

## FIRM funding critical for delivering on Food Harvest 2020

On December 12th 2012, The Minister for Agriculture, Food and the Marine, Simon Coveney, TD, announced grant awards of approximately €10 million for research projects being undertaken, on a collaborative basis, by researchers from 13 institutions across the island of Ireland. The majority of this funding is devoted to Food Research in Dairy and is seen as critical to underpin the delivery of Food Harvest 2020 with respect to Dairy Expansion.

In all, the UCC/Teagasc Alliance is involved in 10 newly funded projects which together total €4 Million in research income. Importantly, these new projects address key areas of development within Dairy Processing and were developed in close consultation and collaboration with the Dairy Stakeholder Industries. These projects are designed to provide the research base on which new products will be developed to make use of the expanded milk pool in the most profitable way.

They include projects on cheese diversification, infant formula and dried ingredient technology, all of which will be critical in delivering a dividend for the research spent. This applied public programme of research will provide choice and opportunity for our Dairy Industry as it faces a very interesting era of challenge and expansion with the abolition of quotas. Related to this success, the Teagasc Food Programme at Ashtown and Moorepark has just gone through an intensive International Peer Review which assessed its performance and outputs over the last five years. The International examiners included representations from Irish Meat and Dairy industries, the Food Safety Authority, and International food research experts and was chaired by Professor Jan Wouters (former Director of NIZO Dairy Research Centre, Wageningen, NL). The Group is currently finalizing a detailed report of the assessment with recommendations for the future direction of the Programme.

The report will be presented to the Teagasc Authority early in the New Year, after which it will be available publically.



Paul Ross, Minister Simon Coveney, Kevin Lane, Chief Executive, IDB at the launch of the new Dairy Innovation Centre at Moorepark.

### VIEWPOINT

## New degree in Dairy Business at Moorepark

In response to major changes in the dairy industry, Teagasc and UCD, in consultation with relevant industry stakeholders, have developed a new B.Agr.Sc (Hons) degree in Dairy Business.

The new course is designed to provide students entering the dairy industry with a high level of scientific, technical and business acumen. Years 1, 2 and 4 of the programme are being delivered at UCD, while Year 3 involves 5 weeks at Teagasc Kildalton in preparation for a 6-month Professional Work Experience placement abroad. This is followed by a 5-month training period at Teagasc Moorepark.

Modules will impart the latest knowledge and technologies in Grassland & Cow Nutrition, Breeding & Reproduction, Animal Health & Milk Quality and Dairy Production Systems within four 5-credit modules. A further

10-credit Project Module will engage the knowledge and skills gained centring around 'real' commercial farm data. Each student will be assigned a 'Mentor farm' where sub-projects pertaining to grassland management technology, Breeding Records, Biosecurity Auditing/Animal Health Accreditation, Heifer Rearing and Profit Monitor application will be assessed. The students will interact with various industry experts representing ICBF, AHI, IFJ, dairy processors, banking institutions, dairy farmers, etc.

Up to 30 students will start the course each year, with the first 3rd year students arriving at Moorepark in January 2012.

The Animal and Grassland Research and Innovation Centre at Moorepark, formerly Moorepark Dairy Production Research Centre, is recognised as a centre of excellence for Irish grass-based dairy research (since 1959).

The 5-month training period at Moorepark is a very unique selling point of the Dairy Business degree option.

Students will be challenged to demonstrate understanding, appreciation and practical application/relevance as well as an ability to collate relevant data, analyse same, report their findings and recommendations. It is anticipated that such skills will greatly enhance their professional development.

Dr. Frank Buckley is coordinating the degree programme at Moorepark while Dr. Karina Pierce is the UCD coordinator.

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## highlights

- \* TCM Level Reductions
- \* New 'Smart' Ingredients Facility
- \* Latest Moorepark Partnerships

## Sward structure influences dairy cow performance



A recent grazing study at Moorepark evaluated the influence of perennial ryegrass cultivars on the milk production performance of spring-calving dairy cows. The objective was to identify sward structure characteristics as exhibited by the respective cultivars which influence milk production.

Four perennial ryegrass cultivars, Bealey, Astonenergy, Spelga and Abermagic, all of which exhibit very different sward structures, were evaluated. The study took place during two periods, the first late in spring/early summer (April to July), the second in late summer (July to September).

During the spring/early summer period, the organic matter digestibility (OMD) of the Bealey and Astonenergy swards was highest. The Abermagic swards contained a higher stem proportion and longer standing stem height which resulted in reduced milk solids yield (-0.13 kg/day) compared to the other three cultivars. During late summer, the OMD of Bealey swards was highest and also recorded the highest daily milk solids yield (+0.08 kg/day).

These results indicate that grass cultivars with good grazing characteristics (i.e. low presented stem, high available leaf content) produce higher milk production. When calculated over the entire grazing season, the higher milk production produced by the Astonenergy and Bealey cultivars was worth an extra €65/cow. This work will continue in 2012.

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## Extra step needed to reduce TCM levels

We have come a long way between 2007 and 2011 in dealing with TCM (or Trichloromethane) levels in milk. But we now need to keep up the effort and go that extra step to make it all worthwhile.

During those four years, Teagasc (our Food and Agriculture Research sections as well as our Advisory section), in collaboration with the Irish Dairy Board and six Irish butter manufacturers, have been involved in a programme to reduce TCM levels in Irish butter destined for the German market. Failure to reduce TCM would seriously jeopardize the share of Irish butter in that market – and, indeed, in other markets in the future.

When this drive began, levels of TCM in butter were 0.07 mg/kg. The graph (Fig. 1) shows the steady progress we have made in

gradually reducing levels to less than half that amount: 0.031 mg/kg in 2011.

However, if we are to maintain a dominant position in markets, we must further reduce TCM levels in butter to below 0.03 mg/kg and keep them at that level. From the farmer's point of view, this means reducing the levels below 0.002 mg/kg in milk.

TCM residue develops in milk due to the interaction between milk and chlorine in the milking machine/bulk tank cleaning process. The TCM levels become concentrated in the butter after processing.

The reduction since 2007 has been mainly due to farm visits to identify incorrect practices. We had a vigorous advisory campaign, run by Teagasc and the milk processors, on the correct practices for

## Unexpected losses highlighted by new calf research



Calf loss has always been a significant welfare and economic problem in Irish dairy herds. In recent years there has been no research work carried out on this problem as funding has gravitated towards other animal health issues.

Following solicitations from dairy farmers, this problem was revisited recently with the initiation of a pilot study in research herds. This was followed by a large-scale prospective study of the extent, nature and causes of calf loss on commercial dairy farms in Munster. This is a collaborative research project involving DAFM, UCDF, AFBI and SAC. To date, over 500 necropsy examinations have been carried out at the recently set up Moorepark Post Mortem Laboratory.

One of the investigations to date has uncovered an unexpectedly high rate of loss due to a lethal congenital defect of the foetal intestinal tract. This finding has prompted a collaborative research project with the laboratories of DAFM to ascertain whether the Moorepark findings are representative nationally. The results from this calf research programme at Moorepark are contributing to the scientific knowledge base of the Calf Health Technical Working Group of Animal Health Ireland.

We thank the participating dairy farmers for their collaboration in this research.

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cleaning milking machines and bulk tank surfaces. We also introduced an intensive milk analysis programme; this year alone, 25,000 milk samples have been analysed in routine screening for TCM in both tanker milk and the milk from individual suppliers.

Our aim is to eliminate almost all chlorine residues in milk. Chlorine is actually one of the most effective, efficient and economical substances that can be used to kill or remove bacteria from milking machine and bulk tank surfaces. We emphasise that cleaning procedures with chlorine detergents can continue to be used in this programme.

BUT these procedures must be used **CORRECTLY** and **CAREFULLY**.

Further screening will continue in the future under this programme and it is critical that each milk supplier takes responsibility for their milk TCM level. Milk from one supplier that is high in TCM when added to a milk tanker load with an acceptable TCM level can result in all of the milk in that load being measured as high in TCM.

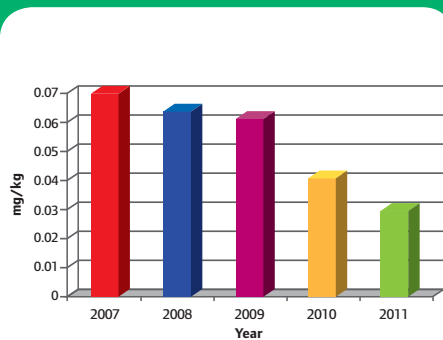


Figure 1. Profile of TCM reduction from 0.07 to 0.031 mg/kg in Irish butter

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## Latest Moorepark partnerships

Teagasc Food Research Centre Moorepark is a partner in 3 recently-awarded EU FP7 Research Projects.

### PLEASURE

The acronym 'PLEASURE' is a play on the project title Novel Processing approaches for the development of food products Low in fAt, Salt and sUgar Reduced. The reduction, all at once, in these three sensory components in our food is a major technological challenge, so the project consortium will approach it by developing new micro-structured and naturally reduced foods with similar sensory properties to existing foods. Teagasc Food Research Centre Moorepark will be responsible for the cheese research task to reduce the contents of salt and fat by 30%. Moorepark's cheese and ingredient researchers Drs. Tim Guinee, Phil Kelly, Diarmuid Sheehan and Kieran Kilcawley are involved.

### PROMISE

Protection of consumers by microbial risk mitigation through combating segregation of expertise (PROMISE) is the title of a 3-year food safety project that will be led by the Veterinary University of Vienna, Austria.



**EUROPEAN COMMISSION**  
7th Framework Programme on  
Research, Technological  
Development and Demonstration

The overall aim is to improve food safety in Europe through closer integration of 'old' and 'new' member states. Moorepark will attempt to develop a quantitative method for determination of numbers of *L. monocytogenes* in samples from the environment and therefore assess the contribution of environmental contamination to food contamination.

Dr Kieran Jordan is the participating Teagasc research scientist on the project.

### DIETARY FIBRES

Dietary Fibres supporting Gut and Immune Function – From polysaccharide compound to health claim (FibeBiotics) is a 54-month project led by a Dutch research team. Most of the functional food market is directed towards the gut and immune system, e.g. probiotics and prebiotics (mainly based on oligosaccharides) and fibres or non-digestible polysaccharides. Moorepark will concentrate on the High Molecular Weight non-digestible polysaccharides as beneficial agents for gut function. The project goal is to support the development of functional food ingredients and products that are beneficial for the human gut and immune system. Dr. Catherine Stanton is project leader at Moorepark.

## New "smart" ingredients facility for industry



The Biofunctional Engineering Facility (BEF) at Teagasc is currently undergoing a major expansion. This unique facility will allow client companies and researchers to develop new "smart" ingredients for use in the food industry. It will be utilised by the infant formula / nutritional sector as well as providing new opportunities for cheese, yogurts, nutritional beverages, sports drinks manufacturers. The expanded facilities will contain chromatographic, membrane separation and spray-drying technologies.

The facility which will follow protocols for GMP practices will allow research teams from companies develop new products or trouble shoot existing products while having access to the centre's expertise and laboratory facilities.

The expanded facility will support the research programme in Teagasc by providing new processing infrastructure and expanding research capabilities in the areas of membrane separation and dehydration technology. The new facilities will be also utilised as a training facility for students and researchers at Teagasc as well as providing a location for customised training courses for interested industries.

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## Teagasc National Dairy Conference 2011

The Teagasc National Dairy Conference was held in Cork and Athlone on 15 and 16 November. Capacity attendances heard presentations on the theme of 'The Irish Dairy Industry: To 2015 and Beyond'. The presentations were divided into four sections – Opportunities and Challenges, Expansion: The Importance of Planning and Cash Flow, Technologies for Profitable Dairying and Business Operating Models for the Future. National and international speakers represented dairy farmers, industry, research.



Pictured at the Teagasc National Dairy Conference in Cork are speakers Tom Egan, Teagasc Regional Manager, James Allen, New Zealand, Professor Gerry Boyle, Teagasc Director & Jim Woulfe, Chief Executive, Dairygold. Photo O'Gorman Photography.

## Peer review of the Animal and Grassland Programme

In early November, the Teagasc Animal and Grassland Programme was reviewed by both a national and international panel of experts which included Dr Sinclair Mayne, (Chairperson) Scientific Adviser DARD; Prof Dorian Garrick, Professor of Animal Science, Iowa State University; Prof Julie Fitzpatrick, Moredun Institute, Scotland; Dr Brian Wickham, Chief Executive, ICBF; Prof John Doherty, UCD; Mike Magan, dairy farmer, and Michael Doran, beef farmer. The purpose of the review is to assess if an effective and balanced scientific programme is being delivered which fulfils the needs of its stakeholders. Preliminary recommendations indicate a high level of satisfaction with the programme.



## Ballyhaise Open Day

Ballyhaise Agricultural College hosted 500 Border Midlands West (BMW) region dairy farmers in October for an Open Day to commence planning for EU quota abolition in 2015. Visiting farmers were encouraged to put more emphasis on feed budgeting to extend the grazing season into autumn and allow additional high value autumn milk to be produced cheaply from grazed grass.

## The 4th Glycoscience Ireland meeting

Over 120 delegates attended the 4th Glycoscience Ireland meeting organised by Teagasc, AGRC, NIBRT and APC, at Teagasc Food Research Centre, Moorepark. Twelve delegates presented studies on the most recent developments in fundamental and applied research in Glycobiology.



At the Glycoscience Ireland meeting were Mariarosaria Marolta, Food for Health Ireland (hosted at Teagasc), Dr Marguerite Clyne, UCD, Prof David Newburg, Boston College, & Dr Rita Hickey, Teagasc Food Programme



## Munster Champions

We congratulate our Moorepark Inter-Firm Hurling Team who won the Munster Interfirm Junior Hurling Championship Final. They have secured a place in the All-Ireland Final as Munster champions, and are awaiting the Leinster winners before they know their opponents.

## The Eighth Cheese Symposium

Over 170 delegates attended the 8th Cheese Symposium jointly held as part of the UCC/Teagasc Strategic Alliance in Food Research in collaboration with INRA, the French National Institute for Agricultural Research. Thirty delegates from 10 countries presented studies on the most recent developments in fundamental and applied research in cheese.



At the 8th Cheese Symposium were Gerry O'Brien, Carbon Group, Ringaskiddy, Dr Kieran Kilcawley, Teagasc, & Lyn Bell, Danisco, UK.

## Equine Conference

Over 250 people attended an Equine Conference in Moorepark in November. A number of expert speakers from throughout the industry made presentations.

## What's for Lunch?

This was a showcase event organised by the EU to highlight the results of projects in the area of food and bacterial traceability. Details and videos of the event are at: <http://webcast.ec.europa.eu/eutv/portal/archive.html?viewConference=12928>



Showcase presenters Dr. Kaye Burgess and Dr. Kieran Jordan with Mairead McGuinness, MEP, and Dr. Geraldine Duffy, Head of Teagasc Food Safety Department.

## Science Week

Six second level schools visited Moorepark during Science Week Open Day. The students visited both centres and saw practical demonstration at laboratory, processing and farm level.



David Gleeson, Teagasc, addressing students from Midleton College in Teagasc Moorepark during Science Week. Photo: O'Gorman Photography

## Sean Cummins - 2011 RDS medal winner

Sean Cummins was the 2011 winner of the RDS medal at the Teagasc Walsh Fellowships seminar in November. His PhD programme involved the development and initial characterization of a unique lactating cow genetic model of fertility. Sean's supervisors were Stephen Butler from Moorepark, and Alex Evans and Pat Lonergan from UCD.



Pictured at the awards are Sean Cummins, Mr. Jim Flanagan, Chairman, RDS Committee of Agriculture, Dr. Frank O'Mara, Director of Research Teagasc.

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