
**Tillage area of >= 20ha - 60ha	€220/ha	€170/ha
Standard rate - other holdings - farmed area of >= 3ha - 60ha	€220/ha	€170/ha
Reduced rate other holdings - Farmed area >60ha	€60/ha	€30/ha

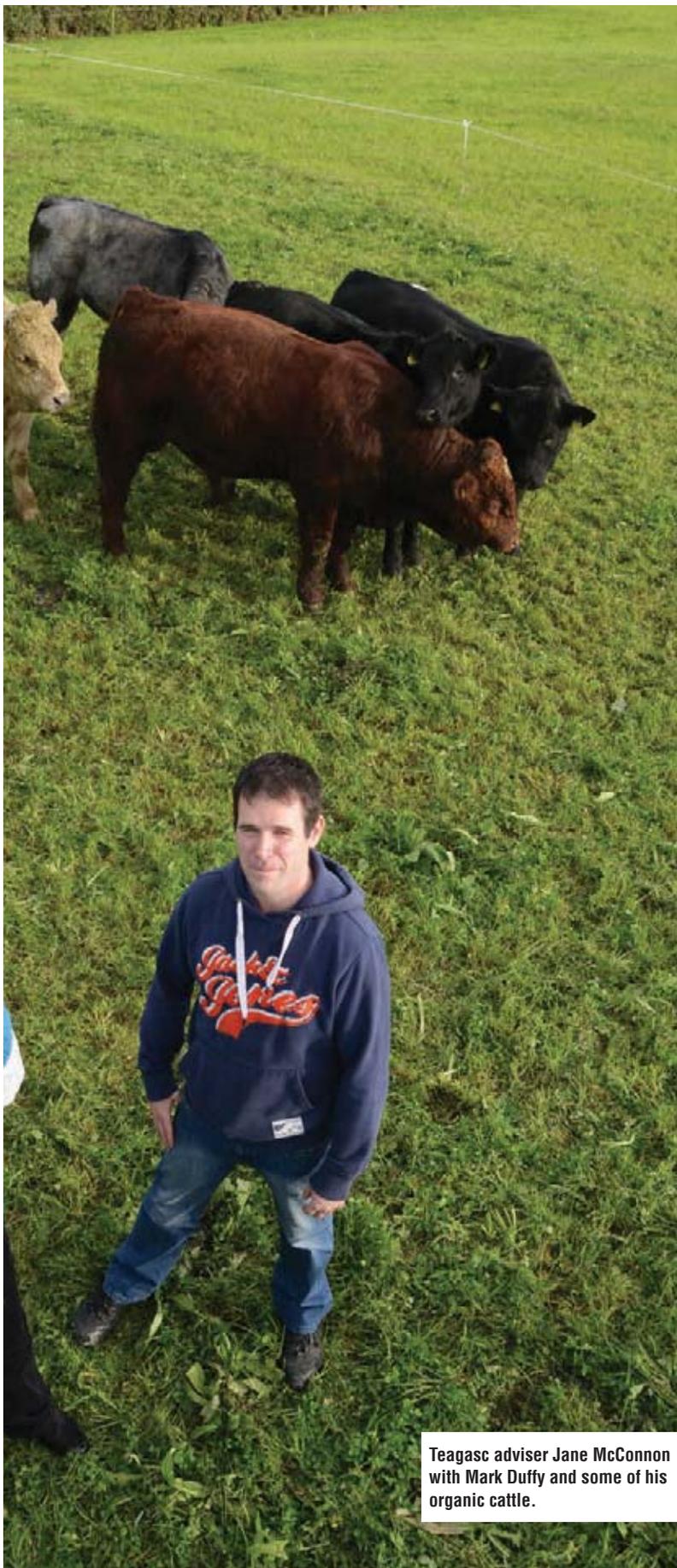
\*The higher horticultural rates will apply to the first 6ha only and thereafter the standard rates apply up to 60ha and a reduced rate in excess of 60ha.

\*\*The higher tillage rates will apply to the first 20ha only and thereafter the standard rates apply up to 60ha and a reduced rate in excess of 60ha. An additional €30ha is available for red clover.

## Farm profile

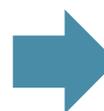


# Mark Duffy, Ballybay, Co Monaghan



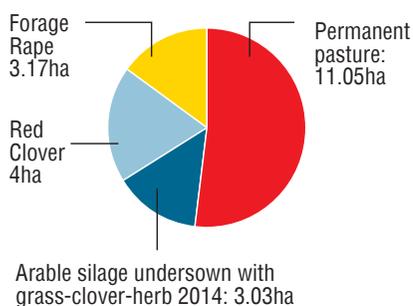
Teagasc adviser Jane McConnon with Mark Duffy and some of his organic cattle.

Mark Duffy along with his wife, Grainne, and their children, Dillon, Kate and Ryan, live on their ca. 22ha family farm in Bellview, Clogher, Ballybay, Co Monaghan. In May 2008, Mark made the considered move into organic beef farming and began his organic conversion period, which lasted two years. Prior to this, Mark had a conventional suckler cow to finish enterprise. The farm had been in dairying up until 2005. Since organic conversion, the suckler cow numbers have been reduced and extra stock from other organic farms and organic marts have been purchased and supplied to finish. All progeny on the farm are supplied into the organic beef market with 40 to 45 cattle finished annually in recent years.



Continued on p26

**Figure 1**  
Land use Mark Duffy 2014



**Table 2: Farmed area**

Grassland permanent pasture	11.05ha
Arable silage (undersown with new permanent pasture-clover-herb re-seed) 2014	3.03ha
Red clover	4.00ha
Forage rape	3.17
Other buildings/dwelling	0.48
<b>Total forage area</b>	<b>21.25ha</b>

**Table 3: Average stocking regime on the farm 2014**

Animal Type	Numbers
Suckler cows	11
0 – 1 yr olds	20
1 – 2 yr old	40

**Average stocking rate = 1.8 LU/ha approx based on 2013 eProfit Monitor. 150kg N/ha approx**

Organic layers manure imported to bring to 170kg N/ha stocking rate limit.

Keys to a strong financial performance

- **Markets:** "I aim to supply the organic market during the winter/early spring period when organic beef prices are generally at their highest," says Mark. "The market price for organic beef has generally been 15 - 20% ahead of conventional prices in recent years."
- **Productivity:** "Fast turnover of quality, relatively young finished stock, has been our route to productivity," says Jane McConnon, Mark Duffy's local Teagasc adviser. On average both steers and heifers are slaughtered at 21 months old. Killout deadweights in 2014 were ~380kg for continental own stock and ~330kg for easier-finish more traditional stock e.g. Aberdeen Angus purchased from other organic farms.

Mark has carried out a number of innovations on his farm to keep production levels high, including:

- **Reseeding with grass mixtures** containing high amounts of clover. Clover is the driver of production on organic grassland farms mainly due to its ability to fix N from the air (~100kg N/ha/year). 19ha has been reseeded since 2009 (90% of the farm). Reseeding mixes have included:
  - » Grass - white clover mixes (+/-herbs) and herbal leys for both grazing and occasional silage cutting.
  - » Red clover - ryegrass ley for high yielding, high protein silage in 2009 (4ha). On average three silage cuts per year has been achieved yielding up to 15 t DM/ha/year over the past four years.
- **Forage rape - turnip mixes** have been sown almost every year over the last five years for fattening cattle prior to slaughter over winter. This provides a bulky, high protein feed for finishing cattle.

## Profit Monitor per hectare analysis (Mark Duffy v other non-breeding farms 2013)

	Mark Duffy 2013	Profit Monitor <sup>1</sup>	
		Average	Top 1/3
<b>Physical</b>			
Farm Size	21.3	38	41
Stocking Rate	1.8	1.66	1.99
Liveweight produced (kg/LU)	431	399	456
Liveweight produced (kg/ha)	778	638	907
<b>Financial €/ha</b>			
*Gross output (€) (excl. all direct payments)	2,512	1,500	2,306
Variable Costs (€)	737	962	1,286
Gross Margin (€)	1,775	539	1,020

<sup>1</sup>Non-breeding beef farms (n = 199)

Note: \*Direct payments are not included in the above figures.

**Table 4:** Variable costs per hectare breakdown Mark Duffy vs non-breeding farms in 2013

	Mark Duffy 2013	2013 Profit Monitor <sup>1</sup>
Feed (€)	313	535
Fertilizer (€)*	106	164
Vet (€)	97	50 (vet and AI)
AI/breeding (€)	32	
Contractor (€)	47	119
Other variable costs(€)**	141**	94
Total	737	962

<sup>1</sup>Non-breeding beef farms (n = 199)

\*Fertilizer used was Lime and imported organic/free range chicken manure.

\*\*Included in Other variable costs is straw for cattle bedding = €58/ha.

- **Arable silage and arable combi-crops** have been grown as cover crops for new grass - high clover pastures to produce extra quality winter fodder for finishing cattle.
- **Keeping organic matter nutrient levels** high by importing nutrients on to the farm in the form of layers' hen manure from free-range and organic layers units (average 25 tonnes per year depending on nitrates rules at a cost of €5/tonne including delivery), lime and permitted mineral fertilizers (Slag fertilizers).
- **Costs:** Costs have been kept low by having no artificial fertilizer bill. Phosphorus (P) and Potassium (K) levels

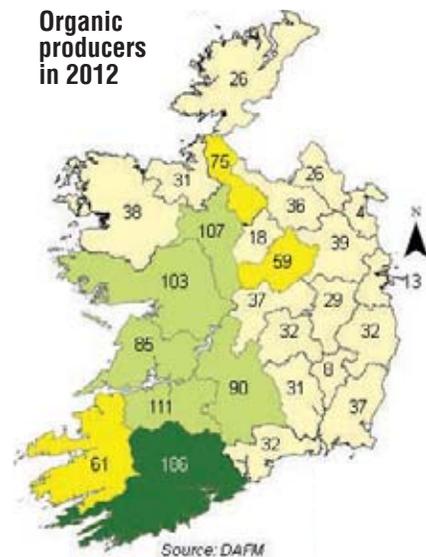
have been maintained since organic conversion mainly by importing cheap hen manure from organic and/or free-range farms. Mark cuts and bales his own silage and spreads his own slurry and FYM. A contractor is used for reseeded. The recognised higher price for organic rations has been identified as a barrier for some farmers entering organic production. While a certain amount of rations are bought in and fed (eight tonnes in 2014), Mark's feed costs are lower than the average due to his resourceful use of on-farm sources of feed such as red clover, winter forage crops and white-clover silage swards. Mark's main costs relate to re-seeding to produce these crops.

## Organic farming on increase

In 1994, there were 250 organic farmers in Ireland. Today that figure has jumped to almost 1,400 producers farming almost 60,000ha of land (1.3% of utilisable agricultural area). Average farm size is 38ha. Profile of organic production in Ireland - 2012:

- **Beef:** 981 herds (including 807 suckler cow herds), average herd size = 42 animals. 13,600 suckler cows.
- **Dairy:** 27 herds with 1,539 cows.
- **Sheep:** 410 flocks, average 80 breeding ewes.
- **Pigs - 60 producers, Poultry ~160 producers (approx)**
- **Cereals:** 156 growers, 2,312 ha with 62 growers > than 10 ha
- **Horticulture:** ~300 growers, ~420 ha, with ~20 > 6 ha (approx..)
- **Size of Irish Organic Market:** €100m (Source: Bord Bia, November, 2014).

### Organic producers in 2012



Mairead Kirk with Colm McKenna of the NEWS discussion group.



# Beef group benefits

Drystock adviser and programme facilitator **Mairead Kirk**, Teagasc, Monaghan, analyses the effect of the Beef Technology Adoption Programme on discussion groups in the area



Both groups are made up of suckler herds, which range from 10 to 100 cows

**M**ore than 7,500 beef farmers have completed their third year in the Beef Technology Adoption Programme (BTAP). This article examines the effect of BTAP on the Castleblayney Active and Positive Suckler (CAPS) and the Night-time, Evening and Weekend Suckler (NEWS) discussion groups.

The CAPS discussion group was established in 2009 and meets on the last Wednesday morning of each month. The group consists mainly of full-time suckler farmers and is chaired by Inniskeen farmer JJ Callan. The NEWS discussion group came into being at the start of BTAP and is made

up of part-time suckler farmers. To facilitate off-farm day jobs, this group meets on the last Tuesday evening of each month. The NEWS discussion group is chaired by Castleblayney farmer Paul Kernan.

Both groups are made up of suckler herds, which range from 10 to 100 cows and land quality within the groups is variable. At the monthly meetings, a range of topical issues such as grassland management, animal health and ration formulation, etc, are covered.

» Continued on next page



Once group members began to really focus on breeding, progress was made quickly

» From page 27

They follow closely developments in the Teagasc BETTER Farm suckler programme and have visited five BETTER farms throughout the country: Willie Treacy, Louth; Joe Murray, Roscommon; Marty Lenehan, Sligo; Chris McCarthy; and Mark Maxwell, Westmeath.

### First things first

Each monthly meeting begins with the host farmer opening up his ICBF HerdPlus suckler cow and beef calving reports for appraisal by group members. This often leads to animated discussions regarding the host farmer's breeding strategy.

The groups believe that efficient and effective breeding are the cornerstones on which profitable suckling units are built. Recognising the importance of breeding from an early stage led to a tight focus on breeding throughout the BTAP.

CAPS and NEWS farmers are united in their ultimate aim of producing a calf per cow per year.

Table 1 shows the breeding efficiencies gained by the members of the NEWS discussion group in the three years of the BTAP. Within the group, the average herd size grew from 21 to 28 cows. Calving interval fell from 379 to 367 days and it now stands 45 days better than the national average of 412. Calves per cow per year increased to 0.96, well above the national average of 0.79. The group is now calving 45% of its heifers at 24 months. Finally, calving spread has reduced from five to three months.

### Financial pay-off

So, what do these efficiencies mean? According to the ICBF, every one-day reduction in calving interval is worth €2.20/head. Therefore, the 12-day reduction achieved by the NEWS members returns €26 per cow. The calves/cow/year increase from 0.86 to 0.96 is significant in terms of number of weanlings sold at year end. In a 28-cow suckler herd, 0.86 translates into 24 weanlings to sell, while 0.96 results in 27 weanlings.

Take a weanling weight of 300kg and a weanling price of €2.20/kg, the three extra weanlings mean a €1,980 increase in sales. Teagasc, Grange, estimates that for a 28-cow herd calving five heifers, it costs €245 for each additional month that calving is delayed over a 24-month period. With the NEWS group now calving almost half of their heifers at 24 months, substantial savings are being made. Table 2 shows that the CAPS group achieved similar breeding efficiencies to their NEWS counterparts.



### Quick progress

So, how were these breeding efficiencies achieved? Once group members began to really focus on breeding, progress was made quickly. Following the discussions on the ICBF reports at the beginning of each BTAP meeting, the host farmer drew up a defined breeding strategy. Key in this was the simple step of selecting a date for the end of the breeding season. Removing the bull at the correct time, eliminating the possibility of late calves is crucial in efficient breeding units.

Similarly, culling poor breeding performers with consistently long calving intervals eventually leads to a core group of efficient breeding cows. As breeding efficiency is a highly heritable trait, retaining heifers from this core group of cows should ensure good breeding performance into the future.

While focusing on breeding performance, group members were also acutely aware of the importance of measuring farm financial performance. All members share the same goal of increasing profits and, to this end, the groups decided that all members must complete a Teagasc Profit Monitor in time to allow a full analysis of the results at the January meeting. This timely completion of

Mairead Kirk with Gervaise Marron, of the CAPS beef discussion group.



profit monitors leads to better decision making in the farm business.

Over the three years of the BTAP, the NEWS group members increased their gross group by €100/ha (€40/acre). Output has grown by €201/ha but some of this gain has led to increased variable costs, which are up by €100/ha. It should be noted that most members in this group are younger, part-time farmers who are growing their farm business by building cow numbers. Therefore, to record a gross margin increase at this stage in their business development is a significant achievement.

CAPS farmers have managed to significantly increase output, while at the same time lowering variable costs over the period of the BTAP. Just as breeding performance was monitored, farm spending on meal, fertilizer, etc, was carefully checked. This means that the gross margin has almost doubled leading to an extra €241/ha (€100/acre).

In conclusion, it would be fair to say that the BTAP has been a resounding success for the CAPS and NEWS discussion group members. They have made significant strides in their breeding and financial performances, crucial to the success of all suckler farms.

**Table 1:** Breeding efficiencies gained by the NEWS discussion group

Breeding efficiency	2012	2014	Change
Cow numbers	21	28	33% increase
Calving interval (days)	379	367	12 day decrease
Percentage of females not calved	14%	3%	11% decrease
Calves per cow per year	0.86	0.96	10 more calves per 100 cows
% of heifers calved at 24 months	16%	45%	29% increase
Number of months with calving	5	3	Two-month decrease

**Table 2:** Breeding efficiencies gained by the CAPS discussion group

Breeding efficiency	2012	2014	Change
Cow numbers	31	35	12% increase
Calving interval (days)	371	365	6 day decrease
% females not calved	11%	4%	7% decrease
Calves per cow per year	0.92	0.92	Held the same
% Heifers calved at 24 months	11%	27%	16% increase
Number of months with calving	5	4	One-month decrease

**Table 3:** Monetary benefits achieved by the NEWS discussion group

Performance measures	2011	2013	Change
Gross output (kg/ha)	406	460	+ 54 kgs/ha
Gross output (€/ha)	778	979	+ 201 €/ha
Variable costs (€/ha)	475	575	+ 100 €/ha
Gross margin (€/ha)	304	404	+ 100 €/ha

Source: Teagasc profit monitor

**Table 4:** Monetary benefits achieved by the CAPS discussion group

Performance measures	2011	2013	Change
Gross output (kg/ha)	407	552	+ 145 kg/ha
Gross output (€/ha)	913	1111	+ 198 €/ha
Variable costs (€/ha)	626	583	- 43 €/ha
Gross margin (€/ha)	287	528	+ 241 €/ha

Source: Teagasc profit monitor

## INDEPENDENT EVALUATION

Farmers who are members of Teagasc beef discussion groups have higher output, higher costs and higher overall gross and net margins than non-members. That's according to an independent evaluation report, "Impact of Farmers Participating in Teagasc Beef Discussion Groups, 2012 to 2014", carried out by Broadmore research for Teagasc.

On average, beef farmers who are members of groups had a higher output (€36/ha) and higher net margin (€95/ha). Discussion group members had higher stocking rates and achieved higher prices per head for their live-stock. The report found that discussion group members who were mainly in suckler to weanling production, tended to have larger farms, had a higher level of agricultural education and training and were, on average, younger than

non-discussion group members (National Farm Survey).

The author of the report, Pat Bogue from Broadmore Research said: "Farmers are clearly benefiting from being members of groups and are satisfied with the delivery of the service from Teagasc.

Members are focused on productivity and the financial benefits emerge as practices change on farms. One of the main motivations behind farmers joining groups was to learn and to get more information and new ideas.

"Teagasc is committed to further developing discussion groups as a means of engaging with farmers," says Teagasc director Professor Gerry Boyle.

"The publication of this report is timely as we reach the end of the current BTAP Programme. Teagasc is committed to working with farmer discussion groups towards improving the technical efficiency and profitability on beef farms."

The report found that three quarters of participants intend to stay in groups after the BTAP scheme comes to an end.

# Good news on water

**Andy Boland**  
Environment Specialist,  
Teagasc Crops, Environment  
and Land Use Programme

**A**t the recent Teagasc National Agri-Environment Conference, water quality and understanding water use were examined in detail with a number of speakers indicating that the relationship between agricultural activity and water quality improved between 2000 and 2010. Further progress is needed.



Greater forestry cover was found to be positively associated with better river water quality, primarily because forestry is planted in areas of lower activity

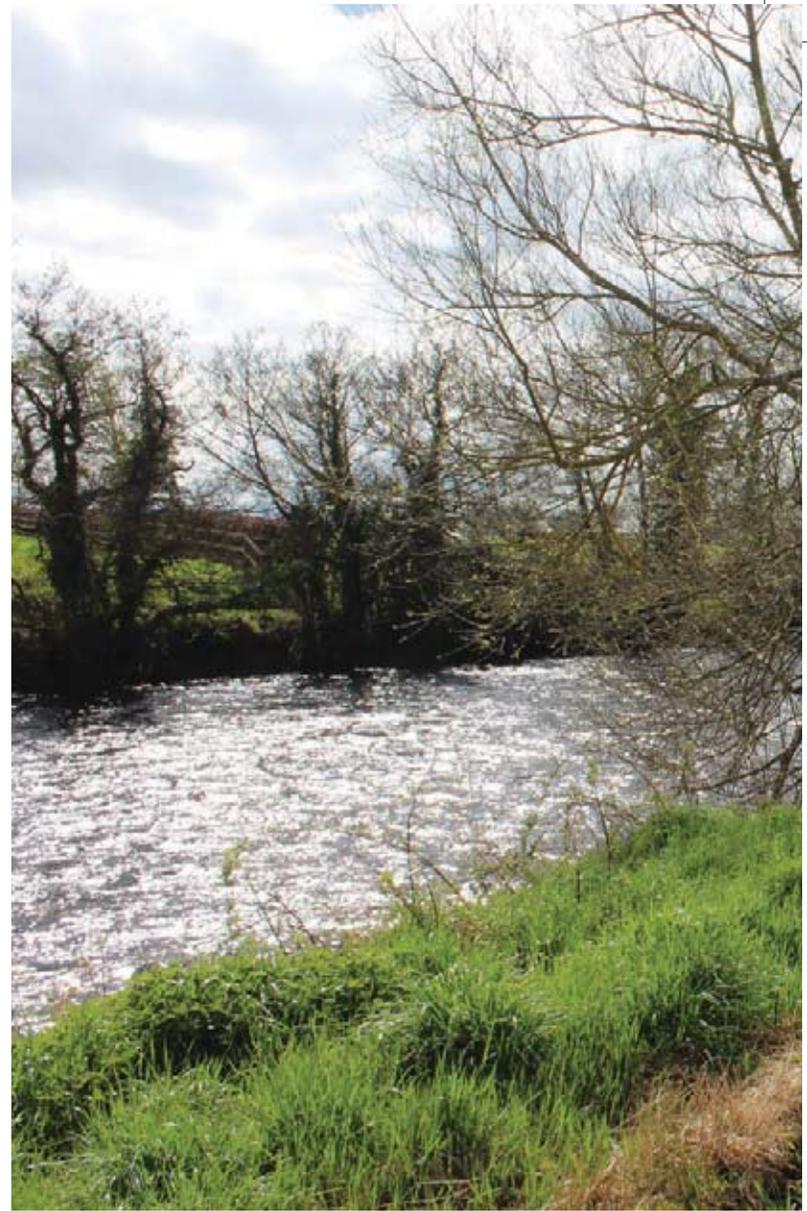
Researcher Dr Brendan Horan of Teagasc, Moorepark, described how implementing a number of farm practice changes on Curtin's Research Farm, Fermoy, led to improved groundwater quality over the 10-year period from 2002 to 2011. These changes included reductions in chemical fertilizer usage, improvements in timing of slurry application, the movement of a dairy soiled water irrigator to less vulnerable areas of the farm with a greater depth of soil and the usage of minimum cultivation when reseeding on the farm.

"Groundwater nitrate concentrations can be reduced by optimising nitrogen use efficiency and following improved farming practices," Brendan concluded. "Increasing farm milk output need not be incompatible with better environmental outcomes."

### Catchment level

Ger Shortle, manager, Teagasc Agricultural Catchments Programme, reported that there are signs of stabilisation and improvement in water quality in Ireland in recent years, following a general declining trend in the preceding decades.

This improvement coincides with the introduction of a broad package



of measures to address declining water quality, including improvements in urban and domestic waste water treatment and, in the agricultural sector, initiatives such as REPS and the good agricultural practice measures under the Nitrates Directive.

"The Agricultural Catchments Programme is continually improving our understanding of the processes that drive nutrient loss at catchment scale and showing where changes in management can improve efficiencies and reduce risks to water," said Ger.

"For example, simple changes in the management of open drains can cut phosphorus (P) losses and automated systems for identifying critical source areas on farms can help reduce nutrient loss risk, while facilitating intensive production on the rest of the farm.

"However, there is good evidence that, following the introduction of packages of measures, a delay or 'lag' can be expected before there is any detectable improvement in water quality. Examples include the lag in P decline in Index 4 soils to Index 3, which can take up to 30 years. High nitrate levels in groundwater can,

**Water quality and understanding water use were examined in detail at the recent Teagasc National Agri-Environment Conference.**



# MILK PRODUCTION

Eleanor Murphy of Teagasc Moorepark estimates that, on average, 6.4 litres of direct water is used for every litre of milk produced. This water use is driven by consumption by livestock and miscellaneous use, plate cooler water use and cleaning procedures in the parlour. She recommends an optimum plate cooler ratio of water:milk of 2:1 for optimum energy consumption. Milk cooling procedures using a ratio 2:1 or higher demand 56% less energy to cool milk than plate coolers, which use <2:1L water/L milk.

Plate cooler water can be collected and reused for washdown procedures and animal drinking water. Another aspect to consider in efficient water use is the maintenance of the water supply network. Leaks which go unchecked can add to the pumping cost of water on a farm. A leak of 10L/min could cost up to €526/annum in pumping costs. A hot water leak of 60mL/min (one drip/sec) could cost up to €240/annum in associated pumping and heating costs.

in some situations, be expected to take up to 21 years to reach threshold levels following the introduction of measures.

“Expectations of measurable improvements must be tempered in light of these lags. There remains a significant gap to close between current water quality and the Water Framework Directive target of 100% of Irish waters at good status or better.”

### Effect of economic activity

Researchers led by Teagasc’s Prof Cathal O’Donoghue examined the relationship between economic, agricultural activity and settlement related characteristics and the quality of water in rivers. The research drew upon spatial datasets, the census of population and census of agriculture and water quality measures, as measured by the sample of Environmental Protection Agency (EPA). The work took into consideration local hydrological conditions utilising spatial environmental attributes such as soils, slope, rainfall, etc.

“Water quality is driven by the intensity of activity such as the livestock density, the population density or the extent of septic tanks,” said

Prof O’Donoghue. “It is also affected by the environmental efficiency in terms of the relationship between a given level of activity and water quality and local hydrological conditions.

“We found that a higher density of septic tanks is associated with poorer water quality and, consistent with findings from the EPA and the ESRI, that more intensive agriculture is also associated with poorer water quality. However, between 2000 and 2010, the relationship between livestock density, cereal production and water quality has improved, so that environmental efficiency has improved.”

While the research showed little difference in septic tank density over the period, the intensity of agriculture has fallen. For example, the number of cattle fell by one million from 1998 to 2010 and the number of sheep fell by 3.5 million. Cattle numbers have increased by 0.3 million since 2010.

An active landfill site upstream of a monitoring station was found to be associated with poorer water quality. Taking into account hydrological factors, such as soils, slope and rainfall, improves the accuracy of the analysis but does not change the fundamental conclusions.

Greater forestry cover was found to be positively associated with better river water quality, primarily because forestry is planted in areas of lower activity.

“The improvement in the relationship between agricultural activity and water quality is unsurprising given the investment of €2.9bn by farmers between 2005 and 2011 on improved facilities, improved farm management practices and more efficient use of fertilizer,” said Professor O’Donoghue.

“There has also been significant participation in agri-environmental improvement programmes and compliance with Nitrates Directives and cross-compliance measures within the Common Agricultural Policy.

“Environmental lag times are also long for practice, improvement and investments to affect water quality, so it is expected that these investments will have a stronger effect into the future. Incentives created by public policy and the active participation by farmers have been instrumental in this improved situation. Sustainable farm practice is a vital pillar in underpinning Ireland’s green image that is central to the Food Harvest 2020 strategy.”

# Let's end avoidable carnage

**John McNamara**  
Teagasc Health and Safety Officer

Last year was a tragic one on Irish farms, with 30 people dying in farm accidents. Four of those who lost their lives were children under 16, while nine were aged 65, or older. These sad facts must encourage us all to cut the level of tragedy and pain and suffering associated with farm accidents.

While a wide range of accident possibilities exist on farms, farm vehicles and machines, livestock, collapsing objects and slurry incidents account for 89% of accidental deaths. Accident prevention strategies include: (a) removing hazards from around the farm, and (b) influencing human behaviour to adopt safe procedures. Your effectiveness in implementing such farm safety strategies is the vital ingredient to prevent accidents.

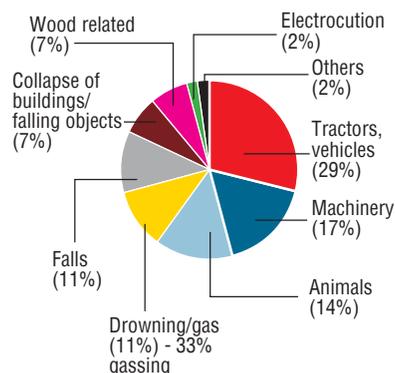
## Changing accident profile

There have been no fatal accidents due to power drives in recent years, but they remain potentially lethal and should always be guarded to the legal standards. Getting struck or crushed by a moving vehicle is now the predominant cause of farm deaths. In 2015, 16 (60%) deaths were associated with farm vehicles or machines, with the majority involving crushes or blows.

The average tractor size on Irish farms has increased over time with consequent implications for visibility. It is vital to ensure that persons, particularly older farmers and children, are not in the vicinity of moving vehicles, especially in the farmyard.

There were a number of crush deaths associated with tractors rolling away in farmyards in 2014. These machines are silent killers as farmers are often focused on their work and don't see or hear the vehicle coming until it is too late. Also, there have been a lot of deaths associated with

**Figure 1**  
Major causes of farm deaths (2004 to 2013)



handling baled silage, either through being crushed by a falling bale or getting crushed while removing the wrapping with the load raised.

## Vehicles and machinery safety

Safety attention is needed when parking vehicles to prevent crushing due to vehicle "run-away" which can occur on even the slightest of slopes. The principal precautions are as follows:

- Stop the engine and leave the fuel-control in the shut-off position and remove key.
- Apply the handbrake securely.
- Park on level ground, where possible. Leave the vehicle in gear. If on a slope, select a reverse gear if facing downhill and a low forward gear, if pointing uphill.
- Use wheels stops, if necessary, to prevent a vehicle rolling from its parked position.
- As vehicles vary in their operating procedures, always follow the handbook instructions.

The majority of accidents with PTOs occur when machines are stationary, particularly slurry tankers, slurry agitators or grain rollers, so extra care is needed with this situation. Ensure that the power-shaft is



Shane Martin, Michael Coyne and Casey O'Connor, students from St Etchen's National School, Kinnegad, help promote an Agri Aware farm and countryside safety challenge.



Average tractor size on Irish farms has increased over time with many implications for visibility

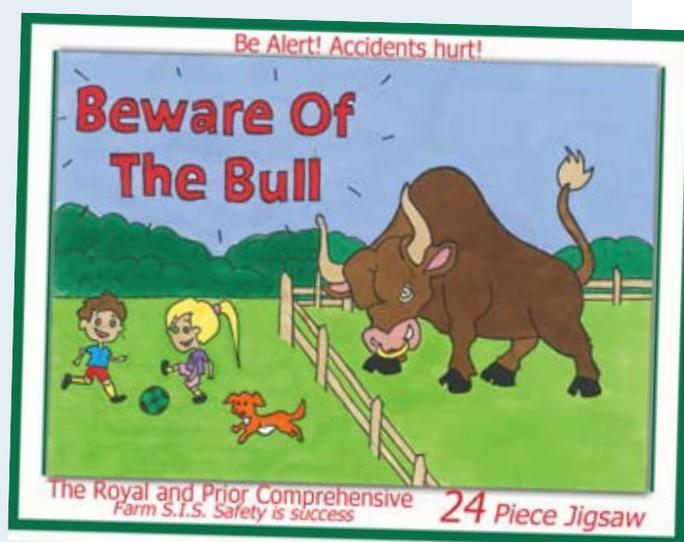
# There's nothing puzzling about FARM SAFETY



A transition-year mini company called Farm SIS (Safety Is Success) from the Royal and Prior Comprehensive School, Raphoe, Co. Donegal, has designed farm safety jigsaw puzzles based on three themes – beware of the bull, stay away from moving machinery and stay away from slurry toxic fumes.

These puzzles have 24 pieces each and are being sold to children aged between three and five. The cost is €7 for one jigsaw, €12.50 for two jigsaws and €18 for all three. If you purchase one jigsaw puzzle from 16 January, you will receive a free high-visibility jacket for a child aged between

three and seven. The jigsaws are available for sale in Tinneys Toy Store, Letterkenny, Co Donegal, or you can contact the mini company directly via email farmsis1@gmail.com or check out their Facebook page "Farmsis".



completely covered and adopt a work procedure, whereby you do not have to work near the rotating shaft. Also, care is needed when adjacent to operating stationary-powered machines, such as diet feeders.

### Inflating tyres

A leaflet on safety when inflating tyres in motor vehicle repair, which includes agricultural-type tyres, has been issued by the Health and Safety Executive in Britain. The publication is available at <http://www.hse.gov.uk/pubns/indg433.pdf> and should be read in its entirety.

### Collapse of loads/farmyard tidiness

Collapse of loads, falls particularly from heights and untidy farmyards are associated with a significant number of farm deaths. Farms are dynamic places and this aspect of managing the farm needs to be kept under constant review. Particular attention needs to be given to positioning sharp objects in a safe manner. Secure all weights, such as unattached heavy gates, which can pose a particular threat to children. Consider the safest way to access heights and always use a safe platform with "edge protection".

### Cows at calving

A notable recent trend is an increase in the level of fatal accidents with cows, particularly after calving. The numbers are now almost as high as for bull-related fatalities.

Always manage facilities to minimise contact with freshly-calved cows, cull animals showing aggression and breed for docility. Vigilance is always needed.

### Risk assessment document

Completing and updating a risk assessment document is a legal requirement under the Safety, Health and Welfare at Work Act (2005). In it, the key questions regarding safety and health are asked. Information on the causes of accidents, along with pictures of key controls, are included. Safety and health actions needing attention should be listed on the action list and implemented.

A Health and Safety Authority (HSA) inspector can ask to examine the document during a farm inspection. The HSA also recently announced that it plans to prosecute in the following situations: children under seven years being carried as a passenger on tractors or farm vehicles; uncovered power-shafts and unsafe slurry tanks.

### Safety training courses

Teagasc provides half-day training courses to farmers on completion of the risk assessment document. The feedback from these courses is very positive. Ninety-nine per cent of farmers agreed that it would be worthwhile to offer the course to all farmers, 97% of farmers agreed that the course motivated them to implement health and safety measures and 100% stated that they planned to make health and safety improvements on their farms.

### Events and discussion groups

Teagasc will be highlighting farm health and safety issues in its publications, at events and, in particular, at discussion groups in 2015. Discussion groups are hugely valuable due to their interactive nature.

Several pairs of eyes will almost always spot more safety risks than you alone.

Why not ask a friend or neighbour to take a look at your farm and suggest ways to improve safety? Then return the favour.

Remember, just 6% of the total workforce are employed in agriculture but 55% of all accidental workplace deaths occur on farms.

# Going against the trend in Serbia

Milk production is declining in Serbia but Vladan Milinkovic is expanding.  
**Mark Moore** reports

**V**ladan and Danijela Milinkovic, who farm near Bela Zemlja, move smoothly and efficiently through the early-morning chores on their dairy farm in southern Serbia. In much of central Europe, cows live indoors year-round but Serbian cows typically spend about six months grazing. The 21 Simmentals are brought in for milking twice a day.

Tethered and feeding happily on hay or silage and some concentrates, the cows are milked using a relatively simple "bucket-plant".

Radojka, Vladan's mother, is part of the team and she ensures the clusters and all other equipment for collecting and storing the milk are spotless.



Many Serbian families are glad of their few hectares on which they will often keep a small number of pigs for their own consumption.

Cows calf all year round, so heat detection and AI are also part of the routine.

"Vladan's herd is not large by EU standards but he is among the top 5% in Serbia," says Dejan Stankovic, Vladan's local agricultural adviser. "In Serbia, nearly four out of five farms have livestock. But 93% of them have less than 10 livestock units. Very few are expanding like Vladan who has 20 heifers and is aiming to increase his milk production. He is going against the trend which has seen cow numbers fall over the past decade in Serbia."

Milk production has almost become a niche in Serbia. Falling real incomes as a result of the global recession have reduced demand for milk and meat and many farms have opted for crops, such as maize and cereals, which are profitable and more easily traded. The government even has a scheme to encourage farmers to switch from dairy cows to sucklers to boost beef production.

But while dairy cow numbers have fallen steadily over the last 10 years – from 607,000 in 2006 to 429,000 today – total milk production has only fallen from 1.58bn litres to 1.41bn in 2013 as



yields per head are increasing.

Vladan's cows yield well above the national average of about 3,300 litres and their milk contains 3.90% fat and 3.40% protein.

Unsurprisingly, there are no production restrictions or quotas in Serbia. The milk price in 2013 averaged about 32c/l (39 Serbian Dinars). Vladan says that price volatility is a problem though the central government provides price support of about 6c/litre, paid every three months in arrears.

There is also a support payment per hectare (about €50), a payment per cow (€132) and a subsidy on diesel. Local authorities offer a small additional support to farmers, by subsidising AI as a way of encouraging genetic progress, for example.

## Farm structure

Serbia is a country of small, some might say tiny, family farms. With a land area almost identical to our own 26 counties, there are more

# FOOD CONSUMPTION

According to the Statistics Office, an average monthly net wage in Serbia is only €375, almost the same as it was 10 years ago.

According to a USDA report, the average Serbian consumer spends 44% of his/her income on food compared with the average EU consumer who spends about 18%.

The average annual consumption of meat in Serbia is 60.8kg/person against an EU average of 78kg; 27.3kg pork meat, 17.2kg poultry, 14.4kg beef and 1.9kg lamb. Milk and dairy consumption at 87 litres/annually per inhabitant is less than a quarter of the level consumed in the European Union.



Annual Serbian milk consumption is 87 litres per inhabitant.



Vladan Milinkovic and agricultural adviser Dejan Stankovi inspect dairy cow housing under construction.

INSET: Vladan and Danijela Milinkovic.

than 600,000 farms. Virtually all are privately-owned, and producing both livestock and crops. Over 90% of farms are less than 10ha and most are fragmented into several parcels. With over 1.4 million people living on these farms (the total population of Serbia is 7.27 million), the countryside is vibrant and well-populated.

The form of communism practised in Yugoslavia helps to explain the current farm structure. The country wasn't part of the communist block, took a pragmatic approach, and never collectivised its small farms as happened in other eastern European countries. Most workers retained their farms as part-time enterprises.

With general unemployment today at over 20% and jobs hard to find, many families are glad of their few hectares on which they will often keep a small number of pigs for their own consumption, grow vegetables and fruit, as well as cereals and livestock.

Nearly every family has some plum

trees from which they produce plum brandy. Production for home consumption is legal and its quality is a source of great pride.

The small farm structure creates problems, however, particularly for milk and meat processors who would prefer to deal with farmers like Vladan and Danijela Milinkovic who have reasonable scale and can consistently meet quality standards. Hay "stooks" across the countryside show that silage contractor services are not viable.

"My biggest problem is to get hold of more land to farm," says Vladan." He has 10ha of his own and rents another 21ha in a number of small parcels. "Land is rarely available to buy and rental agreements are for a maximum of three years."

### Cautious optimism

Serbia has had a difficult 25 years since communism began to unravel in the early 1990s.

Just when it was beginning to recover from the war in the 1990s, which resulted from the messy breakup of Yugoslavia, the world recession hit in 2008.

Average monthly net incomes are almost the same as they were 10 years ago and the government deficit is still at 8% of GDP. But there's an air of cautious optimism.

Official accession negotiations with the EU began in 2014 and, while entry may be some way off, Serbia seems almost certain to follow the former Yugoslav republics of Slovenia and Croatia into full EU membership.

There is a good research and advisory infrastructure to support farmers like Vladan Milinkovic who will lead growth in production. "Vladan is investing for the future by building cattle facilities and expanding his herd," says Dejan Stankovic. "I think farmers with his energy and go-ahead attitude can be optimistic about the future."

# Agroforestry - farming and forestry in the same field

**John Casey**  
Teagasc Forestry Development Officer,  
Mallow

**A**round 5,000 years ago, forests were the frontier, to be eliminated in favour of a new technology, farming, which required bare land for cattle or corn. Ever since, land has been seen as one or the other – farmland or forest. Now, an innovative scheme aims to increase total output by marrying the best of both land use options.

In December 2014, the Government approved the Forestry Programme to 2020. The new programme will consist of 11 separate measures and will involve total new spending of €262m and a further €220m in future commitments from 2020, mostly in relation to premium payments.

The new premiums are 20% higher than those in the previous programme when compared year on year. The same premiums are available for both farmers and non-farmers, and continue for 15 rather than 20 years.

Establishment grants have been increased by 5% across the board and roads will now be supported at a rate of €40 per linear metre – a 14% increase over the previous rate. Support will be available for the construction of up to 690km of new forest roadways to improve overall access for thinning and other management operations.

In addition to these familiar support measures, there is a new and imaginative measure aimed at supporting agroforestry, in which trees or shrubs are grown around or among crops or pastureland.

It combines agricultural and forestry technologies to create more diverse, productive, profitable, healthy and sustainable land-use systems.

Although combining land and livestock is a very old and proven land

management system, there has been little recent experience of agroforestry in Ireland.

Initially, the measure will be targeted at agroforestry systems which combine forestry and pasture, including grazing and the growing of fodder.

The new forestry programme has set a target of 195ha of newly-created agroforestry by 2020.

The objectives of the scheme are to:

- Establish agroforestry as a realistic land use option within future programmes.
- Increase the economic output per land unit.
- Increase biodiversity.
- Produce high-quality hardwood timber where appropriate.
- Protect water quality by reducing surface water runoff and prevent erosion of river banks.
- Encourage continuous-cover forestry and close-to-nature silvicultural techniques.
- Enhance the quality and diversity of landscapes.

## Pilot plantation

A pilot agroforestry plantation was established in 2012 on Liam Beechinor's farm in Rossmore, Clonakilty, Co Cork.

## Suitable land type

Ideally, sites under the Agroforestry Scheme should have free-draining mineral soils. Sites suitable for agroforestry should not require additional fertiliser for tree growth, apart from the possibility of manual application at the base of individual trees at establishment.

However, additional nitrogen (<100kg/ha), may be required to promote grass growth for spring/summer grazing. This will be assessed on a site-by-site basis.

Prior to planting, vegetation man-



agement, typically using herbicides, will be required to reduce competition during the initial growing season. Vegetation-suppressing mats and mulches may also be considered.

In general, post-planting vegetation management is achieved by grazing animals. Initial establishment should be carried out using pit-planting where possible.

## Tree species and stocking

A stocking rate of 400 to 1,000 trees/ha (equal spacing) is recommended and the minimum eligible plot size and width will be 0.5ha and 20m respectively.

Acceptable broadleaf species include oak, sycamore and cherry. Other species, including conifers, will be considered on a site-by-site basis at application time.



Large planting stock (90cm to 120cm) should be used. Individual trees must be protected by tree shelters for the first six to eight years.

Tree shelters will be replaced with plastic mesh after that time (depending on tree growth), to prevent bark and stem damage from grazing stock.

Where an agroforestry plot forms part of a larger afforestation project, the plot must be fully fenced to prevent animals trespassing into the adjacent forests.

The following agricultural activities are allowable, so long as such activity is compatible with protecting the trees:

**Pasture:** Grazing by sheep or young domestic stock is permitted during the spring and summer months for the first six to eight years, depending on tree growth, but trees must be

protected and tree shelters checked regularly. Thereafter, when tree shelters are replaced with plastic mesh, larger animals may be introduced.

**Fodder:** Silage and hay production is permitted. It is important that appropriate machinery is used when cutting silage and/or hay so as to ensure that the trees (including stem, roots and crown) are not damaged.

The trees will be thinned out over the tree species rotation, so that when the trees are finally ready for felling (using continuous-cover forestry principles) there may be as few as 160 to 250 trees/ha).

The initial high numbers will help ensure that a suitable number of final crop trees is achieved. In addition, the continuous opening of the crown should ensure light for grass to continue growing sufficiently.

#### **Eligibility, grant and premium rates**

Under State Aid rules, only 80% of eligible costs can be funded under the Agroforestry Scheme.

Land classified by the Department as unimproved/unenclosed will not be eligible for support under the scheme.

Grant rates and payment structure will be similar to the Afforestation Scheme, with a maximum total grant of €4,450/ha applying, 75% paid after planting and the remaining 25% on successful establishment. A premium of €260/ha will be paid for five years only.

Once land is converted to agroforestry, it will be classified as forest land and the provisions of forest legislation will apply. Agroforestry must remain under forestry and therefore is subject to a replanting obligation.

Saffron, a spice extracted from the flowers of cousins of the common crocus, is worth far more per ounce than gold. Less valuable flowers, too, play a vital part in our cuisine.

## Flowers worth a nibble

**Pat Leonard**  
Lecturer at the Teagasc College,  
National Botanic Gardens

**C***rocus sativus* flowers in the autumn in many countries including Greece, Spain, India, Afghanistan and Iran. Saffron is derived from the bright red stigmas, the female parts of the flowers, which together with their styles or stalks are known as “threads”.

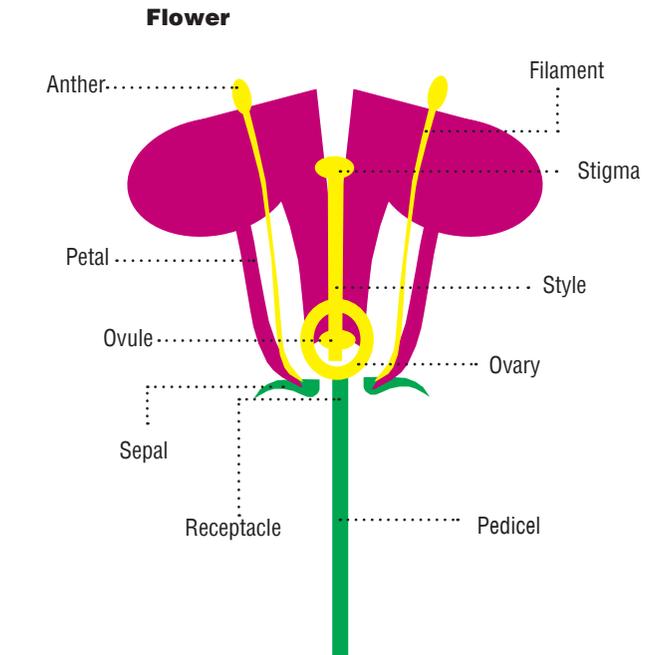
In a good year, each plant might produce several flowers. Each individual flower contains three stigmas which, when dried, yield commercial saffron. These stigmas must be picked by hand, so you can understand why it is among the world’s most expensive spices by weight.

It takes 80,000 flowers or 240,000 hand-picked stigmas, almost an acre of flowers, to make a single pound (454g) of saffron spice, which has a long history of use. There are historical references to both Cleopatra and Roman emperors bathing in saffron scented water.

Food is the main application, however, and even though saffron stigmas are red, their dye is egg-yolk yellow and gives that characteristic colour to such classic food dishes as Risotto Milanese, Paella Valenciana and Bouillabaisse.

Another highly-prized spice, the clove, that stalwart of the “cold curing” hot whiskey, and also used as an indispensable ingredient of apple tarts also comes from a flower.

Cloves are the aromatic unopened “flower buds” from an evergreen tree *Syzygium aromaticum* that grows up to between 8m and 12m tall in the rainforests of Indonesia, where they are commercially harvested. The flower buds of the clove tree initially have a pale colour, which gradually turns green and eventually bright



red when ready for harvest. They are picked when they reach 1.5cm to 2cm in length.

Structurally, each bud consists of a long calyx of four spreading sepals and four unopened petals, which form a small ball at the centre. The sweet aroma of cloves is due to Eugenol, an essential oil, which has many health benefits. Cloves were also prized in the past for their ability keep food from spoiling.

The salty, pea-sized dark green things we call “capers” – often used in Mediterranean dishes like spaghetti puttanesca or salad nicoise – are, in fact, pickled flower buds.

Capers are the unripened small flower buds of *Capparis spinosa*, a prickly plant native to the Mediterranean region. They are expensive as the buds are all harvested by hand with the smallest variety, called non-pareil, the most prized and priciest. Once harvested, they are dried in the sun and then pickled in vinegar, brine or salt to add that distinctive sour and salty flavour to salads, sauces and a variety of savoury dishes.

Many flowers grown for their attractive appearance are also edible. Common garden plants, such as Pot Marigold *Calendula officinalis*, Nasturtium *Tropaeolum majus*, Pansy *Viola*, Chives *Allium schoenoprasum*, Pinks *Dianthus*, Daylily *Hemerocallis* have edible flowers. However, be sure to positively identify a flower before eating it as some flowers have lookalikes which are not edible.



Cloves are the aromatic unopened “flower buds” from an evergreen tree that grows to between 8m and 12m tall in the rainforests of Indonesia



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