



Annual Report 2015

& Financial Statements



Teagasc client Sarah Claxton from Co. Waterford completed a degree in psychology before becoming a dairy farmer.

Introduction

The 2015 Annual Report is built around the goals outlined in the Teagasc Statement of Strategy. Examples of key achievements and developments for the Research, Knowledge Transfer and Operations directorates are described in the context of these goals.

Mission

To support science-based innovation in the agri-food sector and wider bioeconomy so as to underpin profitability, competitiveness and sustainability.

Vision

Teagasc wishes to be nationally and internationally recognized as the knowledge provider of choice for Ireland's agri-food sector.

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Chairman's Statement



Dr. Noel Cawley

The Teagasc National Farm Survey results show that family farm income increased by 6% in 2015, bringing the average income figure for the farming sector to €26,526.* Cattle prices increased considerably in 2015, between 6 and 16 per cent depending on stock type. This, combined with reduced input expenditure meant that the average farm income on cattle farms increased by 29 to 34%, depending on the production system.

Milk price was down almost 20% in 2015, but income on dairy farms fell by just 4 per cent to an average of €63,020. The EU milk quota system, which was in place for 31 years, was removed in April 2015. A combination of increased production and efficiency gains were achieved on dairy farms with input expenditure declining despite the rise in output.

Lamb prices increased by just 2% in 2015, but incomes on mixed sheep and cattle farms increased by 8% to an average of €15,791 on the back of strong cattle prices and reduced input expenditure. Despite a modest reduction in the value of cereals, income on mixed tillage and drystock farms increased by 16% to an average of €33,731, mostly due to strong cattle prices and lower fuel prices.

In 2015 exceptional flooding caused difficulties for many farm families. Agricultural advisors in Teagasc offices assisted farmers with advice and information to help them manage their farms during the extreme weather in late 2015.

Teagasc advisors in offices in Ballinasloe, County Galway; Ballina, County Mayo; Ennis, County Clare; Ballymote, County Sligo; Newcastlewest, County Limerick; Letterkenny, Co. Donegal, and Skibereen in West Cork were particularly involved.

In 2015 Teagasc and industry shareholders announced an investment of €10 million to expand and modernise the MTL pilot plant facility. As pointed out by Minister Coveney this kind of investment ensures that value is added to high quality raw materials in Ireland and



maximises the contribution of the dairy sector to employment creation and the Irish economy generally. It also contributes to improved competitiveness, and helps to mitigate the impact of commodity price volatility on operators along the supply chain, including farmers.

A €4.5 million Innovation Centre for Grassland and Dairying, named in honour of the late Paddy O'Keeffe, was opened at the Teagasc campus in Moorepark, Fermoy, County Cork.

The Innovation Centre will be used by the researchers, specialists and advisors involved in the delivery of the Teagasc Animal & Grassland Research and Innovation Programme, and in the delivery of the Teagasc Education programme. It will support the research programme on grassland, animal breeding and health, and farming systems.

** The 2013 FSS estimated the farming population falling within the sampling frame of the NFS to be 84,259. The 2015 estimates reported here are based on this updated population figure. In order to be consistent in the year on year comparisons presented in this report, the 2014 results were revised to reflect the new population and therefore the 2014 figures presented in this report do not correspond to the figures published in the "National Farm Survey 2014" report.*



Professor Gerry Boyle, Dr. Noel Cawley, Lt. Col. Brian MacSweeney (Retired), Professor Paddy Wall, Minister Simon Coveney TD, Professor Cathal O'Donoghue, Pat Hanly and Commodore Mark Mellett at the launch of the 'Reaching New Heights' Report of the Irish Sport Horse Industry Strategy Committee.

I would like to thank FBD Trust for their generous financial support which facilitated the establishment of the Centre.

As part of an ongoing programme of upgrades to Teagasc offices an extension to the Teagasc Advisory and Education Centre in Ballinrobe, County Mayo was opened in 2015. Ballinrobe is one of the four locations in the Mayo region from which Teagasc provides an education, advisory and research service for the benefit of the 9,800 farmers in the region. Teagasc invested €130,000 in the centre, doubling its capacity. The latest IT and computer facilities have been installed to provide quality education for up to 35 students at any given time.

A new Technology Foresight Project was commenced in order to identify the key technologies that have the potential over the next 20 years to underpin competitiveness, sustainability and growth in the Irish agri-food sector. This study is designed to enable Teagasc to focus on emerging technologies and to develop strategies, policies and roadmaps for its research and innovation programmes.

INRA (France's National Institute for Agricultural Research) and Teagasc signed a joint declaration for the strengthening of scientific cooperation between the two organisations. Together, these research institutes possess a high level of competence and expertise located in over 200 laboratories in France and 13 research and development centres in Ireland.

The cooperation themes encompass food processing, ecology, plant biology, human nutrition, microbiology, physiology, genetics and animal health, livestock breeding systems, environment, rural development and more.

The Health and Safety Authority and the Health and Safety Executive Northern Ireland, with the support of FBD and Teagasc, hosted an 'All-Island Farm Safety Conference' in Monaghan. Farmers and Health and Safety professionals from both sides of the border shared ideas and prevention strategies on how to best reduce injury and death on farms.

I would like to thank the Minister for Agriculture, Food and the Marine, Simon Coveney, TD and Ministers of State, Tom Hayes TD and Ann Phelan TD for their support for Teagasc's

knowledge transfer and research activities during 2015.

I would also like to thank Secretary General Aidan O'Driscoll and his staff at the Department of Agriculture, Food and the Marine with whom we work closely for the benefit of our stakeholders. Since early 2016 we already have an excellent working relationship with Minister for Agriculture, Food and the Marine, Michael Creed TD and Minister for State at the Department for Agriculture, Food and the Marine, Andrew Doyle TD. Early 2015 saw Ms. Cliona Murphy and Mr. Liam Woulfe appointed to the Teagasc board. We greatly appreciate their commitment and efforts on the board.

In June 2016, Richard Kennedy was appointed to the Teagasc Authority by the Minister for Agriculture, Food and the Marine, Michael Creed TD. I would like to acknowledge the contribution of Tim O Leary who stepped down from the Authority. His input to Teagasc business during his term on the board was always respected, valuable and constructive.

Dr. Noel Cawley

Chairman of the Teagasc Authority

Report of the Director



Professor Gerry Boyle

A Teagasc National Strategic Plan for Advisory - "Strategic Pathways for the Teagasc Advisory Service 2015-2020" was officially launched by Phil Hogan, EU Commissioner for Agriculture and Rural Development in the Teagasc College of Amenity Horticulture, Botanic Gardens, Dublin, in June.

Soil sample results for soils analysed at Teagasc show that 90% of samples have sub optimal levels of one of the principle soil nutrients Lime, Phosphorus (P) and Potassium (K). This is a serious limitation to the production potential of our soils and limits our ability to maximise our most competitive advantage which is our ability to grow high yields of quality grass.

NMP-Online, which has been developed by Teagasc, provides the capacity to undertake high quality nutrient management planning that meets statutory requirements and effectively gets the message across to farmers concerning the benefits of efficient soil nutrient management. Access to the system will be open to all agri-professionals and will be supported by Teagasc. It is a key tool in the ongoing campaign to improve soil fertility and fertiliser efficiency.

Teagasc Beef Production System Guidelines which cover 14 different cattle production systems, were launched by the Minister for Agriculture, Food and the Marine, Simon Coveney TD on the Teagasc stand at the National Ploughing Championships in Laois in September. These guidelines, published in conjunction with Bord Bia were produced as a result of the discussions at the Beef Roundtable

chaired by the Minister and reflect the production systems present on many Irish beef farms. They contain farm management advice that will be of value to farmers currently in, or considering these systems of beef production.

Two major Open Days took place in 2015. Thousands of farmers from all over the country travelled to attend a major Teagasc sheep Open Day in Athenry, County Galway, and the Open Day at Teagasc, Moorepark, Fermoy, County Cork.

Important traits are often not considered in breeding programmes because of the cost or inconvenience associated with their measurement. Milk quality and animal feed intake are two such traits, which normally require laborious and expensive measurement prohibiting the collection of a large quantity of individual cow data from commercial farms. Both sets of traits impact farm profit and, thus, must be considered within the framework of holistic, profit-based breeding goals such as the Economic Breeding Index (EBI).

Teagasc researchers have been investigating if mid-infrared (MIR) spectroscopy, a technique used for routine laboratory analysis of milk fat, protein and lactose content, could be used to predict milk quality and animal characteristics. Since all individual cow and bulk tank milk samples are subjected to milk MIR analysis, a huge bank of phenotypic data is now being generated at negligible cost. These data may have applications in decision support systems for routine day-to-day farm management or use in breeding programmes.

Two new Teagasc grass varieties were added to the Department of Agriculture, Food and the Marine's Recommended List in 2015: a Late heading diploid named Glenroyal and a Late heading tetraploid variety named Solas. Teagasc also provided a new white clover variety named Buddy.

The new grass varieties continue the recent trend of improved varieties in the Recommended List with increased yield potential combined with good spring and autumn yield performance. The new medium leaved clover variety competes well with the accompanying grass.

A nationwide series of information meetings on the new Forestry Programme 2014-2020 were organised by Teagasc in association with the Forest Service, DAFM. These meetings attracted over 1,300 people who heard details of the new attractive forest establishment and support grants and how the new forestry grants interact with other agricultural support schemes.

The objective of the new Forestry Programme is to support the planting of over 43,000 hectares of new forests as well as support for the construction of up to 690 kilometres of new forest roads. Another important feature of the new programme is substantial funding towards protecting and enhancing Irish native woodlands.

Teagasc outlined a draft Strategy programme for the Pig Development Department at the annual pig conferences. The number of pigs whose data is entered into the Teagasc e Profit Monitor PigSys herd recording and analysis system, continues to grow – and now stands at 84,000 sows in 2015.

Teagasc made a comprehensive contribution to the development of the Food Wise 2025 Report and over 130 actions in the Report are the responsibility of Teagasc. Teagasc submitted a proposal for an Enterprise Ireland funded Meat Technology Centre. Teagasc was appointed as the Host Institute.

The Teagasc Organics Team delivered 15 FETAC Level 5 organic production courses across the country in 2015, in response to unprecedented demand. Over 500 farmers joined the new organic farming scheme this year and the Teagasc courses provided these farmers with the knowledge to successfully convert to organic farming. Ireland now has 1,725 certified organic farmers, which represents approximately 2% of all farmers. As part of the scheme conditions, each farmer has to complete a 25-hour FETAC Level 5 organic production course. Teagasc is the primary provider of these courses in Ireland.

Demand for the Teagasc adult Green Cert programme is now at an all-time high. During 2015 Teagasc enrolled in excess of 3,500 learners in its adult Green Cert programme, up from the normal circumstances of 500 learners enrolled each year. Many factors drove the exceptional demand for the Green Cert. These include the requirement to have Green Cert, or its equivalent, for many farm schemes, financial and capital taxation incentives for young farmers. Another key driver is the desire of many adults engaged in farming to pursue an agricultural education to improve their farming knowledge and technology if they

had not had a previous opportunity to do so. Around 1,100 people attended the 27 Teagasc Green Cert course commencement events organised by Teagasc in December 2015. These events were organised to facilitate 2015 Young Farmer Scheme (YFS) and National Reserve (NR) scheme applicants.

A new innovative Teagasc Post-Doctoral Development programme was established to provide professional development for post-doctoral researchers. This programme which was jointly devised by Teagasc and UCC will prepare Post-Doctoral Fellows for a variety of career options in academia and industry.

Building on the success of the research-based Masters in Agricultural Innovation Support programme, Teagasc, in conjunction with the School of Agriculture in UCD, has developed a new and innovative Taught Masters programme.

The Masters in Agricultural Extension and Innovation, which is largely based around experiential learning, involves students working alongside designated advisors for two years and attending academic modules on block. Students will also have to complete a minor thesis.

I would like to thank all of my colleagues, in all roles and functions across Teagasc, for their commitment and hard work during 2015.

Professor Gerry Boyle
Teagasc Director

Teagasc Authority 2015



Teagasc Authority

Back row: Mr. Pádraig Gibbons, Mr. Joseph Larkin, Mr. Alan Jagoe, Mr. Tommy Cooke.
Front: Professor Gerald Fitzgerald, Dr. Noel Cawley, Ms. Cliona Murphy, Mr. Brendan Gleeson.

New Staff Representative Appointed to Teagasc Authority 05 November 2014

Mr. Joseph Larkin was appointed to the Teagasc Authority for a five-year term by the Minister for Agriculture, Food and the Marine, Simon Coveney TD. Joe filled the position on the Teagasc authority vacated by Marie Christie who completed a five-year term in August. Joe is the staff representative on the Authority and attended his first meeting of the Teagasc board in November.

Nominations Committee

In 2014 the Teagasc Board established a Nominations Committee as part of the process of filling the vacancies on the Teagasc Authority. Its aim was to identify the skill set needed by potential members. The Authority approved the establishment of the Nominations Committee at its meeting on 07/01/15.



Dr. Karina Pierce



Mr. Liam Woulfe

Attendance at Authority Meetings 2015

	07-Jan	04-Feb	04-Mar	01-Apr	06-May	03-Jun	01-Jul	02-Sep	07-Oct	04-Nov	02-Dec
Cawley, Dr. Noel, Chairman	√	√	√	√	√	√	√	√	√	√	√
Collins, Mr. Tom*	√										
Cooke, Mr. Tommy	√	√	√	√	√	√	√	√	√	√	√
Gibbons, Mr. Pdraig	√	√	√	√	√	√	√	√	√	√	√
Gleeson, Mr. Brendan	√	-	√	√	√	-	√	√	√	-	-
Pierce, Dr. Karina	√	√	√	√	√	√	√	√	√	√	√
Fitzgerald, Prof. Gerald	√	√	√	√	√	√	√	√	√	-	√
Jagoe, Mr. Alan	√	√	√	-	√	√	√	√	√	√	√
O'Leary, Mr. Tim	√	√	√	√	√	√	√	√	√	√	-
Larkin, Mr. Joe	√	√	√	√	√	√	-	√	√	√	√
Woulfe, Mr. Liam**					√	√	√	√	√	√	√
Murphy, Ms. Cliona***					-	√	-	√	√	-	√

Mr. Collins terms of appointment expired on 2 February 2015. **Mr. Woulfe was appointed to the Authority effective from 29 April 2015.

*** Ms. Murphy was appointed to the Authority effective from 29 April 2015.

Note: This schedule of attendances at meetings is provided in accordance with paragraph 3.8 of the Code.

Audit Committee

	04-Mar	08-Jun	08-Jul	07Oct	27-Nov
Gibbons, Mr. Pdraig (A/Chair)	√	√	√	√	√
Pierce, Dr. Karina	√	-	√	√	√
Gleeson, Mr. Brendan	√	√	√	√	-
Cawley, Dr. Noel*	√				
Woulfe, Mr. Liam**		√	√	√	√

* Stepped down from the Committee effective from 3 June 2015.

**Appointed Committee Chairman effective from 1 August 2015.

Research Committee

	17-Jul
Pierce, Dr. Karina (Chair)	√
O'Leary, Mr. Tim	-
Larkin, Mr. Joe	√
Jagoe, Mr. Alan	√
Fitzgerald, Prof. Ger	√

*Though not a member Mr. Cooke attended this meeting.

Advisory & Education Committee

	24-Feb	17-Jul	20-Nov
Cooke, Mr. Tommy (Chair)	√	√	√
O'Leary, Mr. Tim	√	-	-
Gibbons, Mr. Pdraig	√	√	√
Larkin, Mr. Joe	-	√	√
Jagoe, Mr. Alan	√	√	√

Operations Committee

	02-Feb	24-Feb	28-Aug	28-Oct	18 Dec
Gleeson, Mr. Brendan (Chair)***	√	√	√	√	√
Cawley, Dr. Noel	√	√	√	√	√
Cooke, Mr. Tommy*	-	-	√	√	√
Larkin, Mr. Joe	√	√	√	√	√
Murphy, Ms. Cliona**					√

*Mr. Cooke appointed Committee Chairman on 4 November 2015.

** Ms. Murphy appointed to the Committee on 4 November 2015.

*** Mr. Gleeson resigned from the Committee on 4 November 2015.

Nominations Committee

	20-Jan
Cawley, Dr. Noel (Chair)	√
Fitzgerald, Prof. Ger	√
Gibbons, Mr. Pdraig	√
Cooke, Mr. Tommy	√
Pierce, Dr. Karina	√
Gleeson, Mr. Brendan	√

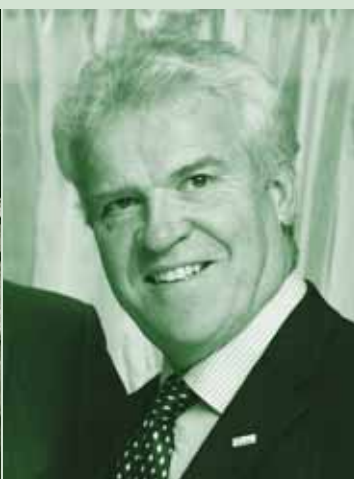
Senior Management Team



Professor Gerry Boyle
Director



Dr. Frank O'Mara
Director of Research



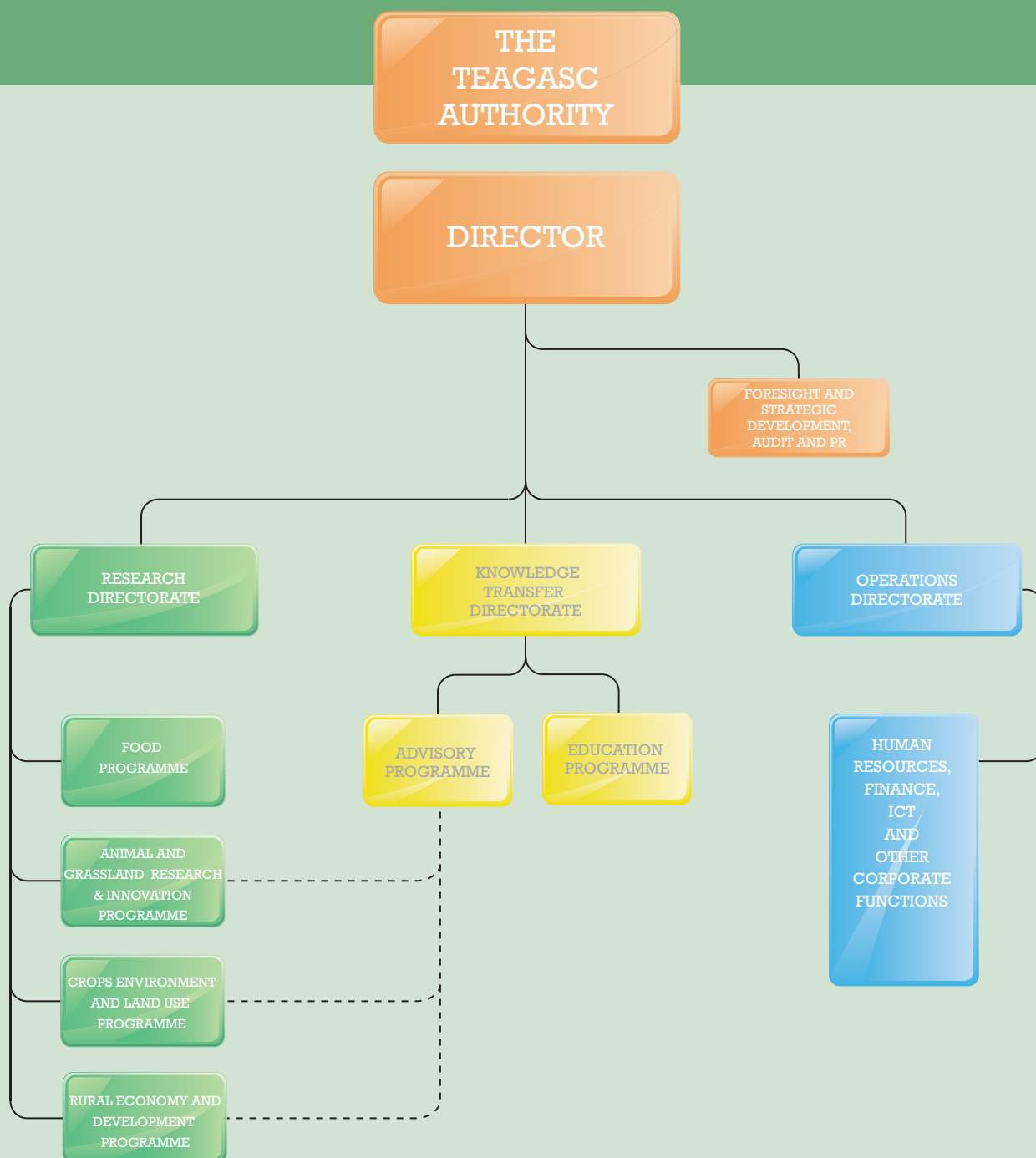
Mr. Tom Doherty
Chief Operating Officer



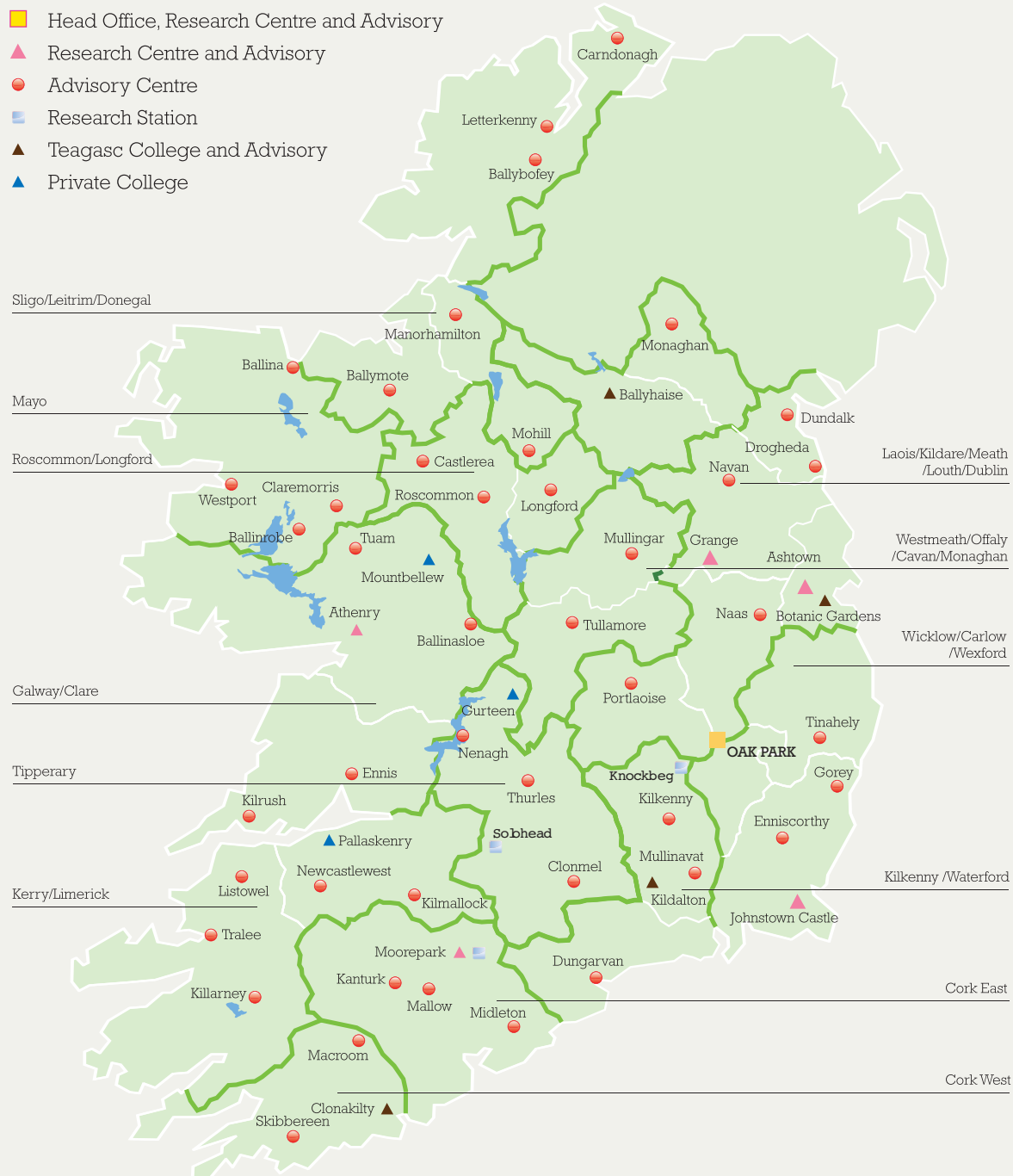
Prof. Tom Kelly
Director of Knowledge Transfer

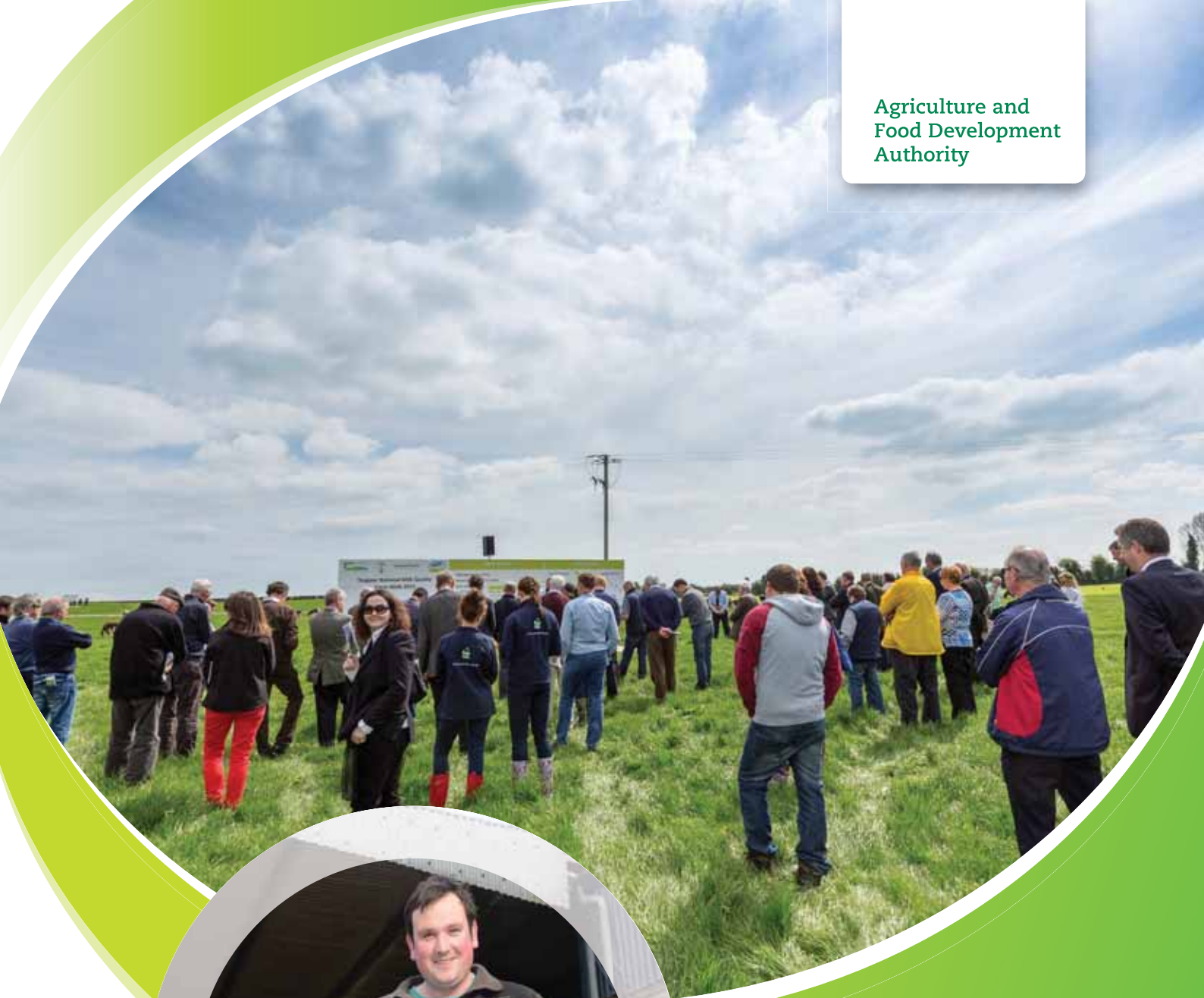
Organisational Chart

January 2015



January 2015





Goal 1

Improve the competitiveness
of agriculture, food and the wider
bio-economy

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BEEF

Beef Production Systems

Teagasc Beef Production System Guidelines which cover 14 different cattle production systems, were launched by the Minister for Agriculture, Food and the Marine, Simon Coveney TD, on the Teagasc stand at the National Ploughing Championships in Laois in September.

These guidelines, published in conjunction with Bord Bia were produced as a result of the discussions at the Beef Roundtable chaired by Minister Coveney and reflect the production systems that are present on many Irish beef farms. They contain farm management advice that will be of value to farmers currently in, or considering these systems of beef production.

Pearse Kelly, Head of the Teagasc Drystock Knowledge Transfer Department said: "All of the performance data and estimates of inputs and outputs outlined for each system in these guidelines is based on data generated from Teagasc research in Grange Research Centre and Johnstown Castle. It also includes data verified in Teagasc research demonstration herds such as the Derrypatrick herd in Grange."

Beef Conference

Hundreds of beef producers who contribute to the €2 billion in beef and cattle output from Irish farms were in Athlone for the Teagasc National Beef Conference. The event featured the technologies which can be applied on farms to sustain profitability.



Charles Chavasse, Zoetis, with Pearse Kelly, Paul Crosson and Tom Kellegher of Teagasc pictured before the Teagasc Beef Conference.

Opening the conference, Teagasc Director, Professor Gerry Boyle said: "All of the beef research that Teagasc is involved in, and all of the advice that we provide to beef farmers, is based on returning the best possible economic outcome in a sustainable way. The financial results from the top one third of farmers that complete eProfit Monitors, and the Teagasc demonstration farms, clearly show that achieving a gross margin of €1,000 per hectare is achievable."

Mervyn Parr from Teagasc Grange said: "Only 23 per cent of beef calves in Ireland are born to an AI sire. It is well acknowledged that AI allows access to genetically proven sires for terminal, maternal, and ease of calving traits, thereby facilitating greater genetic progress and ease of management."

At least half of the herd should be bred to produce quality herd replacements and the remainder bred to terminal beef sires."

Noirín McHugh, Teagasc geneticist described the ideal suckler cow as one that requires low labour input, efficiently produces a good quality weanling, and goes back in calf year on year. She said that the economic benefit of using a five star replacement index cow over a one star cow is as much as €172 per calving event.

Teagasc Beef Enterprise Leader, Eddie O'Riordan, outlined feeding strategies to optimise performance from pasture in steer and bull finishing systems. He said: "As most beef cattle destined for slaughter spend at least two seasons at pasture in addition to two winters indoors, the level of animal performance at any stage of the production cycle can have an influence on performance at a later stage in the cycle."

BETTER Farms

A series of farm walks took place on Teagasc/Irish Farmers Journal BETTER Beef Farms where the focus is on improving farm profitability with a special emphasis on how better breeding can contribute significantly to increasing margins per suckler cow and per hectare.

Farmer Patrick Drohan for example has worked closely with Teagasc advisor Patrick O'Brien and programme advisor Peter Lawrence since he became a BETTER Beef Farm in 2012. Since then the value of output on the farm has almost doubled through a combination of increasing cow numbers and an increased number of calves reared per cow.

Homebred replacement heifers have significantly higher replacement index values than the average of the herd, and by following this policy over the coming years the average index of the herd is expected to rise considerably.

Teagasc Green Acres Calf to Beef Programme

A Teagasc Green Acres Calf to Beef Programme was launched in mid-March. This new programme will demonstrate profitable dairy calf to beef systems on a whole farm basis through a network of ten demonstration farms. The aim is to demonstrate that where a high level of technical efficiency is achieved on beef farms,

it is possible to attain a net margin per hectare (excluding premia) in excess of €500 per hectare.

Speaking at the launch in Tullamore, County Offaly, Director of Knowledge Transfer in Teagasc, Prof. Tom Kelly thanked the ten farmers and their families for putting themselves forward to participate in the programme saying that he looked forward to working with them to demonstrate what can be achieved and what lessons can be learned by other beef producers.



Beef Enterprise leader Eddie O'Riordan and members of the United States Department of Agriculture team which visited Teagasc Grange in 2015.

Goal 1

Improve the competitiveness of agriculture, food and the wider bio-economy

SHEEP

'Sheep 2015' Open Day

Farmers from all over the country travelled to attend a major Sheep Open Day in Athenry, County Galway. Sheep 2015 was officially opened by Mairead McGuinness, MEP in Teagasc Athenry on Saturday 20 June.



Addressing the large attendance, Mairead McGuinness said: "Sheep farming can be sustainable from both an income and an environmental point of view. The knowledge gained from the many organisations and companies involved at Sheep 2015 will help you to improve your farming and to do things better on your own farms. Teagasc data shows that the top one third of farmers make a good income from sheep farming."

Speaking at the official opening, Teagasc Director, Professor Gerry Boyle said: "I am particularly pleased to see the results flowing from the sheep

research demonstration flock which was set up a number of years ago. I am really looking forward to seeing the results of the research which has just commenced with the high genetic sheep imported from New Zealand which we will use to benchmark against the best sheep in Irish flocks."

A series of themed villages covering all areas of interest to sheep producers was on display in Athenry and attracted considerable interaction, making the event a major success.





Jonathan Forbes, Kepak, Mairead McGuinness MEP, Prof. Michael Diskin, Teagasc, and Stephanie Fitzgerald, Supervalu, attending 'SHEEP2015', the major National Sheep Open Day hosted by Teagasc at Athenry.

Dr. Jos Houdijk, Scottish Rural College (SRC), Edinburgh, described worm control strategies with reduced reliance on anthelmintics. Delegates heard about the potential of breeding to reduce lambing difficulty and improve lamb survival from Dr. Joanne Conington, also of the SRC.

Professor Michael Doherty of the School of Veterinary Medicine, University College Dublin, spoke about Biosecurity for the Irish Sheep Flock. Lameness is a major problem in many flocks and Dr. Fiona Lovatt, a Veterinary Consultant in the UK addressed this important topic.

Teagasc Sheep Conferences

Teagasc held three sheep conferences: a Hill Sheep Conference held in Westport with further National Sheep Conferences held in Killarney, Co. Kerry and Trim, Co. Meath. All conferences focused on flock health, ewe nutrition, options for finishing hill lambs and marketing, which are all key drivers of productivity and profitability.

These topics were addressed by Teagasc researchers, specialists and advisors including Michael Diskin, Michael Gottstein, Shane McHugh as well as other Irish and International speakers.



A future sheep farmer studying the stock at Athenry.

Goal 1

Improve the competitiveness of agriculture, food and the wider bio-economy

Dairying

Genetic evaluations

Important traits are often not considered in breeding programmes because of the cost or inconvenience associated with their measurement. Milk quality and animal feed intake are two such traits, which normally require laborious and expensive measurement prohibiting the collection of a large quantity of individual cow data from commercial farms. Both suites of traits impact farm profit and, thus, must be considered within the framework of holistic, profit-based breeding goals such as the Economic Breeding Index (EBI).

Teagasc researcher, Dr. Sinead McParland and colleagues have been investigating if mid-infrared (MIR) spectroscopy, a technique used for routine laboratory analysis of milk fat, protein and lactose content, could be used to predict milk quality and animal characteristics.

"Since all individual cow and bulk tank milk samples are subjected to milk MIR analysis, a huge bank of phenotypic data is now being generated at negligible additional cost. These data may have applications in decision support systems for routine day-to-day farm management or use in breeding programmes," says Dr. Sinead McParland.

Moorepark Open Day

"Dairy farming must be sustainable from an economic, environment and from a family farm perspective." That was the message from Director of Teagasc, Professor Gerry Boyle speaking at the Teagasc Moorepark Dairy Open Day in Fermoy, County Cork, Wednesday, 1 July. Sustainable expansion was the theme and it attracted thousands of farmers from all over the country and abroad.

Over 14,000 people visited the Teagasc Moorepark Open Day.



Speaking at the Teagasc Moorepark Dairy Open Day, Minister for Agriculture, Food and the Marine, Simon Coveney TD said: "Teagasc Moorepark is a vital piece of national infrastructure. Its work on grassland management and other efficiency measures at farm level is world class, and it is remarkable that on the same campus its staff is providing top class research and product development work for processors, covering almost the entire supply chain.

"I commend Teagasc for its work here and I welcome those who have attended today in search of knowledge and inspiration."

Minister Coveney was joined by Tom Hayes, TD, Minister of State at the Department of Agriculture, and by Sean Sherlock TD, Minister of State at Department of Foreign Affairs. Minister Sherlock said: "The Teagasc science and technology on display here for the farming sector and the food sector is an important asset for the sector to assist it to develop and expand in a sustainable way."

The dairy farmers' forum at Teagasc Moorepark '15 focussed on opportunities for young people to develop successful careers in dairying, focusing in particular on gaining the skills and experience for dairying. Eight farmers outlined their career paths into dairy farming.



Farmers at the Teagasc National Dairy Conference participated in break-out discussion sessions. This discussion is being led by Teagasc Soil & Fertiliser expert Dr. David Wall.

Teagasc announced details of a new Dairy Expansion Service. Teagasc advisors Patrick Gowing, Abigail Ryan and Paudie Kelly will lead delivery of a new planning and support service.

They will work with farmers undertaking significant investment on their farms with a view to creating robust development plans leading to resilient dairy businesses. They will work in tandem with the existing network of 80 Teagasc Dairy Advisors around the country, the five Teagasc Dairy Specialists and the research team to provide this service to farmers.

National Dairy Conference 2015

The Teagasc National Dairy Conference took place in Kilkenny over two consecutive days in December. The theme of the event was 'Managing in a New Era', reflecting the challenges and changes that dairy farmers now face.

Attendees had the option of attending either, or both of the days. Four keynote speakers from diverse fields addressed the conference over the two days.

Dr. Tom O'Dwyer, Head of Dairy Knowledge Transfer in Teagasc, said: "The most innovative aspect of this year's conference is the inclusion of break-out sessions on both afternoons. Attendees choose to attend three break-out sessions from a list of seven on each afternoon. The break-out sessions focus on six key topics: grassland, breeding/ herd fertility, finances, animal health, labour and systems. All of these sessions were interactive, with high levels of audience involvement."



A Teagasc farm walk on the land of Eddie, Anne and Thomas Dwan following a National Dairy Council seminar in Thurles, Co. Tipperary.

Milk Quality

Dairy Market Demand & Quality Standards was the subject of a seminar organised by the National Dairy Council in Thurles, Co. Tipperary. The event was organised as part of National Dairy Week and was followed by a Teagasc Farm Walk on the farm of Eddie, Anne and Thomas Dwan, the most recent national winners of the NDC & Kerrygold Quality Milk Awards.

"NDC research has shown that, in reputational terms, quality is the single most important attribute of Ireland's Dairy Industry. Our well-earned reputation for excellence and quality are key to the confidence and loyalty which consumers have in Irish dairy products at home and in premium global markets," said NDC Chairman Mr. Jackie Cahill.

Dr. David Gleeson from Teagasc's Moorepark Research Centre and a member of the national judging panel for the NDC & Kerrygold Quality Milk Awards shared his insights from his annual analysis and inspection of the country's top dairy farms each year.

High animal health status is key to trade and international market access and gives Irish milk producers and processors a competitive advantage.

This was the main message to emerge from the Teagasc ICOS Dairy Expansion Seminar also held in Tipperary. The theme of the seminar was "Animal Health and Milk Quality at Farm and Industry Levels".

Aaron Forde, CEO Aurivo and Chairman of the Irish Dairy Board acknowledged the central role that Irish milk producers play in current product positioning on international markets.

Aaron Forde, CEO Aurivo and Chairman of the Irish Dairy Board speaking at the Teagasc ICOS Dairy Expansion Seminar held in Tipperary.



"A premium quality product, such as Kerrygold butter on the German market, is only possible because of our premium raw material." He challenged dairy farmers and others supporting the dairy industry to continuously seek ways to improve our animal health and milk quality status.

He said: "We must guard against complacency in these areas as we are seeing the emergence of a more knowledgeable and demanding customer. Meeting existing quality standards is unlikely to be enough in the future."

Teagasc Dairy Diploma Students Graduate

Graduates of the Teagasc Professional Diploma in Dairy Herd Management course were presented with their diplomas at an awards ceremony at the Teagasc Animal and Grassland, Research and Innovation Centre, Moorepark, Fermoy, County Cork, on Friday, 11 December.

This is the second group of students to graduate from this recently established course.

The 1,2,3 of Calf Rearing

Animal Health Ireland and Teagasc, in conjunction with Glanbia, Kerry Agri Business and Aurivo and supported by Volac teamed up to deliver seven CalfCare events in January. These events were timely as calving started on most dairy farms over the next two weeks.

Ireland's newest roadside sculpture comprising of three cows is pictured on the roundabout beside the Teagasc Centre at Moorepark, Fermoy, Co. Cork.

The events focused on six key areas:

- Colostrum Management;
- Calf Nutrition; Managing the Scouring Calf;
- Calf Performance
- Weaning to Mating;
- Biosecurity
- Managing Johne's Disease at Calving.

More than 1,000 farmers attended.

GRASS

New Grass and White Clover Varieties

Two new Teagasc grass varieties were added to the Department of Agriculture, Food and the Marine's Recommended List in 2015: a Late heading diploid named Glenroyal and a Late heading tetraploid variety named Solas. Teagasc also provided a new white clover variety named Buddy.

The new grass varieties continue the recent trend of improved varieties in the Recommended List with increased yield potential combined with good spring and autumn yield performance.

The new medium leaved clover variety competes well with the accompanying grass.

Performance data based on a Simulated Grazing (frequent cutting; 8 to 10 cuts per year) trial system is provided for nearly all of the perennial ryegrass varieties in the Intermediate and Late heading groups. It supplements the data based on a General Purpose 2-Cut Silage (i.e. 6 cuts per year, including two silage cuts) trial system, which is available for all varieties.

Each year DAFM test over 100 varieties of grass and white clover in replicated trials at five locations throughout the country. All new candidate varieties are tested against existing commercial Recommended List varieties over a minimum of two sowing years with each sowing harvested for two years, giving a total of four harvest years.

Trials are grown on good quality soils in a manner conducive to selection of varieties most suited to good commercial farming practices.



Goal 1

Improve the competitiveness of agriculture, food and the wider bio-economy

Pasture Profit Index

The proportion of grassland reseeded in Ireland is very low, meaning a large opportunity to maximise our natural advantage is being lost. Teagasc's Pasture Profit Index (PPI) can help grassland farmers identify the most appropriate perennial ryegrass cultivars for their farm. The index is comprised of six sub-indices and the performance values are based on data collected from the Department of Agriculture, Food and the Marine's grass evaluation trials.

With the exception of three varieties (Clanrye, Rodrigo and Solas), all varieties in the recommended list have PPI values calculated. Teagasc's Michael O'Donovan explains: "The PPI index values range from €54/ha to €208/ha per year for the 31 cultivars with the data available." The sub-indices present the opportunity to select cultivars for specific purposes.

For example, if selecting a cultivar for intensive grazing, the emphasis would be placed on seasonal DM yield and quality, with less importance placed on the silage performance. "The use of the total economic merit system enables the identification of cultivars that will provide the greatest economic contribution to ruminant grazing systems. The index illustrates the strengths and weaknesses of individual cultivars. It is expected that it will encourage increased usage of the recommended cultivar list and greater uptake of economically superior cultivars in the future," said Michael O'Donovan.



TILLAGE

National Tillage Conference

Speaking at the Teagasc conference John Spink, Head of Crops Research, pointed out that 'the key to the future profitability of the tillage sector is to exploit our high yield potential; with rotations playing a key role. He said that three of the main factors which determine profitability in good rotations are: profitable break crops, cost effective and sustainable disease control, and an understanding of crop growth and yield formation. These three factors will together maximise yield.'

The new Teagasc/IFA funded break crop research programme was presented by John Carroll outlining bean agronomy for the coming season for those looking to introduce a new crop into their rotation to comply with the three crop rule and avail of up to €250/ha in additional payments under the protein payment.

Ivan Whitten, Tim Ronaldson, Paddy Browne, Richie Hackett, Andy Doyle and Paud Evans at the National Tillage Conference.

The Teagasc Spring Barley Guide produced in collaboration with DAFM and Boortmalt was launched at the conference.

The guide brings together the latest Teagasc crop physiology and agronomy research. It gives a detailed description of how the crop grows and forms its yield and details crop management to optimise crop growth and yield in a one-stop shop for researchers, advisors, farmers and students. Circa 500 people attended the event.

Crops Forum

This year's Teagasc Crops Forum took place in September and focused on the technical challenges facing tillage farmers for the coming year.

A range of Teagasc and external speakers addressed the Forum. Dr. Michael Gaffney, Entomologist, Teagasc, updated the forum on aphid populations and the level of knockdown resistance, also called kdr, to certain insecticides. He said, "We have confirmed evidence of the kdr resistance gene being present in Irish grain aphid populations and we are now trying to establish the prevalence of the gene throughout the country, and also any practical effect this may be having on the ability of pyrethroids to effectively control grain aphid populations."

Eamonn Lynch, Teagasc advisor, gave practical advice to growers on how to combat the problem. He said: "Sowing early this autumn puts crops at greater risk and the advice is to use an insecticide seed dressing in these situations."

Seed Potatoes

The Teagasc workshop addressed the important aspects of seed potato production in Ireland. Seed exports have dwindled from over 10,000 tonnes per annum, a little over 10 years ago, to negligible volumes today.

Dr. Barry O'Reilly, Department of Agriculture, Food and the Marine, addressed the conference about the new EU regulations governing seed certification and also the standards seed must pass to qualify in each seed category and grade.

The workshop was joined by Dr. Jan van der Wolf, an international expert on the potato disease Blackleg from Wageningen University. "Blackleg is a huge problem when producing seed potatoes and the wetter climate in Ireland suits its development," said Dr. van der Wolf. "Eradication is impossible but careful management in field and storage is essential," he added.

Dr. Denis Griffin, Teagasc, Oak Park outlined how growers should focus on specialised seed potato production, rather than dual cropping, and outlined the major steps to achieving this. Teagasc staff from Oak Park presented the latest research findings in virus and potato cyst nematode management.

Speakers at the Teagasc Crops Forum.



Goal 1

Improve the competitiveness of agriculture, food and the wider bio-economy

Crops and Sprayers Open Day in Oak Park

Irish growers produce some of the highest crop yields in the world but given our climate, significant inputs are required. This requires the tailoring of fertiliser inputs to soils and crop needs. In addition each year farmers invest €80 million in crop protection products for weed, pest and disease control on their farms.

A major crops and sprayers Open Day in Teagasc Oak Park, Carlow, which took place in June, focussed on assisting farmers in choosing and applying these products most effectively.

Head of Crops Research in Teagasc, John Spink, said: "Getting the best return on this investment is down to three things – timing, product choice and getting the application right. We are highlighting the importance of all three at today's event. Our research continues to monitor the efficacy of available products, and identify the key timings for inputs.

Live demonstrations on getting the best from your sprayer and getting it ready for the sprayer test are taking place throughout the day."

Dermot Forristal and Brendan Burke demonstrating sprayer technology at Teagasc Oak Park, Carlow.



FOOD



Dr. Karen Twomey, Tyndall National Institute.

Detecting bacteria

Tyndall National Institute, Cork, and Teagasc announced the launch of the 'Spore Analysis Critical Control Point' (SACCP) partnership. The first of its kind, the project will develop a portable biosensor to detect spore forming harmful bacteria of environmental origins that may enter the dairy supply chain and exceed the ever-tightening microbiological specifications for high-end products such as infant milk formula.

Developed in Ireland, this new system will revolutionise quality monitoring processes within the dairy industry at a global level, benefiting businesses and consumers. Current spore detection processes are cumbersome and can take days of analysis in laboratories before establishing a definitive result. By comparison, the biosensor under development will be portable and produce results in just minutes. Ireland is a significant player within the global dairy market producing 15% of the world's infant milk formula.

Processing Collaboration

A new collaboration agreement was announced at the Teagasc Food Research Centre in Moorepark, Fermoy, Co. Cork between Glanbia Ingredients Ireland (GII) and Teagasc in the areas of dairy ingredients and processing. The arrangement focuses on the development of scientific capability to support the generation of value-add in the cheese and dairy ingredients space.

Speaking at the launch, Teagasc Director Professor Gerry Boyle said: "With the abolition of milk quotas and an increasing milk pool, there is a need for rapid transfer of scientific know-how for development of dairy ingredients with new end uses in export markets. This collaboration combines Teagasc's extensive capability in dairy chemistry and processing with GII's knowledge and expertise in dairy and nutritional ingredients with the goal of bringing new innovative products to export markets."

To support this initiative, a scientific programme has been agreed between the two parties which will support delivery of the latest developments in dairy science and technology at GII, the largest private shareholder in Moorepark Technology Ltd.

Investment in dairy processing

A €35 million investment by Government and industry will position Ireland as a world leader in dairy innovation, and help to maximise the long term growth opportunities created by anticipated increase of 50% in the Irish milk pool by 2020.

Announced jointly by Simon Coveney TD Minister for Agriculture, Food and the Marine, and Richard Bruton TD Minister for Jobs, Enterprise and Innovation, at Arrabawn Co-Op in Co. Tipperary the investment is in the form of two initiatives:

- a €25 million Dairy Processing Technology Centre (DPTC) supported by the Department of Jobs through Enterprise Ireland and the dairy industry partners which will be hosted by University of Limerick;
- a €10 million investment by Teagasc and the dairy industry shareholders in the expansion of the Moorepark Technology Ltd. (MTL) pilot plant facility in Fermoy Co. Cork.

Of the 10 major dairy companies involved, seven are investing in both initiatives; Arrabawn Co-op, Aurivo, Carbery, Dairygold, Glanbia, Kerry, and Tipperary Co-Op. Lakeland Dairies is part of the DPTC consortium only.

Goal 1

Improve the competitiveness of agriculture, food and the wider bio-economy

Ornua and North Cork Co-op are investing in MTL.

University of Limerick will lead nine other Research Performing Organisations (RPO's) in the DPTC to deliver the research and technology required creating 52 new jobs for highly-skilled researchers over the five year term of the centre.

Announcing the investment of €10 million by Teagasc and industry shareholders to expand and modernise the MTL pilot plant facility Minister Coveney said: "Investing in product and process innovation makes sense for a host of reasons. It ensures that value is added to high quality raw materials in Ireland.

This maximises the contribution of the dairy sector to employment creation and the Irish economy generally.

"It also contributes to improved competitiveness, and helps to mitigate the impact of commodity price volatility on operators along the supply chain, including farmers."

The Moorepark Technology Ltd. shareholding companies are: Arrabawn Co-op, Aurivo, Carbery, Dairygold, Glanbia, Ornua, Kerry, North Cork Co-Op and Tipperary Co-Op.

Teagasc Gateways to Foods for Health

A showcase of research and opportunities for Irish food producers took place in the Teagasc Food Research Centre, Moorepark, Fermoy, Cork in December. The Teagasc Gateways event provided an opportunity for food and ingredient producers to receive updates on the major national and international consumer health concerns and the current trends in Food for Health research.

Opening the event, Teagasc Director, Professor Gerry Boyle said that: "The Teagasc Gateways events provide an opportunity to develop the on-going relationship between the research community and the food industry.

EU Commissioner Phil Hogan (centre) opened the Food Innovation Gateways event.



It encourages networking and interfacing between companies and researchers in Teagasc and UCC, from which future innovations in the food sector will emerge."

Food Research conference

The 44th Annual Food Research Conference took place at the Teagasc Food Research Centre Moorepark in Fermoy Co. Cork and provided a platform for post-graduate students to present their research findings in the form of either an oral or a poster presentation. For over 40 years, this conference (formerly the UCC Annual Conference on Food Science and Technology) took place in UCC, while the event was hosted by Teagasc Ashtown in 2013 and UCD in 2014.

The conference came to Teagasc Moorepark for the first time this year.



Adrian Brodkorb, Sophie Gaspard, Dara Kirke, and Mark Fenelon at the 44th Annual Food Research Conference at the Teagasc Food Research Centre, Moorepark.

The conference has established itself as the main Irish Food Research event for postgraduate students in food related subjects. Over 110 attendees from Teagasc and the Universities heard 18 oral presentations and viewed 50 scientific posters, primarily from postgraduate students.

For many, this was their first time to be exposed to a national audience, and the conference continues to provide a key networking and communication opportunity for young food researchers.

Participants at the Food Innovation Gateways event at Teagasc, Ashtown.





Farm Management

Teagasc Farm Business Conference

Teagasc brought rural professionals who work with farmers together for a Farm Business Conference themed 'Professionals working together' in Tullamore.

There are a lot of different professionals working in the agri sector like solicitors, accountants, and agricultural consultants. Teagasc has identified the need to work more closely with these professionals for the benefit of mutual clients.

This is particularly relevant when farmers are making decisions on land access, taxation, succession and carrying out business analysis. Speaking at the event, Fintan Phelan, Head of Farm Management Department in Teagasc said:

Professor Cathal O'Donoghue and Thomas Curran, Teagasc, Minister of State, Tom Hayes with John Fitzgerald, Jerry Twomey, Chairman of the Irish Farm Managers Association

"The key focus for today's event is to share information, from Teagasc advice and research with others offering services to farmers and those living in the rural countryside."

A new publication "Guidelines for Long Term Land Leasing" was launched by Andrew Doyle TD, Chairman of the Oireachtas Joint Committee on Agriculture, Food and the Marine. The document is intended as a guidance document for farmers and landowners who are considering long term land leasing.



Share Farming Template for Dairying

A specimen template agreement for dairy share farming has been developed by Tom Curran, Teagasc Farm Structures Specialist.

The template was developed in consultation with a steering committee representing a wide range of stakeholders and with the support of the Irish Farm Managers Association.

The purpose of the template is to help landowners and potential share farmers to form a sound legal agreement when setting up a dairy share farming operation.



FORESTRY

New Forestry Programme

A nationwide series of information meetings on the new Forestry Programme 2014-2020 were organised by Teagasc in association with the Forest Service, DAFM. These meetings attracted over 1,300 people who heard details of the new attractive forest establishment and support grants and how the new forestry grants interact with other agricultural support schemes.

The objective of the new Forestry Programme is to support the planting of over 43,000 hectares of new forests as well as support for the construction of up to 690 kilometres of new forest roads. Another important feature of the new programme is substantial funding towards protecting and enhancing Irish native woodlands. Under the Native Woodlands Conservation Scheme, almost 2,000 hectares of these forests will be eligible for support.

Birch Improvement

Teagasc and None so Hardy Nurseries agreed a joint commercialisation plan to support and ensure exploitation of improved birch resulting from the Teagasc-led tree improvement programme.

Dr. Nuala Ni Fhlathárta addressing a Talking Timber event in Tullow, Co. Carlow.

Nuala Ni Fhlathárta, Head of Teagasc's Forestry Development Department commented: "This announcement is the result of seventeen years of tree improvement research initiated and led by Teagasc with collaboration from UCC and UCD, and has been mostly funded through the Department of Agriculture, Food and the Marine. The research is now at the exciting stage of starting to build strategic alliances with commercial seed producers/nurseries to ensure that Teagasc's research output is brought to the next level by making improved planting stock available to landowners."

Teagasc researcher Dr. Oliver Sheridan explained the background to this research project: "Over a million birch trees are planted every year in Ireland; mainly for biodiversity and native woodland schemes. Successful birch tree breeding programmes in other countries, such as in Finland and Sweden, have resulted in silver birch of much higher quality (straight stem and reduced knots) and with about 26% higher volume growth."

Talking Timber

Tom Hayes TD, Minister of State at the Department of Agriculture, Food and Marine with responsibility for forestry, opened a 'Talking Timber' event in Tullow, Co. Carlow. The purpose of the event was to provide forest owners with an opportunity to access information about selling their timber - to find out more about the timber sales process, harvesting options and the way in which timber value can be maximised.

The event was organised by Teagasc, in conjunction with the Department of Agriculture, Food and the Marine, and with the collaboration of the Irish Forest and Forest Products Association (IFFPA) and the forest industry. The event in Carlow was the second in a series, as a similar event was held in Claremorris, Co. Mayo.

Speaking at the opening of the event in Carlow, Minister of State Tom Hayes commented that he considered "The 'Talking Timber' events to be a useful opportunity for forest owners to see and hear about harvesting and marketing and basically to 'talk' about all aspects relating to their timber crop."

Goal 1

Improve the competitiveness of agriculture, food and the wider bio-economy

PIGS

Teagasc Pig Farmers' Conference

The Teagasc National Pig Conferences took place on Tuesday 20 October at the Cavan Crystal Hotel, Cavan and on Wednesday 21 October at the Horse & Jockey Hotel, Thurles County Tipperary. Guest speakers Jannes Doppenberg and Francesc Molist from Schothorst Feed Research in the Netherlands looked at using Alternative Feed Ingredients to reduce feed costs.

This is a critical area for pig producers as Irish producers look to close the gap on production costs with European competitors. Caroline Garvan and Denis Healy from the Department of Agriculture, Food and the Marine provided an update on antimicrobials in pig production and what the sector is facing in relation to usage reduction. Other papers looked at nutrition, performance and farm health.

Head of the Teagasc Pig Development Department, Ciarán Carroll, outlined a draft Strategy programme for the Pig Development Department over the next few years.

In poster presentations at the conference, Teagasc researchers and PhD students presented an overview of what is currently happening on some of the pig research projects at Teagasc Moorepark.

Ciarán Carroll, said: "The conference provided a valuable opportunity for all in the sector to meet other producers and get the latest information from the Teagasc Pig



Development Department and the other speakers on the issues and challenges facing the sector."

Increased recording

The number of pigs whose data is entered into the Teagasc eProfit Monitor PigSys herd recording & analysis system, continues to grow - from 70,000 sows in 2014 to 84,000 sows in 2015 (representing 56% of National Herd).

Pictured at the Teagasc pig conference at the Horse & Jockey, Co. Tipperary are speakers: Ciarán Carroll, Teagasc Head of Pig Development Department, James Doppenberg, Schothorst Feed Research (Netherlands), Edgar Garcia Manzanilla, Teagasc & Francesc Molist, Schothorst Feed Research (Netherlands).

Among those at the Teagasc Pig Farmers' Conference 2015 in the Cavan Crystal Hotel were: Anna Lavery, Teagasc Moorepark, Amy Haigh, Teagasc Moorepark and Bernadette Doyle, Contract Research Officer, Teagasc Moorepark.



EDUCATION

Teagasc Green Cert Course

Around 1,100 people attended the 27 Teagasc Green Cert course commencement events organised by Teagasc in December 2015. These events were organised to facilitate 2015 Young Farmer Scheme (YFS) and National Reserve (NR) scheme applicants. The EU commission clarified that 2015 YFS/NR scheme applicants needed to enrol in an approved agricultural programme by the end of 2015, in order to fulfil 2015 YFS/NR scheme conditions.

This requirement only affected those scheme applicants who had not already achieved the required educational qualification, or had not already commenced a course leading to such a qualification. Teagasc, as the main provider of young farmer training, made arrangements to ensure that scheme applicants could be enrolled in a Green Cert programme in December.

Demand for the Teagasc adult Green Cert programme is now at an all-time high. During 2015 Teagasc enrolled in excess of 3,500 learners in its adult Green Cert programme, up from the normal circumstances of 500 learners enrolled each year. Many factors drove the exceptional demand for the Green Cert.

These include the requirement to have Green Cert, or its equivalent, for many farm schemes, financial and capital taxation incentives for young farmers.



Damien McGrath is the 2015 winner of the Teagasc/FBD Student of the Year award. Damien completed his Teagasc Green Cert programme at Mountbellew Agricultural College.

Another key driver is the desire of many adults engaged in farming to pursue an agricultural education to improve their farming knowledge and technology if they had not had a previous opportunity to do so.

Many of these young finalists have already taken over significant levels of responsibility, or full responsibility on home farms, or through farm partnerships and are well capable of doing so."

Student of the year.

Damien McGrath is the 2015 winner of the Teagasc/FBD Student of the Year award. Damien completed his Teagasc Green Cert programme at Mountbellew Agricultural College.

Tony Pettit, Head of Education in Teagasc said: "Having interviewed Teagasc Student of the Year finalists over the past number of years, the quality of finalists is improving year on year. It is very reassuring to see the depth of knowledge and understanding of these Teagasc finalists across key farm performance indicators such as grass management, breeding, herd fertility and cost control and profit analysis.

Goal 1

Improve the competitiveness of agriculture, food and the wider bio-economy

Work-based Horticulture Courses

The Teagasc College of Amenity Horticulture at the National Botanic Gardens, Dublin, launched a series of new part-time / work-based courses for the horticulture sector. Four QQI Level 6 component awards will be offered in Sportsturf Science and Maintenance, Market Gardening, Nursery Stock Production and Landscape Design and Construction.

Principal of the Teagasc College of Amenity Horticulture, John Mulhern said: "These courses are intended for prospective students who are currently employed in the horticulture industry and who wish to further their career development in their chosen sector. These courses will enable the student to develop a greater understanding of the sciences underpinning their sector and will also help them improve their skills and competence at a practical level."

Strategy certificates for farmer graduates

The first group of farmers graduated from the Teagasc/UCD Michael Smurfit Business School Certificate in Strategy in December (*pictured below*).

The course content is delivered by UCD and Teagasc staff and the fully certified qualification is awarded by UCD.

HORTICULTURE

Ireland and UK's Mushroom Industries 'Harnessing Innovation'

Delegates at the All Ireland and UK Mushroom Conference and Trade Show in Monaghan discussed how Ireland and the UK's mushroom industries are 'Harnessing Innovation'.

The conference, sponsored by Bord Bia, brought together growers, scientists and suppliers from all 32 counties of Ireland, and also Great Britain. The event, themed 'Harnessing Innovation', was opened by Tom Hayes, Minister of State at the Department of Agriculture, Food and the Marine, with special responsibility for Horticulture.

Minister Hayes said: "Accounting for almost 50% of the value of our edible horticultural output, the mushroom industry is by far the most important sector within Ireland's horticultural industry. The strong export focus and high employment levels add further to the sector's contribution to the Irish economy and especially the rural economy. Irish mushroom growers are among the most technologically advanced and efficient in the world."





Bord Bia estimates the combined North and South mushroom production has a farm gate value of €173 million. UK mushroom production is estimated to be worth £115 million at farm gate level. The majority of Irish production is sold on the export market, with 80 percent exported each year. Bord Bia reported that mushroom sales remain steady both in Ireland and in the UK, Ireland's most important export market.

In the first session Helen Grogan (Teagasc) and Mairead Kilpatrick (AFBI) updated the industry on key research messages from MushTV, Tim Dolden from Loritus discussed Biocoal from Spent Mushroom Substrate and Production Management Software was covered by Hazel Codd, Codd Mushrooms. In the second session, Gerry Walsh, Teagasc (Retired) spoke about 40 years of Irish mushrooms, Brendan Burns, Sylvan looked at Growing Systems Abroad.

Michal Slawski, Bord Bia covered Food Innovation and a short Market Review and Stephen Allen, Monaghan Mushrooms spoke about "3 Ways To Get People to Eat More Mushrooms."

Advances in mushroom science

The Irish mushroom industry is among the most advanced in the world. However, despite having high levels of production and engineering controls, pathogens can still cause problems.

Dr. Helen Grogan, Teagasc researcher explains: "Since the late 1990s new virus diseases with serious economic consequences have been a sporadic problem for the mushroom industry across Europe". Similarly, recent outbreaks of *Trichoderma* green mould, highlighted gaps in our knowledge on how the mould develops and spreads within modern technologically-advanced systems.

Collaborative research across Europe (MushTV) has identified a complex of 19 different mushroom viruses, sixteen of them new to science, as well as identifying how mechanization of compost handling exacerbates *Trichoderma* green mould. "These important results have advanced our knowledge of potential threats to the sector and have provided the industry with important information to combat them," Helen explains.

Integrating crop protection

As of January 2014, all growers are required by law to grow crops in a manner that is complimentary to the principles of integrated pest management (IPM), which means that crop protection decisions should be considered in a prioritised order by examining firstly physical solutions, then cultural, biological and finally chemical.

Teagasc researcher Dr. Michael Gaffney explains: "In Ireland, the comparative lack of access to plant protection products, coupled with increasing regulation and public opinion has led to innovative practices being developed to combat pest, disease and weed problems."

Many growers now use mesh covers to protect young crops from insect damage, or introduce beneficial insects into glasshouses that prey on undesirable pests such as aphids and whitefly.

Michael Gaffney says: "While these systems are robust, there is a continual need to work on integrating them into the entire agronomic strategy."

Goal 1

Improve the competitiveness of agriculture, food and the wider bio-economy

Innovative plants for cut foliage

Worldwide demand for cut foliage, the decorative branches cut from a wide variety of trees, shrubs and perennials for use in bouquets and flower arrangements, is increasing and the prospects for continued expansion of the small Irish industry for export markets are very good. Andy Whelton, Teagasc's ornamentals specialist says:

"Buyers and customers are constantly looking for innovative new products displaying different textures, colours and scents.

Current Teagasc research involves screening and evaluating a wide range of ornamental plants to identify potentially interesting 'new' foliage lines.

"The first commercial plantings of a long stemmed scented Rosemary species will take place in 2016 for use in an innovative scented bouquet range" explains Andy Whelton.

Organic farming

The Teagasc Organics Team delivered 15 FETAC Level 5 organic production courses across the country in 2015, in response to unprecedented demand.

Over 500 farmers joined the new organic farming scheme and the Teagasc courses provided these farmers with the knowledge to successfully convert to organic farming.

Ireland now has 1,725 certified organic farmers, which represents approximately 2% of all farmers. As part of the scheme conditions, each farmer has to complete a 25-hour FETAC Level 5 organic production course. Teagasc is the primary provider of these courses in Ireland.

ADVISORY SERVICES

Overall Advisory Programme for 2015

	Totals	BT Dairy	BT Drystock	BT Tillage	ET REPS
Clients and Groups					
1 Clients	43,290	11,119	22,780	2,077	7,314
1a Client Breakdown: Club	15,830	2,375	9,171	529	3,755
1b Client breakdown: Group	10,790	4,452	5,295	295	748
1c Client breakdown: Other	16,670	4,292	8,314	1,253	2,811
2 Visits	20,246	8,241	7,697	1,535	2,773
3 Consultations	64,359	20,556	30,030	3,530	10,243
4 Discussion /Project Groups	817	332	426	26	33
5 Disc. / Project Group Meetings	6,175	3,207	2,659	144	165

Farm Planning Activities

6 SFP submitted on-line	38,681	9,320	20,523	2,217	6,621
7 Profit Monitors	6,576	2,867	3,231	103	375
8 Your farm your plan completed	2,654	1,085	1,381	62	126
9 Full Farm Business Plans	1,599	735	763	15	86

Environment / Regulation Activities

10 Simple Fertiliser Plans	9,845	3,602	3,683	850	1,710
11 New Derogations	608	436	84	4	84
12 Derogation renewals/ revisions	3,114	2,355	331	10	418
13 Cross Compliance Support	5,043	1,460	1,855	486	1,242
14 TAMS	3,611	1,023	1,116	1,280	192
15 AEOS / REPS Records	2,015	20	1,203	29	63
16 GLAS	5,175	218	3,351	91	1,515



Goal 2

Support Sustainable Farming
and the Environment

Goal 2 Support Sustainable Farming and the Environment



GREENHOUSE GASES

Greenhouse gases

Newly published research into soil processes shows that over half the nitrogen applied to grazed grassland soils in temperate regions was lost as environmentally benign di-nitrogen (N_2) gas. The research, published in the respected *Nature Scientific Reports Journal*, was led by Teagasc's Environment, Soils and Land Use Research Department at Johnstown Castle in collaboration with partners in Northern Ireland (Agri-Food and Biosciences Institute) and New Zealand (Lincoln University and AgResearch).

Grazing is associated with low nitrogen use efficiency, which means that, typically, only 15 to 30% of the nitrogen applied is captured in farm produce. The remainder of the nitrogen is either stored in the soil, or lost to water or the atmosphere. Of particular concern is the loss of nitrous oxide (N_2O), which is a powerful greenhouse gas that is

responsible for approximately a third of greenhouse gas emissions in Ireland.

Research to date has focused on the loss of nitrogen gases that are directly detrimental to our health, the climate and the environment. Losses of di-nitrogen (N_2), which comprises 78% of the air we breathe, are still poorly understood, due to difficulties in measuring them and the complexities of the processes involved.

That means that – thus far – our scientific understanding of both nitrogen losses and greenhouse gas emissions from agriculture has been incomplete.

This collaborative cutting edge research used advanced isotopic methods to measure these benign di-nitrogen (N_2) emissions from grazed grassland soils. These were found to account for 57% of the nitrogen applied in the form of cow urine to soil. The source of these benign emissions is a little known process called co-denitrification.

By contrast, emissions of the potent greenhouse gas nitrous oxide (N_2O), accounted for merely 0.7% of the applied nitrogen.

Dr. Karl Richards, Head of the Teagasc Environment, Soils and Land-Use department at Johnstown Castle and the Principal Investigator on the research project said:

"We have to keep in mind that this nitrogen loss, while not environmentally damaging, still represents a significant economic loss of nitrogen to the farmer. Further research is required to see if this soil process can be manipulated to increase nitrogen use efficiency in grazed grasslands."

According to Dr. Gary Lanigan, coordinator of the Irish Agricultural Greenhouse Gas Network: "If we can understand the process further then manipulation of co-denitrification in soil may be a feasible option for reducing greenhouse gas emissions from grazed grasslands."

WATER

Water

Teagasc researchers featured in a science series “10 Things to Know About ...” on RTÉ television.

Water is something we often take for granted, but it’s a hugely valuable resource that plays a vital part in every aspect of our lives. The episode

“Water – What goes around comes (back) around”, looked at how forensic science technology is being used for agriculture.

Teagasc’s Dr. Daire Ó hUallacháin and Teagasc Walsh Fellow PhD student Sophie Sheriff described how they are using forensic geoscience to trace where sediment originates to analyse potential threats to aquatic flora and species such as the Freshwater Pearl Mussel and Atlantic salmon.

“Too much sediment in rivers and streams can clog up gravels and spawning ground, thus having a negative impact on many of our most threatened aquatic species such as Salmon and Freshwater Pearl Mussel.

“Using novel fingerprinting methods to determine where exactly the sediment is coming from, allows us to design and target specific management techniques to reduce the amount of sediment coming from these problem areas,” explained Daire.

Advice for Flooded Farms

Agricultural advisors in Teagasc offices assisted farmers with advice and information to help them manage their farms during extreme weather in late 2015.

Teagasc advisors in offices in Ballinasloe, County Galway; Ballina, County Mayo; Ennis, County Clare; Ballymote, County Sligo; Newcastlewest, County Limerick; Letterkenny, Co. Donegal, and Skibereen in West Cork supported farmers affected.

A Teagasc response team jointly led by Peter Leonard, Teagasc advisory regional manager in Mayo and Teagasc environmental specialist, Tim Hyde based in Ballinasloe, liaised with the Department of Agriculture, Food and the Marine, other state agencies, farm organisations and rural associations to co-ordinate responses. Peter Leonard, said that in excess of 700 farmers across the country had some land, silage stocks or facilities affected by flooding.

Dr. Daire Ó hUallachain explains how he is using forensic geoscience to trace where sediments originate.



Goal 2 Support Sustainable Farming and the Environment

The issues facing farmers included flooded farm yards and cattle sheds, some fodder/ bales damaged and destroyed by flooding, moving animals to higher ground, and feeding a maintenance diet to animals taken out of flooded sheds.

Teagasc produced and distributed an information booklet dealing with personal safety, animal housing, animal feeding, animal movement and flooding of slurry tanks. Teagasc also established a free-phone help line for farmers affected by the flooding.

Enhancing Ireland's Agri Environment

Results from the Agricultural Catchments programme, which is run by Teagasc and funded by the Department of Agriculture, Food and the Marine, conclude that farm and field level nutrient management best practice have been shown to significantly improve both profitability as well as the water quality outcomes at the end of catchments. Best practice in the area of nutrient management promotes strict management of nutrients on land to reduce the risk of nutrient mobilisation in run off pathways to water bodies.

Funding for Phase III of the Agricultural Catchments Programme was agreed in 2015.

Wetlands

Wetlands are areas where water has a major influence on the soil, associated plant and animal life, and on the farming system. They include floodplains and wet grasslands as well as lakes, rivers, ponds swamps and bogs.

By their nature, wetlands often remain unimproved – never reseeded or heavily fertilised, thus providing a resource now more appreciated and valued.

Farming is important for the management of wetland grasslands, according to Catherine Keena, Teagasc Countryside Management Specialist. For example grazing of turloughs and cutting callow meadows is essential to maintain their rich biodiversity. Many wetland sites are considered Priority Environmental Assets in GLAS, the agri-environment scheme, giving farmers with these sites priority access to the scheme.

Some wetlands are designated private NATURA sites and others are identified as GLAS Farmland Bird areas for breeding waders, corncrake, or geese and swans. Farms who fence off rivers and streams identified as Vulnerable Water Areas, which are considered Environmental Assets, have increased chances of access to GLAS. Teagasc encourages farmers with wetlands to consider their options under GLAS as advisors can identify these Priority Assets on the GLAS online planning system.

The value of wetlands and the importance of farming on wetlands was highlighted at the launch of a new leaflet on 'Farming and Wetlands' by Minister for Arts, Heritage and the Gaeltacht, Heather Humphreys TD and Teagasc Director, Professor Gerry Boyle.

Minister Humphreys said:

"Wetlands are very important for plant and animal life and farming can help to protect their rich biodiversity. I would like to commend Teagasc for producing this leaflet, which I hope will be a useful resource for farmers."

Teagasc Director, Professor Gerry Boyle welcomed the multi-agency initiative - the Irish Ramsar Wetland Committee - of which Teagasc is a member along with governmental organisations, local authorities, academic institute personnel and non-governmental organisations.

SOILS

Fertiliser in Grassland Farming Systems

Promoting good soil fertility management for increased grass production and profitability on grassland farms was the focus of the Teagasc Soil Fertility Conference. Hundreds of grassland farmers and fertiliser industry representatives attended the conference. The new Teagasc NMP-Online, a farm nutrient management planning system, and the Fertiliser Association of Ireland (FAI) Technical Bulletin Series on soil fertility, were launched at the event.

Speaking at the launch, Minister of State at the Department of Agriculture, Food and Marine Tom Hayes TD, said: "This conference, which is part of the Teagasc national soil fertility campaign, will help farmers to maximise production and profits on their farms through the efficient use of fertilisers, driving output but in a sustainable manner. This is a key ambition of our FoodWise 2025 Strategy launched earlier this year."

Launching Teagasc NMP-Online, Teagasc Director, Professor Gerry Boyle said: "NMP-Online, which has been developed by Teagasc, provides the capacity to do high quality nutrient management planning,

which meets statutory requirements and effectively gets the message across to farmers through the map based outputs. By linking to external data sets the process of preparing nutrient plans has been made as efficient as possible".

Access to the system will be open to all agri-professionals and will be supported by Teagasc. It is a key tool in the ongoing campaign to improve soil fertility and fertiliser efficiency.

Soil sample results for soils analysed at Teagasc show that 90% of samples have sub optimal levels of one of the principle soil nutrients Lime, Phosphorus (P) and Potassium (K).

Mark Plunkett, Teagasc, Paddy Casey, President of the Fertiliser Association of Ireland, Minister of State at the Department of Agriculture, Food and Marine Tom Hayes TD and Pat Murphy, Teagasc.



Goal 2 Support Sustainable Farming and the Environment

Mark Plunkett, Teagasc Soil and Plant Nutrition Specialist said: "This is a serious limitation to the production potential of our soils and limits our ability to maximise our most competitive advantage in the market place which is our ability to grow high yields of quality grass."

According to Dr. David Wall, leader of the Teagasc Soil Fertility Research Programme at Johnstown Castle: "The first principle in fertiliser planning is controlling soil acidity through liming soils on a regular basis. Soil test results indicate that up to 65% of our soils require lime to maintain a soil pH 6.3 for grassland. Lime is a cost effective soil conditioner and in effect is a fertiliser as it is required to unlock major soil nutrients."

According to Pat Murphy, Head of Environment Knowledge Transfer in Teagasc: "The poor fertility status of soils in Ireland poses a significant threat to the achievement of growth targets for the industry."

"The challenge facing the industry is to improve soil fertility while at the same time delivering on environmental objectives. This can only be done by improving nutrient management planning at farm level, which in turn can only be achieved if farmers have a good understanding of the principles of soil fertility management and a clear plan for its implementation. The new Teagasc NMP online is the first step to achieving this."

Trends

Over the last 10 years Teagasc has analysed approximately 38,500 soil samples annually for its farmer clients. These samples provide an insight to national soil fertility trends (soil pH, phosphorus (P) and potassium (K)) for each farming sector. Overall soil test results for 2015 show that approximately 90% of samples have sub-optimal fertility status (soil pH < 6.3, P & K index 1 or 2) a situation that has persisted for the last number of years.

Currently 64% of grassland soils and 45% of tillage soils have below the optimum soil pH (i.e. pH 6.3 for efficient grassland production and pH 6.5 for tillage crops). According to Dr. David Wall: "Nationally we are applying less than half the quantity of lime that was applied in the 1970s and early 1980s."

Applying lime to correct soil pH is the cornerstone of maintaining the productivity of our soils. Identifying fields that require lime for pH adjustment should be the first step towards correcting soil fertility."

A major concern emerging from these soil test data is the continuous decline in soil P levels over the last decade with the majority of both grassland (61%) and tillage (59%) farms having suboptimal P fertility (i.e. P index 1 or 2). Although fertiliser P usage has recovered somewhat from its lowest level in 2008-09, it appears that the levels of current usage are not balanced with P off-takes on many farms.

Approximately 50% of grassland and tillage soils have low K fertility levels (54% and 47% respectively) however; soil K trends show a stabilization or gradual improvement over the last five years. This may be due to better distribution of manures on grassland farms and the targeting of higher K compound fertilisers on tillage farms.

Attendees at the Teagasc National Soils conference.





Minister Damian English TD and Paddy Browne, Head of the Teagasc Crops Environment and Land Use Programme.

BIODIVERSITY

Biodiversity

Teagasc focuses on increasing awareness of Biodiversity which includes our native flora, fauna and the habitats in which they exist. Because so much of Ireland is farmed, Irish wildlife or biodiversity depends on farmland habitats.

At the Teagasc Biodiversity conference the focus was on Ecosystem Products and Services and Enhancing Biodiversity in the Wider Countryside. The latest evidence and research on current and emerging policies and practices and policies that affect farmland biodiversity were presented.

Responsible rodenticide use

Effective control of rodents is an essential part of farming and food hygiene, as rats and mice can spread human and animal disease, contaminate food stuffs and cause damage to property. Rat poisons, also known as rodenticides, are the most common means of achieving rodent control. However, these compounds can affect a wide range of non-target wildlife.

Rodent predators can be exposed to rodenticides by feeding on rodents that have died as a result of poisoning, or by catching and feeding on live rodents which have these toxins in their systems. Catherine Keena, Teagasc Countryside Management Specialist said: "Recent studies, in Ireland, have shown that Barn Owls and Red Kites have evidence of rodenticides in their bodies, likely acquired through consumption of prey.

The contamination of such species has been confirmed through post-mortem examination of carcasses collected as part of ongoing statutory monitoring and is a matter of serious concern."

A Campaign for Responsible Rodenticide Use (CRRU) aimed to protect wildlife while promoting and providing effective rodent control through the responsible use of rodenticides in rural areas. CRRU Ireland was formed by companies that manufacture and distribute rodenticides in Ireland. CRRU advocates the responsible use of rodenticides to control rodent pest species in the interest of protecting human and animal health and avoiding contamination of food. Its prime objective is to minimise negative impacts on wildlife.

Goal 2 Support Sustainable Farming and the Environment

CRRU has drawn up a CRRU Code to minimise risks arising for wildlife. GLAS the Agri-Environment Scheme specifies that participants should comply with the CRRU Code in their daily farming activities.

Teagasc recommends that farmers follow the CRRU Code to ensure that the threat of secondary exposure to wildlife associated with rodent control measures is minimised. Information on the Campaign for Responsible Rodenticide Use was sent to all Teagasc clients.

Degree Programmes in Sustainable Farming and Agribusiness

Farmers armed with the most up-to-date skills in innovative farming technologies and entrepreneurship, in addition to scientific and agricultural knowledge, will be the result of two new degree programmes launched in Wexford by Government Chief Whip & Minister of State at the Departments of An Taoiseach and Defence Paul Kehoe, TD.

In addition to the provision of entrepreneurship skills and innovative farming technologies, a key component of the course will be regular site visits to farms and organic food producers, in addition to 24-weeks work placement, facilitated by Teagasc.

Pollinator Plan

Teagasc is one of sixty-eight governmental and non-governmental organisations that have agreed a shared plan of action to tackle pollinator decline and make Ireland a place where pollinators can survive and thrive.

Globally, bees are the most important pollinators because they visit flowers to collect pollen for their larvae, as well as feeding exclusively on the nectar of flowers as adults. Of 100 crops providing 90% of the world's food, 71 are pollinated by bees.

One third of 98 bee species in Ireland are threatened with extinction. About three-quarters of our wild plants also require insect pollinators, so without pollinators the Irish landscape would be a very different and less beautiful place.

The All-Ireland Pollinator Plan 2015-2020, makes Ireland one of the first countries in Europe with a strategy to address pollinator decline and protect pollination services. The initiative has generated huge support and has culminated in agreement to deliver 81 actions to make Ireland more pollinator friendly. The Plan identifies actions that can be taken on farm land, public land and private land.

Prof. Gerry Boyle addressing the Teagasc Biodiversity Conference.





Specific pollinator conservation actions for solitary bees have been introduced to the new agri-environment scheme, GLAS. Over 5,400 farmers have undertaken to create sand habitats for bees and a further 1,400 are installing bee boxes. Teagasc encourages farmers applying for GLAS to consider these options. Many other habitats created or managed under GLAS will also help pollinators.

SUSTAINABLE FARMING

BioÉire

Escalating challenges related to economic sustainability, climate change, biodiversity loss, resource scarcity, food security and growing populations highlight the need to transition to more sustainable, low-carbon ways of living.

The bioeconomy concept offers one way to address these challenges, harnessing the optimal use of renewable biological resources and reducing dependence on fossil-fuel based resources, whilst still achieving economic growth. At the European level, the bioeconomy is estimated to provide employment for some 21.5 million people, with a market worth approximately €2 trillion.

These lucrative markets and sustainable, bioeconomic opportunities are only just beginning to be exploited.

The BioÉire consortium hosted its first seminar in the Teagasc College of Amenity Horticulture, National Botanic Gardens, Glasnevin, to present some of the context shaping its current research activities and to provide input for its market development project.

BioÉire is a multi-disciplinary research team led by Teagasc and includes, NUI Galway, University College Dublin and the Dublin Institute of Technology. Outcomes of this workshop will feed into the process of developing a coherent, national bioeconomy strategy for Ireland.

“This strategy is needed to help us to review and ultimately change, how we produce, process and recover biological feedstocks” according to Dr. Maeve Henchion of Teagasc, BioÉire project coordinator.

Bart Bonsall, TCCB, Maeve Henchion, Teagasc, Paul O'Reilly, DIT, and Maria Hayes, Teagasc are part of the BioÉire consortium.

The development of a bioeconomy in Ireland producing biofuels, biofertilisers, biochemicals and bioplastics is particularly plausible given its abundant natural resources, thriving agriculture and marine sectors, growing forestry development, well-respected food industry and renowned research and development capabilities.

Dr. Maria Hayes, Research Officer at Teagasc, reflects on the opportunities that are readily available in the marine sector in Ireland. “The seas around Ireland contain a number of underutilised species, including seaweeds and Boarfish, that at present are not being exploited to their full potential.

“These species are potentially a huge reservoir for novel protein ingredients and functional foods compounds that may be health beneficial and can provide an alternative to dairy, meat and plant proteins.



Goal 2 Support Sustainable Farming and the Environment

“Furthermore, with the clever use of biotechnological processes, marine discards can be considered ideal candidates for generation of natural bioactive materials such as chitin and chitosan that have huge commercial appeal.”

KerryLIFE

The key objective of this demonstration project, which is worth €3.8 million to the local economy, is to support two local communities to restore populations of the critically endangered freshwater pearl mussel in south Kerry. The project will work closely with local communities and stakeholders in the farming and forestry sectors to deliver sustainable land use management for the conservation of the pearl mussel.

This approach will ensure local knowledge is central to the development and selection of the conservation measures to support the mussel. It is estimated that approximately 50 farmers across the Glencar and Blackwater areas will participate in the project, which will last until 2019.

The KerryLIFE project is a partnership project being coordinated by the Department of Arts, Heritage, and the Gaeltacht, the Department of Agriculture, Food and the Marine, Forest Service, Coillte, Teagasc, Pobal and South

Kerry Development Partnership. The project is co-funded by the European Union under the LIFE programme.

Major Job Potential in the Irish Bio-Economy

A new report on the Economic Impact of the Irish Bio-Economy was launched in 2015. Speaking at the launch, Professor Cathal O'Donoghue, Teagasc Head of Rural Economy and Development Programme, highlighted the strong local linkages between the Irish Bio-Economy, which incorporates the Agriculture, Food, Forestry and Marine sectors.

He commented that; “Due to the fact that bio-economic sectors locate much of their inputs in Ireland, and because they employ relatively more people per unit of output, when these sectors increase their sales and in particular their exports, they generate a greater impact on the economy.”

“Of the 162,000 jobs in the bio-economy in 2010, there were an additional 45,000 jobs elsewhere in the value chain. As much of the bio-economy is located in rural areas, this impact can have a particularly strong effect on rural job creation.”

The analysis utilises the Bio-economy Input Output model (BIO), which studies the linkages between the Bio-Economy sectors and the wider economy. This model has been developed to assess the output and employment multipliers of public policy initiatives. It was developed by the Socio-Economic Marine Research Unit (SEMRU) of NUI Galway and the Rural Economy and Development Programme of Teagasc.

The model was used recently to support strategic planning in the recent Food Wise 2025 strategy for the Agri-Food Sector. The strategy targets the creation of an additional 23,000 direct and indirect jobs in the agri-food sector all along the supply chain from primary production to high value added product development.

APC Microbiome Institute launch

The APC in Cork, a collaboration between scientists in UCC, Teagasc and CIT, is one of Science Foundation Ireland's national research centres and since its foundation in 2003 it has made several seminal contributions to our understanding of the importance of microbes in human health.

Prof. Fergus Shanahan, Director APC Microbiome Institute Prof. Mark Ferguson, Director General Science Foundation Ireland and Chief Scientific Advisor to the Irish Government Dr. Sally Cudmore, General Manager APC Microbiome Institute Mr. Simon Coveney, TD, Minister for Agriculture, Food and the Marine, Dr. Frank O'Mara, Director of Research, Teagasc



UCC has recognised the importance and scale of the APC's contribution to the microbiome field and the significance of its industry partnerships, with the designation of Institute status. The APC, formerly known as the Alimentary Pharmabiotic Centre, will now be named the APC Microbiome Institute.

LANDMARK: pathways to sustainable land management

LANDMARK is a brand new consortium of European researchers and advisors that will seek to unearth practices and policy pathways that make the most of Europe's rich and diverse heritage of soils, which are key to so many ecosystem services. LANDMARK receives €5 million in European funding from the European Commission as part of its Horizon 2020 Research Programme.

LANDMARK coordinator, Dr. Rachel Creamer from Teagasc said: "Not only do we expect Europe's agricultural land to provide a nutritious diet for all; we also expect it to provide clean water, to store carbon, recycle our waste and provide a home for biodiversity. These competing demands have now brought soil science sharply back into focus."

LANDMARK is an early example of a European Innovation Partnership, where scientists, practitioners and policy makers work together to generate new knowledge.

At the launch, Minister of State for Skills, Research & Innovation, Damien English, TD, said: "LANDMARK demonstrates Ireland's international leadership



Dr. Lance O'Brien, Paramente Phamotse, Ambassador to Ireland of the Kingdom of Lesotho, Prof. Gerry Boyle and John Weakliam, CEO of VITA discuss the PROIntens Africa Initiative.

in research and innovation in the area of Sustainable Food Production.

I congratulate Teagasc for winning this first, highly competitive call for research. Teagasc has demonstrated that it is possible for Irish research institutions to assume a leadership role in securing funding under the EU's Horizon 2020 programme."

PROIntensAfrica Initiative Explores African Opportunities for Sustainable Food Systems

Although current food production systems in Africa have enabled a substantial increase in food production, the farming practices have also impacted the environment. In addition, many people still do not have enough to eat and cannot escape poverty.

These kinds of effects to the whole African Agro-food system will be included in the explorations as 23 research and innovation institutes, including Teagasc, from 21 countries collaborates in a new initiative, PROIntensAfrica.

It is projected that the expected growth in the world population from 7 to 9 billion and the changing diets will require 70% more food by 2050. There is no single solution to production increase, so a diversity of pathways for sustainable

intensification needs to be explored and exploited.

"The PROIntensAfrica initiative will go beyond the debate of best systems for sustainable intensification in Africa. It will combine elements of different systems, yielding into innovative systems to optimally meet specific requirements," said Dr. Yemi Akinbamijo, Executive Director of the Forum for Agricultural Research in Africa (FARA).

"The ambition of PROIntens Africa is to formulate a universal research agenda and co-develop mechanisms for an effective long term partnerships."

African partners

FARA (Ghana), CORAF/WECARD (Senegal), CCARDESA (Botswana), ASARECA (Uganda), AFAAS (Uganda), ARC (South Africa), CSRI-CRI (Ghana) and INERA (Burkina Faso).

European partners

Wageningen UR (The Netherlands), CIRAD (France), UCL (Belgium), SLU (Sweden), IICT (Portugal), Luke (Finland), Univ. of Copenhagen (Denmark), ZEF (Germany), INIA (Spain), NRI (England), Teagasc (Ireland), BOKU (Austria), Univ. Life Sciences (Czech Republic), Univ. Szent Istvan (Hungary) and Bioforsk (Norway).

Goal 2 Support Sustainable Farming and the Environment

SAFETY

All-island collaboration on farm safety

The Health and Safety Authority and the Health and Safety Executive Northern Ireland, with the support of FBD and Teagasc, hosted an 'All-Island Farm Safety Conference' in Monaghan. Farmers and Safety professionals from both sides of the border shared ideas and prevention strategies on how to best reduce injury and death on farms.

Simon Best, former captain of Ulster Rugby spoke about 'being an active farmer with a young family, as well as an employer', and how he is 'acutely aware of the importance of safety on his farm. 'He encouraged 'all members of the farming community to prioritise safety.' Peter Gohery, a farmer from Galway spoke about how he lost a leg to an unguarded PTO shaft and how it still affects his life and ability to farm.

Dr. Denis O'Hora from the National University of Ireland, Galway presented the findings of a study on the impact of farm stresses and their impact on farm safety.

The study found that financial worries and farm stress increase anxiety and greater anxiety leads to higher expectations of injury. Social support reduces anxiety so it has a protective effect. Farm stress also directly affects farmers' expectations of injury.

Speaking about the types of support available Teagasc Director, Professor Gerry Boyle, encouraged farmers to engage with the initiatives available

for improving physical farm infrastructure and safety behaviour.

"It is vital that the maximum use is made of the Targeted Agricultural Modernisation (TAMS) and Knowledge Transfer (KT) schemes to improve safety. These Schemes have been introduced under the EU Rural Development Programme 2015-2020 by the Department of Agriculture, Food and the Marine, he stated."

Professor Boyle announced that Teagasc and the Health and Safety Authority are to jointly fund a PhD Walsh Fellowship, to study the adoption of farm safety and health through farmer participation in Knowledge Transfer groups.

He stated that academic supervision for the fellowship will be provided through the School of Agriculture and Food Science at UCD and School of Psychology at NUI, Galway.

The conference was sponsored by FBD trust and supported by the Ulster Farmers' Union, ICMSA, IFA and the Farm Safety Partnership.

A combination of farmer behaviours and ageing profile of the farm population are leading to the rising trend in farm deaths. This is a main finding of a long term geo-demographic study jointly conducted by Teagasc and the Health and Safety Authority.

The study's lead researcher, Dr. David Meredith of Teagasc's Rural Economy Development Programme stated that the study has examined farm workplace death patterns since 1993 in relation to population, geography, primary causes of fatalities and the timing of deaths.

The overall aim of the research is to uncover trends that will be of assistance in cutting the farm death toll.

Dr. Meredith noted that whilst the average number of deaths was 18 per year between 1993 and 2013, in four of the last five years farm deaths have been substantially higher than this average. In 2014 there were 30 deaths, and in three of the remaining years the number of deaths was greater than 20 per annum.

Dr. Meredith stated that "Whilst age is not a primary cause of fatalities it does help explain some of the trends that have become more prominent in recent years. Fatalities amongst the population of farmers under 45 years of age since 2009 are below the long run average.

In stark contrast to this, deaths amongst farmers between 45 and 64 years of age are 57% above the long run average for this group. This is the equivalent of three extra deaths per year of farmers in this age group. This trend is thought to be associated with an increase in the number of farmers in this age group resulting from large numbers returning to farming following the collapse of the construction sector."

The Teagasc researcher stated that fatal farm accident data also indicates a strong behavioural dimension to farm workplace deaths particularly those associated with tractors and machinery, livestock and falls particularly from heights. "The data indicate that accidents become increasingly lethal with increasing age. This highlights the importance of forming habits of safe behaviours at an early age and maintaining these habits as age increases," he added.

National Farm Survey

National Farm Survey Strong Cattle Prices Boost Farm Income in 2015

Teagasc National Farm Survey results show that family farm income increased by 6% in 2015, bringing the average income figure for the farming sector to €26,526. Speaking at the launch of the results Dr. Thia Hennessy, Head of the Teagasc National Farm Survey said: "Despite the considerable fall in milk price, increased milk production, combined with higher cattle prices, good weather conditions, reduced input expenditure due to lower fuel and animal feed prices, resulted in a 6 per cent increase in average farm income in 2015."

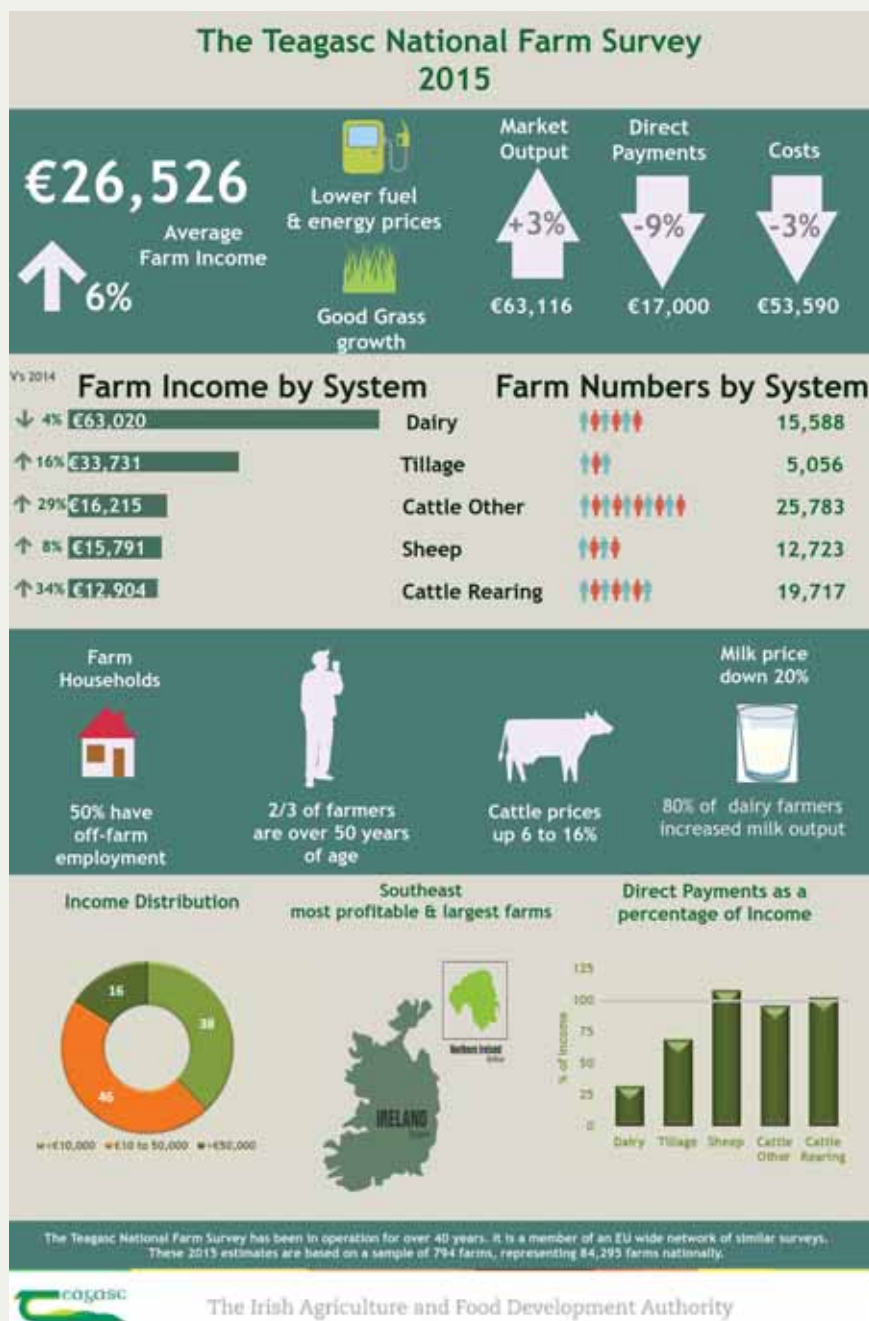
Cattle prices increased considerably in 2015, between 6 and 16 per cent depending on animal type, and this combined with reduced input expenditure meant that the average farm income on cattle farms increased considerably, in the order of 29 to 34%, depending on the production system. While this magnitude of increase seems substantial, it should be borne in mind that average incomes were still quite low at just €12,904 on cattle rearing farms in 2015.

"Cattle farmers are still very reliant on direct payments which comprise a large proportion of income," said Brian Moran of Teagasc's National Farm Survey. "However, 2015 represents the first year in recent times where cattle farms generated a profit from production before they received these payments," he added.

Milk price was down almost 20% in 2015, but income on dairy farms fell by just 4 per cent to an average of €63,020. The EU milk quota system, which was in place for 31 years, was removed in April 2015. The Teagasc National Farm Survey results show that considerable efficiency gains were achieved on dairy farms in 2015 with input expenditure declining despite the increase in output.

Almost one in three dairy farms increased their milk production by 20% or more, with just one-fifth of farms choosing to reduce production levels in 2015.

"The lower milk price in 2015 meant that dairy farmers had to increase their milk output by at least 20% to just maintain their income at the 2014 level," said Dr. Thia Hennessy.



Lamb prices increased by just 2% in 2015, but incomes on sheep farms increased by 8% to an average of €15,791 on the back of strong cattle prices and reduced input expenditure.

Despite a modest reduction in the value of cereals, income on tillage farms increased by 16% to an average of €33,731, mostly due to strong cattle prices and lower fuel prices.

Over €800 million was invested by farmers in their businesses in 2015, over €300 million of which was invested on dairy farms. Somewhat surprisingly, almost two-thirds of farms have no business related debt, with many choosing to fund new investment from working capital. On the remaining one-third of farms the average debt level is €60,607, or 1.47 times the income level.

Farming continues to remain highly reliant on direct payments. The average direct payment per farm was €17,000 comprising 64 per cent of farm income in general and almost 100 per cent of income on cattle and sheep farms.

The farming population in Ireland includes a considerable number of part-time farmers with almost one in three farmers working elsewhere off the farm. Just over half of all farm households have an off-farm income source.





Goal 3

Encourage diversification
of the rural economy and
enhance the quality of rural life

Goal 3 Encourage diversification of the rural economy and enhance the quality of life in rural areas

Collaborative farming

Three collaborative farming arrangements have the potential to redress the deficit in Irish farm structures.

Partnerships, share farming and contract heifer rearing can make a difference in terms of the age profile, average farm size and level of farmer skills in the Irish dairy industry. These were the main messages to emerge from the Teagasc ICOS Dairy Expansion Seminar held in July.

The common element within each of these three collaborative farming options is the importance of the relationship between the partners and the requirement for both partners to work on that relationship.

Tom Curran, Collaborative Farming Specialist Teagasc highlighted the key role that family farm partnerships can play in facilitating the succession process.

He said: "Forming a family farm partnership can be an important interim step before considering full transfer of the farm. A family farm partnership has the advantages of providing increased responsibility for the successor while providing a degree of added security for the parents.

"A registered partnership with another farmer (or farmers) can facilitate expansion without impacting negatively on lifestyle through the achievement of a fair and even distribution of workload between the partners."

In a farm partnership two separate farm businesses come together to operate as a single business while in a share farm agreement two completely separate farm businesses (the farm owner and the share farmer) operate on the one farm.

New Options Workshops

What are the options for increasing family farm income? Are they through on-farm efficiencies or through diversification? To help farmers make wise financial decisions and inspire diversification ideas, Teagasc organised a series of "Options" workshops for farm families at 12 locations throughout the country.

Each workshop consisted of five sessions run over five consecutive weeks and included visits to local farms and entrepreneurs who have succeeded in diversifying their farming activities.

Topics covered at the workshops included: Idea generation; assessing your enterprise; developing your idea; family farm finances; marketing & direct selling; food enterprise possibilities; rural tourism; organic opportunities; alternative land use options; a business plan - the basics; farm family finance; business supports; applying for grant aid.

Professor Gerry Boyle pictured with Minister of State Ann Phelan, TD



Speaking in advance of the first workshop in Claremorris Geraldine Hynes, Teagasc Options co-ordinator for the workshop said: "Improving household income is the key focus for all farm families. The options workshop helped farm families take a serious look at the resources and options available on the farm and within the farm household to generate additional income for the family. Hearing first hand from farmers who have succeeded in adding an additional income stream tells their own story helps expose farm families to new ideas and examine opportunities across a range of options."



Teagasc Rural Development Conference

John Donworth, Pat McDonagh, Mary Ryan, John Concannon, Prof. Cathal O'Donoghue, speakers at the Teagasc Rural Development Conference.

The Teagasc Rural Development Conference heard how the Irish economy is in recovery phase now, with over 80,000 new jobs created in the past two years. Growth in the Small and Medium Sized Food Enterprises (SME's) is identified as being very important to deliver jobs in the future particularly in rural areas.

One of the key challenges for Food SME's, identified by the CEDRA (Commission for the Economic Development of Rural Areas) report, is the development of export pathways to exploit the higher potential on overseas markets.

Getting Farm Financially Fit

The first Teagasc Get Farm Financially Fit event was launched by Ann Phelan TD, Minister of State with responsibility for Rural Economic Development in March.

Minister Phelan said: "Getting financially fit is one of the most important steps that farmers will take if they are to take up the opportunities that will arise in the future. This campaign will help to develop the discussion on managing the financial aspects of the farm and the farm household. The family farm is vital to the development of the rural economy."

Professor Cathal O'Donoghue, Head of the Teagasc Rural Economy and Development Programme said that the need for farm financial fitness arises for three different reasons – Volatility, Investment and Farm Viability.

- Volatility of farm incomes was four times higher over the last five years than the ten years previously.
- On-farm investment of an estimated €1.5 billion will be required if milk output is to increase by 50 per cent over the next five years.

- Teagasc research shows that over one third of all farm households have farm incomes below the minimum wage, where they do not have an off-farm job. Based on data from the Teagasc National Farm Survey, the proportion of economically viable farms in 2013 was 35%.

Kevin Connolly, Teagasc Farm Management Specialist.



Goal 3 Encourage diversification of the rural economy and enhance the quality of life in rural areas

Farm Succession and Transfer

Teagasc produced a new “Farm Succession & Transfer Guide” which aims to support farm families in making decisions on succession and farm transfer. Tomás Russell of Teagasc/UCD, and author of the book, said:

“This book provides farm families with a step by step guide through the processes of succession, helping them to deal with the emotional and complex issues involved in identifying a successor and discussing the future of the farm.”

The Farm Succession & Transfer Guide was launched by Teagasc Director, Professor Gerry Boyle, at a Knowledge Transfer Conference, in UCD.

The book was created by Tomás Russell as part of his PhD study in the Teagasc/UCD Agricultural Innovation Support Programme. His studies were funded through the Teagasc Walsh Fellowship Programme. The guide was produced with collaboration from Farmer Representative



Organisations, as well as the banking sector and legal sector and a number of farmers and successors who are currently confronting this challenge.

Global Food Security Forum

The Teagasc forum creates a platform for various NGOs, research institutions, the private sector and government agencies to share and discuss research across the agricultural sector, with a view to enhancing global food security. It poses the question of Ireland's role in addressing the challenges of reducing hunger in the world's poorest countries.

Director of Teagasc, Professor Gerry Boyle opened the forum, and welcomed delegates from across Ireland, the UK, the Netherlands and Ethiopia. “Ireland's history, expertise and capacity in research-led agriculture, perfectly positions us to be the development leaders on food security.

However, we run the risk of diluting that leadership unless we form practical and dynamic partnerships.”

Other key recommendations emerged from the forum, including the need to promote agricultural and in particular smallholder agricultural enterprises, as a fundamental driver of economic and social growth in lesser developed nations. The Vita potato programme in Chencha, Ethiopia was presented as a case study which successfully utilised knowledge transfer gleaned from a collaboration consisting of local, national and international expertise.



*Connemara Smokehouse,
Ballyconneely, Connemara,
Co. Galway.*



CRAFT REACH

Teagasc's CRAFT REACH project is part of the Government's Action Plan for Jobs 2015-2017 for the West Region launched by the Taoiseach and Minister Bruton in November 2015. The Plan, which covers counties Galway, Mayo and Roscommon, identifies the agri-food, tourism, medical technology, ICT and pharmaceuticals as key for employment growth.

The CRAFT REACH project, which is funded by the EU Northern Periphery and Arctic (NPA) programme, started in mid-2015 and will run to mid-2018. Teagasc is the Irish partner in this project which seeks to support the viability of artisan producers by helping them diversify their businesses into the cultural tourism market by using the Économusée model developed in Canada over 25 years ago.

An Économusée is an artisan producer who opens their premises to visitors by providing an interpretive and educational experience. Working with six other European partners and one from Canada the project supports an international network of 68 producers through knowledge exchange, business development, capability building, and on-line sales.

Dr. Kevin Heanue of Teagasc's Rural Economy and Development Programme who is leading the project in Ireland said that "I am delighted that the Action Plan for Jobs recognises the potential contribution that this innovative model of enterprise support can make. Since the Économusée model was brought to Northern Europe, 38 new artisan producers have become Économusées in the process creating 75 new jobs usually in remote rural areas".

"The core of the Économusée concept is a six step model that artisan producers implement to structure the visitor experience to their premises so as to provide an authentic learning experience, and training in this six step model is given as part of the project" said project coordinator Bridin McIntyre, Teagasc's Rural Economy and Development Programme. There are seven Économusée in Ireland including the Connemara Smokehouse in Co. Galway and St. Tola's Cheese in Co. Clare.

St. Tola's Goat's Cheese, Ennistymon, Co. Clare.



Goal 3 Encourage diversification of the rural economy and enhance the quality of life in rural areas

Rural Innovation Awards

The winners of the Dairymaster innovation awards organised in association with DARD, Irish Farmers Journal and Teagasc, were announced in Tralee.

The awards recognise rural innovations and the overall winner was Recovery Haven Kerry-Cancer Support House, Tralee, Co. Kerry. They were also the winners of the Community Innovation category.

There were two other category winners. In the Farm Innovation Category, the winner was Fresh Extend owned by Brian Hampton based at Kilmore, County Armagh, Northern Ireland. "I have designed a machine and system that can very effectively remove ethylene gas from cold rooms and the food chain of fruit and veg.

The machine and system offers cost effective solutions to small to large scale producers and fruit and veg handlers," said Brian Hampton.

The Rural Business Category was won by SAMCO, owned by Samuel Shine from Adare in County Limerick. Sam Shine said that "Samco's business idea is to provide farmers with a low cost solution to on farm storage of high quality fermented feed without the need for drying.

"The Samco Bag Press is ideal for buffer feeding during the grazing season, storing forage maize, brewer's grain, chopped sugar beet and other such products."

Professor Gerry Boyle, Director of Teagasc, congratulated the winners saying: "Innovation at farm and company level is important to maintaining vibrancy in rural Ireland. Innovation at farm level is evident from the recent analysis of Teagasc National Farm survey data which shows that the adoption of innovative practices on farms is found to be strongly positively correlated with economic performance.

Teagasc continues to support Innovation through the Options programme. The Food Works programme, which we are involved in with Bord Bia and Enterprise Ireland, is another good example of supporting innovation in the food sector.

The Judging Panel of the Dairymaster Innovation Awards looking 'outside the box'.





Healthy Living through Nutrition and Sport

There is a growing realisation that combining healthy eating with exercise is key to ensuring a healthy and active lifestyle. Sports people and scientists involved in food, nutrition and sports science have been aware of this connection for some time.

At the Teagasc Food Research Centre in Moorepark, Fermoy, Cork, aspiring sports people, and those involved in training and coaching sports, and indeed people who just want to tap into this knowledge to increase their general levels of fitness and wellbeing, met to hear presentations on the role of foods in enhancing levels of fitness and health.

It was an opportunity to learn of and discuss the latest developments with scientists and sports people who are experienced in this area.

Presentations were made by; Dr. Niall Moyna, School of Health and Human Performance from DCU on the Biology of Fitness covering a discussion on obesity, fitness and diets; Dr. Sharon Madigan, Head of Performance Nutrition Irish Institute of Sport on Introducing nutritional concepts to children and adolescents; and by Dr. Paul Cotter, (pictured above) Teagasc Food Research Centre, Moorepark on the role Teagasc plays in understanding foods for health.

These three presentations were followed by discussion with well-known sport people including:

- Tomás O'Shea – Gaelic Football
- Mike Ross – Rugby
- Joanne Fearon – Athletics
- Mark Collins - Gaelic Football
- Davy Russell – Jockey
- Ashling Hutchings – Gaelic Football & Rugby
- Tomás Clancy – Gaelic Football & Hurling

Dr. Tom Beresford, of the Food Bioscience Department in Teagasc said: "We have invited people from across the community and local sports clubs to meet and hear from both food research scientists and from some top Irish athletes, across a variety of sports, to highlight how important the choice of foods we eat and the quantities we consume are, and how to balance this with sustainable levels of exercise to ensure we stay as healthy as possible for as long as possible."

Goal 3 Encourage diversification of the rural economy and enhance the quality of life in rural areas



Category winners at the Dairymaster Innovation Awards organised by Teagasc in association with DARD, and the Irish Farmers Journal.

Jobs Dividend from End of Milk Quotas

The impact of dairy farming on the recovery of the rural economy was highlighted at a conference held to mark the elimination of the EU milk quota system.

The event organised by Teagasc and the Irish Cooperatives Organisation Society took place at the City West Hotel, County Dublin marked the launch of a book which charts the history of the dairy sector in Ireland in the quota era and which also estimates the jobs dividend that the policy change will bring for Ireland.

The Minister for Agriculture, Food and the Marine, Simon Coveney TD said: "This is the most fundamental change to Irish Agriculture in a generation. Since 1984, the industry has operated within a quota environment but now the shackles are off and the sector can start to realise its full potential.

"Removing quotas can be of huge benefit to farmers and the wider rural economy through direct and indirect job creation."

Teagasc Director, Professor Gerry Boyle said: "The removal of quotas is highly significant as it provides farmers with the

freedom to choose whether or not to produce milk, or produce more milk through expanding their production. However he warned that expansion is not for all milk producers.

"Some existing producers do not necessarily want to produce more milk while for others producing more milk is not a good option.

In my view, we must clearly advise farmers that it is a case of 'better before bigger', efficiency before expansion, or 'skill before scale'."

"For those among the country's 18,000 dairy farmers who choose to expand, they will see the immediate economic benefit of milk quota removal. The additional people employed on farms to milk Ireland's increasing dairy cow population will also benefit. By increasing the volume of milk they produce these farmers will boost their incomes. But increased milk production has benefits for other sectors of the economy also."

Teagasc economist Trevor Donnellan said that for every additional job created in the dairy and allied sectors, a further job will be created in the wider economy. Agri Input suppliers will see an upturn in their business as they service the needs of the expanding sector. The milk collection business will need to expand considerably to cope with

the targeted 50 per cent increase in milk production and this will provide employment in the transport sector around the country. Manufacturing and distribution jobs will also be created in the dairy processing industry.

Construction jobs have already been created with several projects aimed at catering for the additional milk production already well advanced.

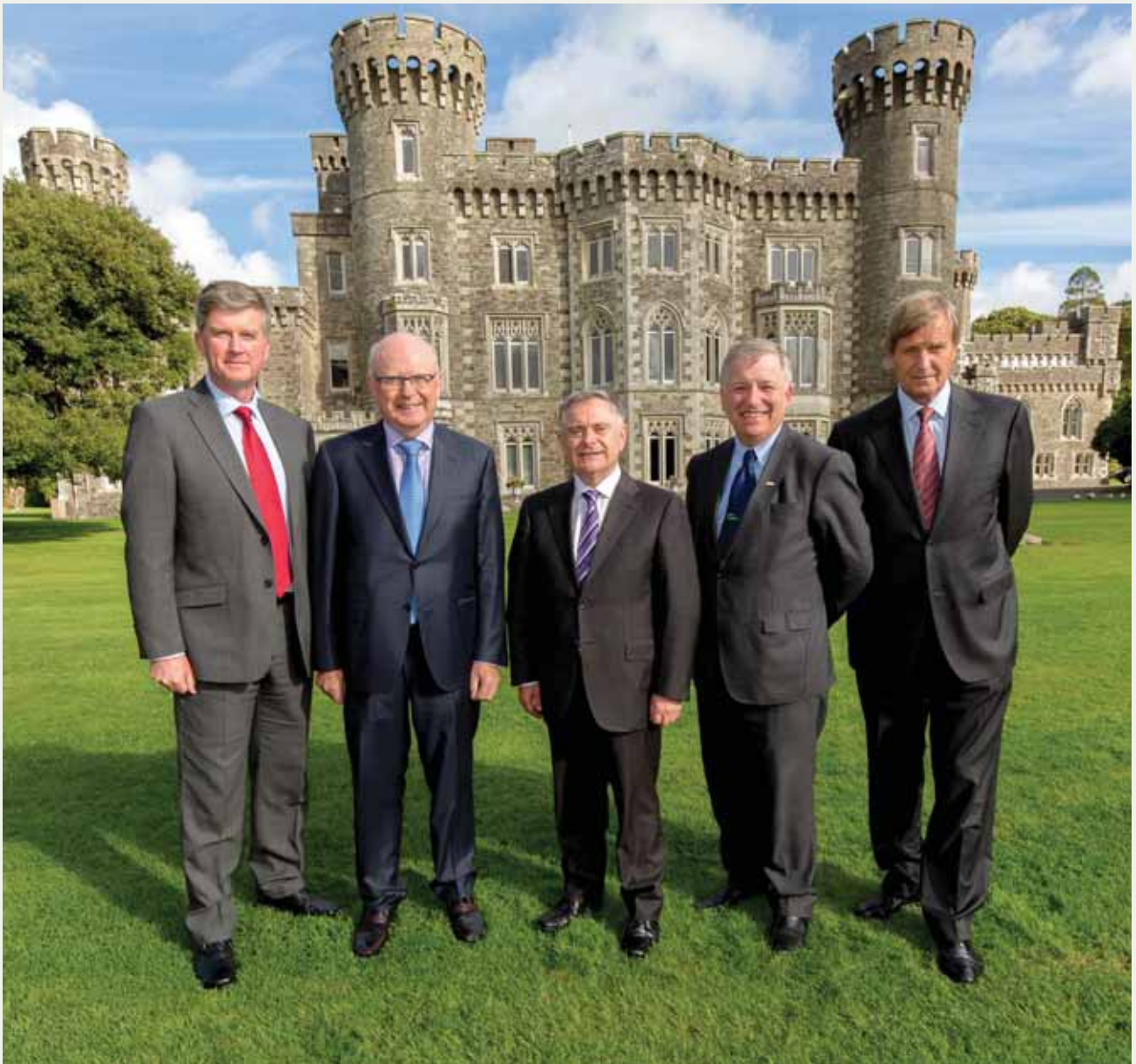
Allied to this will be the jobs created in upgrading the roadway and building infrastructure on expanding dairy farms and the installation of dairy equipment such as milking machines and bulk tank refrigerators.

All told 15,000 additional jobs could be created over the next five years.

Food Wise 2025

Teagasc welcomed the publication of Food Wise 2025, a ten year strategy for the agri-food sector, launched by the Taoiseach Enda Kenny. Food Wise 2025 sets out a path for the agri-food sector of sustainable growth over the next ten years. It predicts that Ireland can increase the value of exports by 85% to €19 billion, increase the value added to the sector by 70% to €13 billion and increase the value of primary production by 65% to €10 billion.





*Pictured at the Johnstown Castle Development Launch, 2015.
Kevin Baird- Chief Executive Officer of The Irish Heritage Trust, Dr. Noel Cawley, Brendan Howlin TD, Minister for Public Expenditure and Reform, Prof. Gerry Boyle and James Osbourne- Chairman of Irish Heritage Trust.*



Goal 4

Enhance organisational
capability and deliver value
for money

Goal 4 Enhance organisational capability and deliver value for money

Strategic Pathways for the Teagasc Advisory Service 2015-2020

A Teagasc National Strategic Plan for Advisory - "Strategic Pathways for the Teagasc Advisory Service 2015 -2020" was officially launched by Phil Hogan, EU Commissioner for Agriculture and Rural Development in the Teagasc College of Amenity Horticulture, Botanic Gardens, Dublin, in June.

Speaking at the event Commissioner Hogan said: "Teagasc has a vital role to play in rural Ireland in the future. How can we produce more food from the resources we have? Farmers need knowledge and advice to achieve that increase in productivity.

There is a strong sense of connection between research and farmers here in Ireland through advisors. The value of an idea is in the using of that idea. We need to support the use of knowledge and innovation in agriculture and Teagasc has an enormous role to play in achieving that."

Teagasc director Professor Gerry Boyle said: "The advisory service is at a cross roads and we have come up with four strategic pathways to guide the development of the advisory service in the future. The advisory service is the bridge between research and farmers and is central to the agricultural knowledge innovation system (AKIS) which brings together advisory, research and education together in one integrated organisation."

The four strategic pathways to guide the development of the advisory service are;

- Striking a balance between an appropriately resourced public service and a private service.
- Focus on driving sustainable on-farm profitability through productivity.
- Increase front line advisor numbers to a minimum of 240 front line advisors.
- Intensify the overhaul of the Teagasc advisory service delivery model.

Dermot McCarthy, Head of Teagasc Advisory Service, said: "Ireland needs a development focused advisory service to capitalise on the development potential of agriculture.

Liam Woulfe with Dr. Kathrin Prager, Senior Social Researcher UK; EU Commissioner for Agriculture and Rural Development, Phil Hogan and Prof. Gerry Boyle, Director Teagasc, at the launch of the Teagasc National Agriculture Advisory Service Strategy 2015-2020, which took place at the National College of Amenity Horticulture, Botanic Gardens, Glasnevin, Dublin.





Pictured at the official opening of the Paddy O'Keeffe Innovation Centre at Teagasc Moorepark, Fermoy, Co. Cork are back row: Dr. Pat Dillon, Head of Teagasc Animal & Grassland Programme, Dr. Noel Cawley, Chairman Teagasc, Phil Hogan, EU Commissioner for Agriculture & Rural Development & Simon Coveney, Minister for Agriculture, Food & the Marine. Front: Carlos Moedas, EU Commissioner for Research Science & Innovation, Dr. Frank O'Mara, Director of Research, Teagasc, Michael Berkery, Chairman FBD, Andrew Langford, Chief Executive FBD.

"Regional Strategic Plans have identified actions Teagasc will take to ensure sustainable farm development takes place in a way that maximises the benefit to farmers in each region. We envisage further development of new and innovative advisory delivery models. A stable baseline number of 240 permanent advisory staff is required as a fundamental requirement to secure sustainable farm development and the attainment of Food Wise 2025 targets."

Innovation Centre for Grassland and Dairying Opened

A €4.5 million Innovation Centre for Grassland and Dairying was opened at the Teagasc campus in Moorepark, Fermoy, Co. Cork. The Paddy O'Keeffe Innovation Centre, funded by FBD Trust was officially opened by

EU Commissioner for Agriculture and Rural Development Phil Hogan, EU Commissioner for Research, Science and Innovation Carlos Moedas and Minister for Agriculture, Food and the Marine, Simon Coveney TD.

The Paddy O'Keeffe Innovation Centre will be used by the researchers, specialists and advisors involved in the delivery of the Teagasc Animal & Grassland Research and Innovation Programme, and in the delivery of part of Teagasc Education programme. Specifically, it will support the research programme on grassland, animal breeding and health, and farming systems.

Speaking at the official opening, EU Commissioner for Agriculture and Rural Development Phil Hogan said:

"The late Paddy O'Keeffe really is one of the legends of Irish agriculture. His passion for innovation, for change, for development, for productivity and ultimately for the sustainability of Irish agriculture and the rural way of life are values more important today than ever before, as we enter a new era of Irish, and indeed European, agriculture."

Teagasc Chairman, Dr. Noel Cawley thanked FBD Trust for their generous financial support which facilitated the establishment of the Paddy O'Keeffe Innovation Centre.

"Paddy was a passionate advocate of new knowledge and recognised the need for continuous improvement within the industry and the need to develop Ireland's competitive advantage as grass based milk producers.

Goal 4 Enhance organisational capability and deliver value for money

“As we enter this new post quota era in milk production, and as we strive to increase our utilisation of grass in beef and sheep systems, this new Innovation Centre, the researchers working here and the young people educated here, will play an increasingly important role in developing Irish agriculture in the future.

“Paddy O’Keeffe was instrumental in the establishment of FBD Insurance Company and was its Chairman for over 20 years. His foresight, leadership and lifelong commitment to the advancement of Irish agriculture, through research and education, established the philanthropic ethos of the FBD Trust over 40 years ago.”

The Teagasc Animal & Grassland Research and Innovation Programme is funded through the Department of Agriculture, Food and the Marine, the Dairy Levy and from the EU through Horizon 2020 and its previous Framework programmes.

Teagasc Technology Foresight

In May 2015 Teagasc launched a new Technology Foresight Project, which will focus on the identification of the key technologies that have the potential over the next 20 years or so to underpin competitiveness, sustainability and growth in the Irish agri-food sector. This study will be of major importance in prompting Teagasc to look beyond the standard 3-5 year timeframe, to think about what is possible in the long term and to develop strategies, policies and roadmaps for its research and innovation programmes.



The overall objective is to provide a comprehensive and well-researched source of evidence for policy decisions relating to Teagasc’s future science and technology programmes. It will aim to assist the organisation in identifying the new areas of technology which it should prioritise for the long-term and the resulting implications for investment in new skills, equipment and infrastructure. It will also bring together a wide diversity of people from different backgrounds to explore new ideas and to achieve consensus on the long-term challenges confronting the Irish agri-food and bioeconomy sector and its future technology needs.

Speaking at the launch, the Minister for Agriculture, Food and the Marine, Simon Coveney, TD, welcomed the initiative and stated that “continuing advances in science, technology and innovation will be central drivers of a profitable and sustainable agri-food sector.

John Hogan, Farm Manager at Teagasc Oak Park, explains wheat production to Prof. Patrick Honohan Governor of the Central Bank of Ireland during a visit by the bank’s board.

Agri-food can continue to look forward to further growth and prosperity under the new Agri-Food 2025 Strategy being developed by an industry-led committee. It is critical that Teagasc continues to develop the new technologies which will be needed to underpin this growth.



Professor Gerry Boyle stated that “Teagasc has a responsibility to begin looking now at the many new technologies which are now beginning to impact on other sectors of the global economy. Advances in areas such as Big Data, 3D printing, artificial intelligence, robotics, nanotechnology and biotechnology, amongst others, are already altering existing economic systems and business models. It is conceivable that such technologies could ultimately impact almost every sector of the economy, and they have the potential to bring about massive change at every stage in the food chain. Ireland cannot ignore these developments, and the Teagasc Foresight Project will be vital in this regard.”

Teagasc Post-Doctoral Development Programme

The new Teagasc Post-Doctoral Development programme is an innovative training programme which is designed to provide professional development for post-doctoral researchers. This programme will prepare Post-Doctoral Fellows for a variety of career options ahead, whether in academia or in industry.

Speaking at the launch, which took place in the Teagasc Food Research Centre in Ashtown, Dublin, Dr. Frank O'Mara, Director of Research, Teagasc, said: “Participants on the programme have access to a range of development opportunities to equip them with the necessary skills for the next stage of their career.

It will open more doors for them in the future as they pursue their careers in science.”

This Post Doc programme, which was developed by Teagasc in collaboration with UCC, UCD and the Agri-Food Advanced Professional Development team, is the first structured post-doctoral training and development programme in Ireland.

The development programme is being delivered by University College Cork, led by Professor Alan Kelly. It's an important initiative to develop and foster the growth of scientific expertise in Teagasc, which will be a major asset, for not just the agriculture and food sector in Ireland, but for other science based sectors.

The first beneficiaries of the Teagasc development programme for post-Doc researchers



Goal 4 Enhance organisational capability and deliver value for money

INRA and TEAGASC to Strengthen Scientific Cooperation

INRA (France's National Institute for Agricultural Research) and Teagasc signed a joint declaration for the strengthening of scientific cooperation between the two organisations.

Together, these research institutes possess a high level of competence and expertise located in over 200 laboratories in France and 13 research and development centres in Ireland.

The cooperation themes covered already encompass food processing, ecology, plant biology, human nutrition, microbiology, physiology, genetics and animal health, livestock breeding systems, environment, rural development and more.

Following on the Memorandums of Understandings (MOUs) signed in 2002 and 2009; a joint declaration will extend collaboration in various themes:

- Participation in European programmes such as Horizon 2020 or Interreg.
- Co-supervision of postgraduates both French and Irish in France and Ireland.
- Supporting PhD students with their travel expenses while undertaking research in France and Ireland.

- Joint seminars in order to explore potential research projects of common interest.
- Publicising the results of joint projects, communicate on existing partnerships and "success stories".

Pictured at the signing of a joint declaration for the strengthening of scientific co-operation between Teagasc and INRA at the National Ploughing Championships in Ratheniska, Co. Laois are Professor Gerry Boyle, Director Teagasc & Luc Delaby, INRA, (back row from left) Stephane Aymard, French Embassy Scientific Attache, Dr. Frank O'Mara, Director of Research Teagasc, Jean Pierre Thebault, French Ambassador, Eric Giry, French Embassy Agricultural Attache, Rene Beaumont & Elodie Ruelle, INRA.





Teagasc Mayo staff with an Taoiseach Enda Kenny TD, Teagasc Chairman Dr. Noel Cawley and Prof. Gerry Boyle.

Taoiseach Opens Extension to Teagasc Centre in Ballinrobe

An extension to the Teagasc advisory and education centre in Ballinrobe, County Mayo was officially opened by An Taoiseach, Enda Kenny TD in October 2015. This is one of the four locations in the Mayo region from which Teagasc provides an education, advisory and research service for the benefit of the 9,800 farmers in the region.

Teagasc has invested €130,000 in the Ballinrobe Centre doubling its capacity. The latest IT and computer facilities have been installed to provide quality education for up to 35 students at any given time. The offices where advisors meet and conduct their business with farmers from the region, have been modernised.

Teagasc Director, Professor Gerry Boyle said: "Nationally we have seen a surge in demand for our education service. This region is no different. Normally we would have 70 students on our Green Cert course here, but this year there will be 250 students. This increased flow of young, well trained people back into farming will be of enormous benefit to farming and the agriculture industry in the region."

Johnstown Castle Development

A €7.5 million proposed development of Johnstown Castle in County Wexford was officially launched by the Minister for Public Expenditure and Reform, Brendan Howlin TD. Teagasc, who own the Castle on behalf of the State, are partnering with the Irish Heritage Trust and the Irish Agricultural Museum, to undertake major conservation work on the Castle and to develop the heritage and tourism potential of the Castle and Gardens for the South East. Teagasc is working closely with Failte Ireland so that this investment compliments their recently launched Ireland's Ancient East tourism strategy.

Goal 4 Enhance organisational capability and deliver value for money



Teagasc researcher Dr. Eimear Gallagher with students visiting Teagasc Ashtown during Science Week

Teagasc's SCIENCE Week

During Science Week 2015, Teagasc research centres and colleges invited local schools to meet its research and teaching staff. It was an opportunity for students to learn about the work Teagasc does to achieve its mission of supporting science-based innovation in the agri-food sector and the broader bioeconomy that will underpin profitability, competitiveness and sustainability. Teagasc hosted over 1,000 students at its Science Week events.

“Science is hugely important for the agriculture and food industries and we are delighted to support Science Week, which aims to promote the relevance of science, technology,

engineering and maths in our everyday lives and to demonstrate their importance to the future development of Irish society and to the economy,” said Dr. Frank O’Mara, Director of Research at Teagasc. Science Week is coordinated by SFI Discover, the education-outreach programme of Science Foundation Ireland. Science Week events at Teagasc Centres.

At the Teagasc Food Research Centre, Moorepark, Co. Cork there were demonstrations, where students had the use of microscopic tools, learned about bacteria phages and saw DNA extraction/isolation. In the Animal & Grassland Research and Innovation Centre, they could see key technologies that underpin dairy farming.

They also learned about calf rearing, breeding and reproduction amongst other activities.

At Teagasc, Oak Park Crops Research Centre, Carlow, students had the opportunity to attend seminars and discuss the wide range of scientific areas investigated in plant sciences by Teagasc crop researchers. Topics on the day included plant pathology and sustainable disease management, plant genomics, the potato breeding programme, bioenergy, crop agronomy and more.

At the Teagasc Food Research Centre, Ashtown, students got a glimpse into the weird and wonderful world of fungi, the functional food ingredients that can be harvested from our marine environment, sensory analysis of food and our meat research, including a sausage-making demonstration. In Galway, students had the opportunity to visit the Animal & Grassland Research and Innovation Centre in Athenry. They saw demonstrations in animal science – how science is being used to address issues related to reproduction and parasitism in sheep. In a grassland and the environment exhibit they saw different grass and clover species and learned about nitrogen fixation.

Kildalton Agricultural and Horticultural College, Co. Kilkenny, hosted an event exploring soils in agriculture. As 2015 was the International Year of Soils, this was an outdoor event looking at some simple field experiments that can be conducted to assess soil quality under a number of different parameters.

Smart Futures

Smart Futures is a collaborative government-industry-education programme promoting science, technology, engineering and maths (STEM) careers information to second-level students, coordinated and managed by Science Foundation Ireland. At University College Cork, Claire Watkins and Cathriona Foley spoke at a Smart Futures event. Claire is a third year PhD student in Teagasc Moorepark and is currently working on her thesis. Cathriona is working on Automatic Milking Systems at Teagasc Moorepark.

Teagasc-Fulbright Fellowship award winners

Mary Carey and Ruairi Robertson, are the Teagasc-Fulbright Fellowship award winners for 2015. Mary Carey is a part-time Walsh Fellow with Teagasc and a PhD candidate at University College Dublin. She is also an economist with the Department of Finance's Economic and Evaluation Service. Mary will research the impact of agri-businesses on the rural economy at the University of Missouri.

Ruairi Robertson is currently a PhD student in Nutrition and Microbiology in University College Cork. As a Teagasc/Marine Institute Fulbright awardee, Ruairi will carry out research at Harvard University examining the role of dietary Omega-3 fats on intestinal and brain health.

Teagasc Director Prof. Gerry Boyle greeting members of the Board of the Central Bank of Ireland during their visit to the Teagasc head office.



Teagasc Walsh Fellowships Seminar

2015 marked the 20th anniversary of the first Teagasc Walsh Fellowships seminar organised in partnership with the RDS.

Thirteen PhD Walsh Fellow Students made oral presentations of their research findings at a seminar in the RDS. In addition, twenty three people presented posters outlining their research.

The year's winner Best oral presentation and winner of RDS medal was Leanne Roche, (pictured) Teagasc, Crops Environment and Land-Use Programme, Johnstown Castle, Wexford. Her research was on 'Selecting nitrogen fertiliser sources for improved yield and reduced gaseous emissions in spring barley production systems'.



Goal 4 Enhance organisational capability and deliver value for money

Gold Medal Winner

The 2015 winner of the Teagasc Gold Medal is Dr. Padraig O'Kiely, who has dedicated a lifetime of work as a researcher at the Teagasc Animal and Grassland, Research and Innovation centre in Grange, County Meath. The Teagasc Gold Medal is awarded on an annual basis to someone who has made an exceptional contribution to Teagasc and to the agriculture and food sectors.

The award was presented to Dr. O'Kiely by the Teagasc Chairman, Dr. Noel Cawley at a meeting of the Teagasc Authority in Oak Park, Carlow.

He said: "Padraig is one of the leading worldwide figures in forage agronomy, conservation, and utilisation. He has published almost 600 scientific papers, over 400 articles in technical and popular farming press and has given over 1,000 presentations to farming and industry conferences and events. He is an editor of five prestigious international peer reviewed journals. His work has stood the test of time and he is one of the outstanding scientists in the organisation."

Dr. Padraig O'Kiely graduated from UCD with a first class honours degree in agricultural science in 1978. He completed a Masters Degree in Agricultural Science after joining An Foras

Talúntais, followed by his PhD, all in the area of silage production.

His scientific interests are many, but it is his contribution to agricultural research that is of international stature, specifically his contribution to advancing scientific and practical knowledge of forage production, its conservation, and utilisation for livestock production.

A native of county Laois, Padraig was one of the first recipients of a Fulbright Scholarship and spent 1986 on sabbatical at United States Dairy Forage Research Centre on the campus of the University of Wisconsin. He is a past President of the Irish Grassland Association and in 2011 was awarded the Irish Grassland Association Lifetime Merit award.

Teagasc Chairman Dr. Noel Cawley, below right, presenting the 2015 Teagasc Gold Medal to Dr. Padraig O'Kiely.



The Teagasc Gold Medal is recognition for advancing the work of Teagasc and is aimed at encouraging high performance and promoting excellence.

New Masters Degree Programme

Building on the success of the research-based Masters in Agricultural Innovation Support programme, Teagasc, in conjunction with the School of Agriculture in UCD, has developed a new and innovative Masters programme.

The Masters in Agricultural Extension and Innovation, which is largely based around experiential learning, involves students working alongside designated advisors for two years and attending academic modules on block. Students will also have to complete a minor thesis.

Annual Energy Usage Report 2015

Teagasc operate out of 55 locations nationwide varying in scale from Campus type facilities with 100+ staff (e.g. Research Centres & Colleges) to small local Advisory offices with approximately 10 staff. The Teagasc built environment is the principal user of energy resources accounting for approximately 74% of total consumption.

In 2015, Teagasc consumed 25,646.7 MWh of energy consisting of:

- 10,993.6 MWh of electricity or 42.9% of total energy
- 7,893.9 MWh of fossil fuel for space heating or 30.7% of total energy
- 5,325.8 MWh of vehicle fuel (agricultural, commercial transport and car fleet) or 20.8% of total energy
- 1,433.4 MWh of renewable fuels or 5.6% of total energy

Teagasc has an on-going programme in place to upgrade the building fabric of its facilities to reduce heat loss (double glazing, roof and wall insulation etc.). This programme will continue in 2016. Renewable fuel sources accounted for 5.6% of total energy use in 2015. This figure does not take account of the portion of purchased electricity which is generated from renewable resources.



Teagasc Director of Research Dr. Frank O'Mara, His Excellency the Mexican Ambassador Carlos Garcia De Alba and Paddy Browne Head of the Teagasc Crops, Environment and Land Use Programme during a visit by the Ambassador to Oak Park.

ICT Investments

In 2015 Teagasc continued the rollout of Voice over IP telephony and further upgraded its local and wide area networks. The development of a Nutrient Management Planning system was progressed to the testing stage. An online system for managing applications for research projects was completed.

A new Education Management System was procured and will be implemented over the next two years. Teagasc also commenced a project to introduce a Content Management System for its public website which will go live in 2016.







Teagasc Consolidated Financial Statements

*Report of the Authority
and Consolidated Financial Statements
Year ended 31 December 2015*

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS
FINANCIAL YEAR ENDED 31 DECEMBER 2015

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TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

REPORT OF THE COMPTROLLER AND AUDITOR GENERAL FOR PRESENTATION TO THE HOUSES OF THE OIREACHTAS

I have audited the financial statements of Teagasc for the year ended 31 December 2015 under the Agriculture (Research, Training and Advice) Act 1988. The financial statements comprise the consolidated statement of income and expenditure, the consolidated statement of comprehensive income, the statement of financial position of the group and of Teagasc, the consolidated statement of changes in capital and reserves, the statement of changes in capital and reserves of Teagasc, the consolidated statement of cash flows and the related notes. The financial statements have been prepared in the form prescribed under Section 12 of the Agriculture (Research, Training and Advice) Act 1988, and in accordance with generally accepted accounting practice.

Responsibilities of the Authority

The Authority is responsible for the preparation of the financial statements, for ensuring that they give a true and fair view and for ensuring the regularity of transactions.

Responsibilities of the Comptroller and Auditor General

My responsibility is to audit the financial statements and to report on them in accordance with applicable law.

My audit is conducted by reference to the special considerations which attach to State bodies in relation to their management and operation.

My audit is carried out in accordance with the International Standards on Auditing (UK and Ireland) and in compliance with the Auditing Practices Board's Ethical Standards for Auditors.

Scope of audit of the financial statements

An audit involves obtaining evidence about the amounts and disclosures in the financial statements, sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of

- whether the accounting policies are appropriate to the Authority's circumstances, and have been consistently applied and adequately disclosed
- the reasonableness of significant accounting estimates made in the preparation of the financial statements, and
- the overall presentation of the financial statements.

I also seek to obtain evidence about the regularity of financial transactions in the course of audit.

In addition, I read the Authority's annual report to identify material inconsistencies with the audited financial statements and to identify any information that is apparently materially incorrect based on, or materially inconsistent with, the knowledge acquired by me in the course of performing the audit. If I become aware of any apparent material misstatements or inconsistencies, I consider the implications for my report.

Opinion on the financial statements

In my opinion, the financial statements:

- give a true and fair view of the assets, liabilities and financial position of the group and the Authority as at 31 December 2015 and of its income and expenditure for 2015; and
- have been properly prepared in accordance with generally accepted accounting practice.

In my opinion, the accounting records of the Authority were sufficient to permit the financial statements to be readily and properly audited. The financial statements are in agreement with accounting records.

Matters on which I report by exception

I report by exception if I have not received all the information and explanations I require for my audit, or if I find

- any material instance where money has not been applied for the purpose intended or where the transactions did not conform to the authorities governing them, or
- the information given in the Authority's annual report is not consistent with the related financial statements or with the knowledge acquired by me in the course of performing the audit, or
- the statement on internal financial control does not reflect the Authority's compliance with the Code of Practice for the Governance of State Bodies, or
- there are other material matters relating to the manner in which public business has been conducted.

I have nothing to report in regard to those matters upon which reporting is by exception.

Seamus McCarthy
Comptroller and Auditor General
30 June 2016

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

STATEMENT ON INTERNAL FINANCIAL CONTROL

On behalf of the Authority of Teagasc, I acknowledge our responsibility for ensuring that an effective system of internal financial control is maintained and operated in Teagasc and its subsidiary.

Any system of internal financial control can provide only reasonable and not absolute assurance against material error, misstatement or loss. In considering the effectiveness of internal financial controls, the Authority and its Audit Committee have regard, among other things, to the requirements of the Code of Practice for the Governance of State Bodies.

The Authority has taken steps to ensure that an appropriate control environment is in place by:

- clearly defining management responsibilities, authority and accountability;
- establishing formal procedures for monitoring the activities and safeguarding the assets of the Group;
- developing a culture of accountability across all levels of the organisation.

The Authority has established procedures to identify business risks within the Group by:

- identifying the nature, extent and financial implication of risks facing the Group including the extent and categories which it regards as acceptable;
- assessing the likelihood of identified risks occurring;
- assessing the Group's ability to manage and mitigate the risks that do occur;
- assessing the costs of operating particular controls relative to the benefit obtained.

The system of internal financial control is based on a framework of regular management reporting, administration procedures including segregation of duties and a system of delegation and accountability including:

- an annual budgeting and financial reporting system which is reviewed and approved by the Authority;
- regular reviews by the Authority of overall strategy, business and financial plans and variances against operating and capital budgets.

The Group has an internal audit function, which operates in accordance with the requirements of the Code of Practice for the Governance of State Bodies and with the effectiveness criteria set out in the Teagasc Statement of Strategy published in 2012. The work of internal audit is informed by analysis of the risks to which the Group is exposed and annual internal audit plans are based on this analysis. The internal audit plans are approved by the Audit Committee. In 2015 the Authority retained an external expert to advise the Audit Committee.

The Authority's monitoring and review of the effectiveness of the system of internal financial control is informed by the work of the internal auditor, the Audit Committee which oversees the work of the internal auditor, the executive managers within the Group responsible for the development and maintenance of the financial control framework and comments made by the Comptroller and Auditor General in his management letter.

I confirm that the Authority conducted a review of the effectiveness of the systems of internal financial control in 2015.

Dr. Noel Cawley
Chairman
27 June 2016

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

STATEMENT ON RESPONSIBILITIES OF THE AUTHORITY

Under Section 12(1) of the Agriculture (Research, Training and Advice) Act, 1988, the Authority is required to prepare financial statements in such form as may be approved by the Minister for Agriculture, Food and the Marine with the concurrence of the Minister for Finance. In preparing those financial statements, the Authority is required to:

- select suitable accounting policies and then apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that Teagasc will continue in operation;
- disclose and explain any material departures from applicable accounting standards.

The Authority is responsible for keeping proper books of account which disclose with reasonable accuracy at any time the financial position of Teagasc and which enable it to ensure that the financial statements comply with statutory requirements. The books of account are kept at the Authority's headquarters at Oak Park, Carlow. The Authority is also responsible for safeguarding the assets of Teagasc and for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Dr. Noel Cawley
Chairman
27 June 2016

Joe Larkin
Member of the Authority
27 June 2016

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

CONSOLIDATED STATEMENT OF INCOME AND EXPENDITURE YEAR ENDED 31 DECEMBER 2015

	Note	2015 €'000	2014 €'000
Revenue			
Oireachtas grants	4	133,008	127,747
EU funding	5	2,542	2,434
Sale of livestock		2,943	2,766
Operational income	6	31,477	25,176
Net deferred funding for pensions	10	9,960	26,785
Surplus on disposal of fixed assets	13	62	158
Other grants, donations and voluntary levies		3,486	4,842
Sale of goods		117	104
Research and technology services		972	1,245
Total Revenue		<u>184,567</u>	<u>191,257</u>
Expenditure	7	<u>(186,512)</u>	<u>(192,640)</u>
Operating (deficit)		(1,945)	(1,383)
Interest receivable		111	224
(Deficit) before transfers and taxation		(1,834)	(1,159)
Transfer from Capital Account		964	1,798
(Deficit)/ surplus for the financial year before taxation		(870)	639
Taxation	11	(46)	(88)
(Deficit)/ surplus for the financial year		<u>(916)</u>	<u>551</u>
(Deficit)/ surplus attributable to			
Teagasc		(1,038)	478
Non-controlling interest		122	73
		<u>(916)</u>	<u>551</u>

The Statement of Cash Flow and Notes 1-37 form part of these financial statements.

Dr. Noel Cawley
Chairman
27 June 2016

Professor Gerry Boyle
Director
27 June 2016

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME YEAR ENDED 31 DECEMBER 2015

	Note	2015 €'000	2014 €'000
Surplus/ (deficit) for the financial year		(916)	551
Actuarial gain/ (loss) on pension liabilities	10	174,088	(23,699)
Adjustment to deferred pension funding		<u>(174,088)</u>	<u>23,699</u>
Total comprehensive income for the year		<u>(916)</u>	<u>551</u>
Teagasc		(1,038)	478
Non-controlling interest		<u>122</u>	<u>73</u>
		<u>(916)</u>	<u>551</u>

The Statement of Cash Flow and Notes 1-37 form part of these financial statements.

Dr. Noel Cawley
Chairman
27 June 2016

Professor Gerry Boyle
Director
27 June 2016

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

STATEMENT OF FINANCIAL POSITION AS AT 31 DECEMBER 2015

		Group		Teagasc	
		2015	2014	2015	2014
					(restated)
	Note	€'000	€'000	€'000	€'000
Non-current assets					
Property, plant and equipment	13	96,658	97,568	93,822	94,786
Investments	15	415	284	416	285
		97,073	97,852	94,238	95,071
Current assets					
Inventories	16	4,675	4,689	4,675	4,689
Receivables: amounts falling due within one year	18	20,253	16,995	20,021	16,718
Cash and cash equivalents	19	18,185	23,057	17,076	22,250
		43,113	44,741	41,772	43,657
Payables: amounts falling due within one year					
Payables and accruals	20	20,571	17,014	20,392	16,876
Deferred income	21	16,354	20,463	16,311	20,436
		36,925	37,477	36,703	37,312
Net current assets		6,188	7,264	5,069	6,345
Total assets less current liabilities		103,261	105,116	99,307	101,416
Provisions for liabilities	23	100	81	-	-
Payables: amounts falling due after one year					
Deferred income	22	485	479	98	45
		102,676	104,556	99,209	101,371
Deferred pension funding	10	1,163,198	1,327,326	1,163,198	1,327,326
Pension liabilities	10	(1,163,198)	(1,327,326)	(1,163,198)	(1,327,326)
Net assets		102,676	104,556	99,209	101,371
Capital and reserves					
Capital account		93,822	94,786	93,822	94,786
Income and expenditure account		6,194	7,110	5,387	6,585
Capital contribution		2,660	2,660	-	-
		102,676	104,556	99,209	101,371
Reserves attributable to Teagasc		99,666	101,668	99,209	101,371
Non-controlling interest		3,010	2,888	-	-
		102,676	104,556	99,209	101,371

The Statement of Cash Flow and Notes 1-37 form part of these financial statements.

Dr. Noel Cawley
Chairman
27 June 2016

Professor Gerry Boyle
Director
27 June 2016

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

CONSOLIDATED STATEMENT OF CHANGES IN CAPITAL AND RESERVES AS AT 31 DECEMBER 2015

GROUP

		Capital account	Revenue reserves	Capital contribution	Total	
			Group	Non- controlling interest	Non- controlling interest	
	Note	€'000	€'000	€'000	€'000	
At 1 January 2014		96,584	6,404	155	2,660	105,803
Surplus for the year		-	478	73	-	551
Actuarial gain/ (loss) on pension liabilities	10	-	(23,699)	-	-	(23,699)
Adjustment to deferred pension funding	10	-	23,699	-	-	23,699
Total comprehensive income		-	478	73	-	551
Amounts capitalised in respect of purchased assets	13	5,780	-	-	-	5,780
Net amount released on disposals	13	(493)	-	-	-	(493)
Less: amortised in line with asset depreciation	13	(6,602)	-	-	-	(6,602)
Impairments	13	(483)	-	-	-	(483)
At 31 December 2014		94,786	6,882	228	2,660	104,556
Deficit for the year		-	(1,038)	122	-	(916)
Actuarial gain/ (loss) on pension liabilities	10	-	174,088	-	-	174,088
Adjustment to deferred pension funding	10	-	(174,088)	-	-	(174,088)
Total comprehensive income		-	(1,038)	122	-	(916)
Amounts capitalised in respect of purchased assets	13	5,995	-	-	-	5,995
Net amount released on disposals	13	(7)	-	-	-	(7)
Less: amortised in line with asset depreciation	13	(6,952)	-	-	-	(6,952)
At 31 December 2015		93,822	5,844	350	2,660	102,676
		99,666		3,010		102,676

The Statement of Cash Flow and Notes 1-37 form part of these financial statements.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

STATEMENT OF CHANGES IN CAPITAL AND RESERVES AS AT 31 DECEMBER 2015

TEAGASC

	Note	Capital account €'000	Revenue reserves €'000	Total €'000
At 1 January 2014 (restated)	35	96,584	6,204	102,788
Surplus for the year		-	381	381
Actuarial loss on pension liabilities	10	-	(23,699)	(23,699)
Adjustment to deferred pension funding	10	-	23,699	23,699
Total comprehensive income		-	381	381
Amounts capitalised in respect of purchased assets	13	5,780	-	5,780
Net amount released on disposals	13	(493)	-	(493)
Amortised in line with asset depreciation	13	(6,602)	-	(6,602)
Impairment of asset	13	(483)	-	(483)
At 31 December 2014		94,786	6,585	101,371
Deficit for the year		-	(1,198)	(1,198)
Actuarial gain on pension liabilities	10	-	174,088	174,088
Adjustment to deferred pension funding	10	-	(174,088)	(174,088)
Total comprehensive income		-	(1,198)	(1,198)
Amounts capitalised in respect of purchased assets	13	5,995	-	5,995
Net amount released on disposals	13	(7)	-	(7)
Less: amortised in line with asset depreciation	13	(6,952)	-	(6,952)
At 31 December 2015		93,822	5,387	99,209

The Statement of Cash Flow and Notes 1-37 form part of these financial statements.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

CONSOLIDATED STATEMENT OF CASH FLOW AS AT 31 DECEMBER 2015

GROUP

	Note	2015 €'000	2014 €'000
Cash flow from operating activities	28	1,296	4,728
Taxation paid		(28)	(6)
Net cash flow from operating activities		<u>1,268</u>	<u>4,722</u>
Cash flow from investing activities			
Payments to acquire tangible fixed assets		(6,344)	(6,264)
Receipts from sales of tangible fixed assets		69	651
Payments to acquire investments		(28)	(259)
Receipts from sales of investments		52	-
Finance income		111	224
Net cash used in investing activities		<u>(6,140)</u>	<u>(5,648)</u>
Net decrease in cash and cash equivalents		(4,872)	(926)
Cash and cash equivalents at 1 January		<u>23,057</u>	<u>23,983</u>
Cash and cash equivalents at 31 December		<u>18,185</u>	<u>23,057</u>
Cash and cash equivalents consists of:			
Cash at bank and in hand	19	9,185	7,261
Short term deposits	19	<u>9,000</u>	<u>15,796</u>
Cash and cash equivalents at 31 December		<u>18,185</u>	<u>23,057</u>

The Statement of Cash Flow and Notes 1-37 form part of these financial statements.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

NOTES TO THE FINANCIAL STATEMENTS

1. General information

Teagasc (the Agriculture and Food Development Authority of Ireland) was established under the Agriculture (Research, Training and Advice) Act, 1988. The mission is to support science-based innovation in the agri-food sector and the broader bioeconomy that will underpin profitability, competitiveness and sustainability. Teagasc's principal and registered office is at Oak Park, Carlow. Teagasc owns a 57% share in Moorepark Technology Limited whose principal activity is the provision of services for Research and Development.

2. Summary of significant accounting policies

The basis of accounting and significant accounting policies adopted by Teagasc are set out below. They have all been applied consistently throughout the year and for the preceding year.

2.1 Statement of Compliance

The financial statements of Teagasc for the year ended 31 December 2015 have been prepared in accordance with FRS 102, the financial reporting standard applicable in the UK and Ireland issued by the Financial Reporting Council (FRC), as promulgated by Chartered Accountants Ireland. These are Teagasc's first set of financial statements prepared in accordance with FRS 102. The date of transition to FRS 102 is 1 January 2014. The prior year financial statements were restated for material adjustments on adoption of FRS 102 in the current year. The result of this adoption can be seen in Note 35.

2.2 Basis of Consolidation

For the purposes of these financial statements, the 'Teagasc Group' comprises: the parent entity Teagasc and its subsidiary Moorepark Technology Limited. The accounting policies and accounting period of the subsidiary are consistent with those of the Group. Inter-company transactions and balances and gains on transactions between group companies are eliminated. The investment in the subsidiary is accounted for at cost less impairment. Details of the subsidiary are provided in Note 15.

2.3 Basis of preparation

The financial statements have been prepared under the historical cost convention, except for certain assets and liabilities that are measured at fair values as explained in the accounting policies below. The financial statements are in the form approved by the Minister for Agriculture, Food and the Marine with the concurrence of the Minister for Finance under Section 12 of the Agriculture (Research, Training and Advice) Act, 1988. The following accounting policies have been applied consistently in dealing with items which are considered material in relation to Teagasc's financial statements.

2.4 Revenue recognition

Oireachtas grants

Teagasc receives government grants in respect of research and other projects (revenue grants) and capital grants to fund capital investment. Revenue grants that do not include performance criteria are recognised as income on a cash receipts basis. Grants received which impose specific performance criteria are charged to deferred income and recorded as a creditor until the relevant performance criteria have been met and the grants are recognised as income. Capital grants are released to income over the expected useful life of the relevant asset purchased.

Sale of goods

Revenue from the sale of goods is recognised when the significant risks and rewards of ownership of the goods have passed to the buyer, usually on dispatch of the goods, the amount of revenue can be measured reliably, it is probable that the economic benefits associated with the transaction will flow to the entity and the costs incurred or to be incurred in respect of the transaction can be measured reliably.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

NOTES TO THE FINANCIAL STATEMENTS

Rendering of services

Revenue from advisory and other service fees is recognised in the accounting period in which the services are rendered when the outcome of the contract can be estimated reliably.

Royalty income

Royalty income is recognised on an accruals basis in accordance with the substance of the relevant agreements.

Tuition fees

Revenue is recognised over the period of instruction.

2.5 Employee benefits

The Group provides a range of benefits to employees, including paid holiday arrangements and defined benefit pension plans.

Short term benefits

Short term benefits, including holiday pay and other similar non-monetary benefits, are recognised as an expense in the period in which the service is received.

Defined benefit pension plans

The Group operates defined benefit pension schemes which are funded annually on a pay as you go basis from monies available to it, including monies provided by the Department of Agriculture, Food and the Marine, and from contributions deducted from staff salaries. Pension Scheme liabilities are measured on an actuarial basis using the projected unit method. Actuarial valuations are obtained at least triennially and are updated at each balance sheet date.

Pension costs reflect pension benefits earned by employees in the period and are shown net of staff pension contributions which are retained by the Group. An amount corresponding to the pension charge is recognised as income to the extent that it is recoverable, and offset by grants received in the year to discharge pension payments.

Actuarial gains or losses arising from changes in actuarial assumptions and from experience surpluses and deficits are recognised in the Consolidated Statement of Comprehensive Income for the year and a corresponding adjustment is recognised in the amount recoverable from the Department of Agriculture, Food and the Marine.

Pension liabilities represent the present value of future pension payments earned by staff to date. Deferred pension funding represents the corresponding asset to be recovered in future periods from the Department of Agriculture, Food and the Marine.

2.6 Leases

At inception Teagasc assesses agreements that transfer the right to use assets. The assessment considers whether the arrangement is, or contains, a lease based on the substance of the arrangement.

Operating leases

Leases that do not transfer all the risks and rewards of ownership are classified as operating leases. Payments under operating leases are charged to the income statement on a straight-line basis over the period of the lease.

2.7 Borrowing costs

All borrowing costs are recognised as an expense in the income statement in the period in which they are incurred.

NOTES TO THE FINANCIAL STATEMENTS

2.8 Taxation

The taxation expense for the period comprises current and deferred tax recognised in the reporting period. Tax is recognised in the income statement, except to the extent that it relates to items recognised in other comprehensive income or directly in equity. In this case tax is also recognised in other comprehensive income or directly in equity respectively. Current or deferred taxation assets and liabilities are not discounted.

Current tax

Current tax is the amount of income tax payable in respect of the taxable profit for the year or prior years. Tax is calculated on the basis of tax rates and laws that have been enacted or substantively enacted by the period end.

Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulation is subject to interpretation. It establishes provisions where appropriate on the basis of amounts expected to be paid to the tax authorities.

Deferred tax

Deferred tax arises from timing differences that are differences between taxable profits and total comprehensive income as stated in the financial statements. These timing differences arise from the inclusion of income and expenses in tax assessments in periods different from those in which they are recognised in financial statements.

Deferred tax is recognised on all timing differences at the reporting date except for certain exceptions. Unrelieved tax losses and other deferred tax assets are only recognised when it is probable that they will be recovered against the reversal of deferred tax liabilities or other future taxable profits.

Deferred tax is measured using tax rates and laws that have been enacted or substantively enacted by the period end and that are expected to apply to the reversal of the timing difference.

2.9 Research and development

Expenditure on research activities is recognised as an expense in the period in which it is incurred.

2.10 Tangible assets

Property, plant and equipment

Property, plant and equipment are stated at cost less accumulated depreciation and accumulated impairment losses. Such costs include costs directly attributable to making the asset capable of operating as intended.

Land is not depreciated. Assets under construction are not depreciated. Depreciation is provided on all property, plant and equipment at rates calculated to write off the cost, less estimated residual value, of each asset on a systematic basis over its expected useful life as follows:

Farm buildings	20 years
Other buildings	50 years
Plant and vehicles	5 years
Computer equipment	3 years
Laboratory and office equipment	10 years

A half year's depreciation is charged in the year of acquisition and disposal of assets.

The carrying values of property, plant and equipment are reviewed for impairment when events or changes in circumstances indicate that the carrying value may not be recoverable.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

NOTES TO THE FINANCIAL STATEMENTS

The estimated useful lives, residual values and depreciation methods are reviewed, and adjusted as appropriate, at the end of each financial year.

The gain or loss, being the difference between the sales proceeds and the carrying amount of the asset, arising on disposal or retirement of an item of property, plant and equipment is recognised in profit or loss. Any amount in the revaluation reserve relating to that asset is transferred to retained earnings directly.

Fully depreciated plant and equipment is retained in the financial statements until it is no longer in use.

Heritage assets

Heritage assets are maintained principally for contribution of knowledge and culture. These include historical buildings and sites. Information on the cost or value of the heritage assets held by Teagasc cannot be obtained at a cost which is commensurate with the benefits to users of the financial statements, therefore the assets are not recognised in the statement of financial position. A disclosure regarding heritage assets held is in Note 14.

Assets for re-sale

Tangible assets are classified as held for sale when the carrying amount is expected to be recovered principally through a sale transaction and a sale is highly probable. They are stated at the lower of carrying amount and fair value less cost to sell.

Impairment of non-financial assets

At each balance sheet date non-financial assets not carried at fair value are assessed to determine whether there is an indication that the asset (or asset's cash generating unit) may be impaired. If there is such an indication the recoverable amount of the asset (or asset's cash generating unit) is compared to the carrying amount of the asset (or asset's cash generating unit).

2.11 Financial assets

Investment in subsidiary

The investment in the subsidiary Moorepark Technology Limited is measured at cost less impairment. If there is objective evidence of impairment, an impairment loss is recognised in the Statement of Income and Expenditure in the year.

Other investments

Investments listed on a recognised stock exchange are measured at their fair value, and movements are recorded through the Statement of Income and Expenditure and Retained Revenue Reserves. Other financial assets comprising investments in unquoted shares and financial investments are measured at their fair value if this can be reliably determined; otherwise they are measured at the value attributed to them at the date of acquisition less impairment. If there is objective evidence of impairment, an impairment loss is recognised in the Statement of Income and Expenditure and Retained Revenue Reserves in the year.

2.12 Inventory

Biological assets

Livestock and own farm produce are valued at the fair value model. Fair value is determined on the basis that animals are sold on the open market. Gains and losses, which arise from these valuations, are reflected in full in operational income.

Other inventory

All other inventory is stated at the lower of cost and net realisable value.

2.13 Receivables

Receivables are recognised at fair value, less a provision for doubtful debts. The provision for doubtful debts is a specific provision, and is established when there is objective evidence that Teagasc will not be able to collect all amounts owed to it. All movements in the provision for doubtful debts are recognised in the Statement of Income and Expenditure.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

NOTES TO THE FINANCIAL STATEMENTS

2.14 Payables

Payables, including trade and other payables and deferred income are initially recognised at transaction price, unless the arrangement constitutes a financing transaction, where the debt instrument is measured at the present value of the future receipts discounted at a market rate of interest.

2.15 Provisions and contingencies

Provisions

Provisions are recognised when the Group has a present legal or constructive obligation as a result of past events; it is probable that an outflow of resources will be required to settle the obligation; and the amount of the obligation can be estimated reliably.

Provisions are measured at the present value of the expenditures expected to be required to settle the obligation using a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the obligation. The increase in the provision due to passage of time is recognised as a finance cost.

Contingencies

Contingent liabilities, arising as a result of past events, are not recognised when (i) it is not probable that there will be an outflow of resources or that the amount cannot be reliably measured at the reporting date or (ii) when the existence will be confirmed by the occurrence or non-occurrence of uncertain future events not wholly within the Group's control. Contingent liabilities are disclosed in the financial statements unless the probability of an outflow of resources is remote.

Contingent assets are not recognised. Contingent assets are disclosed in the financial statements when an inflow of economic benefits is probable.

3. Critical accounting estimates and judgements

The preparation of the financial statements requires management to make judgements, estimates and assumptions that affect the amounts reported for assets and liabilities as at the balance sheet date and the amounts reported for revenues and expenses during the year. However, the nature of estimation means that actual outcomes could differ from those estimates. The following judgements have had the most significant effect on amounts recognised in the financial statements:

Useful economic lives of property, plant and equipment

The Group depreciates the tangible fixed assets over their estimated useful lives after taking into account their estimated residual values. The estimated useful life reflects management's estimate of the period that the Group intends to derive future economic benefits from the use of the Group's tangible fixed assets. The residual value reflects management's estimated amount that the Group would currently obtain from the disposal of the asset, after deducting the estimated costs of disposal, as if the asset were already of the age and in the condition expected at the end of its useful life. Changes in the expected level of usage and technological developments could affect the economics, useful lives and the residual values of these assets which could then consequentially impact future depreciation charges. See Note 13 for the carrying amount of tangible fixed assets.

Valuation of investments

At the end of each financial year, an assessment is made on whether there are indicators that Teagasc's investment in the subsidiary is impaired. Where necessary, Teagasc's assessments are based on the estimation of the value-in-use of the assets by forecasting the expected future cash flows for a period of up to 5 years, using a suitable discount rate in order to calculate the present value of those cash flows. See Note 15 for the carrying amount of investments.

Impairment of receivables

Teagasc assesses its loans and receivables on a continuous basis for any objective evidence of impairment by considering factors, including the ageing profile, the creditworthiness and the past collection history of each debtor. If the financial conditions of these debtors were to deteriorate, resulting in an impairment of their ability to make payments, additional allowances may be required. See Note 18 for the carrying amount of trade and other receivables.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2015

NOTES TO THE FINANCIAL STATEMENTS

Retirement benefit obligation

Teagasc has an obligation to pay pension benefits to certain employees. The cost of these benefits and the present value of the obligation depend on a number of factors, including; life expectancy, salary increases, asset valuations and the discount rate on corporate bonds. Management estimates these factors in determining the net pension obligation in the balance sheet. The assumptions reflect historical experience and current trends. See Note 10 for the disclosures relating to the defined benefit pension scheme.

Provisions

The Group makes provisions for legal and constructive obligations, which it knows to be outstanding at the year-end date. These provisions are generally made based on historical or other pertinent information, adjusted for recent trends where relevant. However, they are estimates of the financial costs of events that may not occur for some years. As a result of this and the level of uncertainty attaching to the financial outcomes, the actual outcome may differ significantly from that estimated.

4. Oireachtas Grants

		2015	2014
	Subhead	€'000	€'000
Vote 31: Agriculture, Food and the Marine Grant-in-aid for general expenses	A.5	111,186	108,757
Grant for human resource purposes	A.3.4	10,500	10,500
Food research and agriculture research	A.3.1	5,146	4,336
Stimulus collaborative research programme	A.3.2	5,496	3,573
Grant for forestry publicity and awareness and training	C.6.4	650	550
Grant for forestry education	C.6.4	30	31
		<u>133,008</u>	<u>127,747</u>

A grant receivable without any performance criteria is recognised in income when the grant proceeds are receivable. Government grants received which impose specified future performance conditions are recognised in income when those conditions have been met. Government grants received before income recognition is satisfied are recorded as separate liabilities in the balance sheet. At year end, Teagasc had unfilled conditions included in the balance sheet as liabilities with respect to the following:

	Note	2015	2014
		€'000	€'000
Food research and agriculture research	21	3,187	4,872
Stimulus collaborative research programme	21	<u>5,230</u>	<u>6,375</u>
		<u>8,417</u>	<u>11,247</u>

5. EU Funding

	2015	2014
	€'000	€'000
Farm Survey Income	144	135
INTERREG	68	180
Framework Programme VI	123	2
Framework Programme VII	1,891	2,030
Horizon 2020	156	-
Other EU income	<u>160</u>	<u>87</u>
	<u>2,542</u>	<u>2,434</u>

Framework Programmes have been the main financial tools through which the European Union supports research and development activities covering almost all scientific disciplines. Horizon 2020 started in 2014 and runs to the end of 2020.

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NOTES TO THE FINANCIAL STATEMENTS

5. EU Funding (continued)

A grant receivable without any performance criteria is recognised in income when the grant proceeds are receivable. EU grants received which impose specified future performance conditions are recognised in income when those conditions have been met. EU grants received before income recognition is satisfied are recorded as separate liabilities in the balance sheet. At year end, Teagasc had unfilled conditions included in the balance sheet as liabilities with respect to the following:

	2015 €'000	2014 €'000
INTERREG	-	20
Framework Programme VI	-	278
Framework Programme VII	1,273	2,247
Horizon 2020	816	-
Other EU income	240	248
	<u>2,329</u>	<u>2,793</u>

6. Operational income

	Operations €'000	Knowledge transfer €'000	Research €'000	2015 €'000	2014 €'000
Advisory service fees ¹	-	13,545	200	13,745	10,075
Course fee income	61	3,679	391	4,131	2,685
Other fees ²	7	639	9,275	9,921	8,599
Other farming operations	-	889	1,702	2,591	3,083
Canteen receipts	-	33	6	39	90
Publications and miscellaneous	145	616	289	1,050	644
	<u>213</u>	<u>19,401</u>	<u>11,863</u>	<u>31,477</u>	<u>25,176</u>

¹ Included in Advisory service fees is GLAS scheme income of €4.319m. This scheme is part of the Rural Development Programme 2014-2020 and commenced in 2015.

² Included in Other fees are state grants received from Science Foundation Ireland of €1.952m, Enterprise Ireland €0.939m and Environmental Protection Agency €0.215m.

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NOTES TO THE FINANCIAL STATEMENTS

7. Expenditure

	Operations	Knowledge transfer	Research	2015	2014
	€'000	€'000	€'000	€'000	€'000
Pay (Note 9)	5,349	29,976	34,327	69,652	68,568
Pensions (Note 10)	50,886	-	-	50,886	67,130
Travelling and subsistence	421	1,929	2,418	4,768	4,475
Staff training	513	20	79	612	531
General operating expenses (Note 8)	6,236	13,877	22,058	42,171	34,734
Financial charges	60	59	(6)	113	130
Depreciation (Note 13)	285	1,333	5,630	7,248	6,881
Grants to private colleges (Note 29)	-	3,367	-	3,367	2,719
Cost of livestock sales	-	71	682	753	560
Cost of research and development services	-	-	224	224	127
Impairment losses	-	-	-	-	483
Other grants	83	974	5,661	6,718	6,302
	<u>63,833</u>	<u>51,606</u>	<u>71,073</u>	<u>186,512</u>	<u>192,640</u>

Total pay includes:

	2015	2014
	€'000	€'000
Overtime	1,101	988
Allowances	2,094	1,903
Redundancy	-	14
	<u>3,195</u>	<u>2,905</u>

In 2015 166 (2014: 165) staff received overtime payments. The highest individual amount totalled €25,554 (2014: €22,207).

Travelling and subsistence

	Domestic	Foreign	2015	2014
	€'000	€'000	€'000	€'000
Subsistence	1,537	415	1,952	1,723
Motor travel	2,448	-	2,448	2,405
Airline and ferries	-	368	368	347
	<u>3,985</u>	<u>783</u>	<u>4,768</u>	<u>4,475</u>

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NOTES TO THE FINANCIAL STATEMENTS

8. Analysis of general operating expenses

	Operations	Knowledge transfer	Research	2015	2014
	€'000	€'000	€'000	€'000	€'000
Farming supplies/ services	-	835	3,440	4,275	4,430
Maintenance/ repairs	155	2,747	5,652	8,554	6,803
Rents/ rates/ insurances	66	659	1,317	2,042	2,283
Postage/ telephones	732	1,007	346	2,085	2,025
Power/ fuel/ petrol	166	781	1,505	2,452	2,689
Laboratory supplies	36	-	4,581	4,617	4,216
Printing/ stationery/ publicity	958	920	786	2,664	2,490
Seminar/ classroom/ library supplies	114	1,067	1,217	2,398	1,722
Services of external agencies*	-	5,033	944	5,977	1,487
Student and staff canteen supplies	65	306	369	740	577
Audit fee	52	-	-	52	52
ICT supplies/ services	2,687	72	228	2,987	3,108
Legal/ professional fees	1,094	327	923	2,344	1,782
Miscellaneous programme costs	105	116	736	957	1,041
Special events and miscellaneous	6	8	13	27	29
	<u>6,236</u>	<u>13,878</u>	<u>22,057</u>	<u>42,171</u>	<u>34,734</u>

*Included in Services of external agencies is GLAS scheme expenditure of €4.016m. This scheme is part of the Rural Development Programme 2014-2020 and commenced in 2015.

9. Staff

The average number of staff employed by the Group during the year was as follows:

	2015	2014
Professional	676	641
Technical	165	165
Administrative/ clerical	195	192
Farm/ domestic	<u>142</u>	<u>155</u>
	<u>1,178</u>	<u>1,153</u>

The Director's remuneration was as follows:

	2015	2014
	€'000	€'000
Basic pay	139	141
Benefit in kind (Car)	<u>13</u>	<u>12</u>
	<u>152</u>	<u>153</u>

The Director's pension entitlements do not extend beyond the model public sector defined benefit superannuation scheme.

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NOTES TO THE FINANCIAL STATEMENTS

9. Staff (continued)

Key management compensation

Key management includes the directors and members of senior management. The compensation paid or payable to key management for employee services is shown below.

	2015 €'000	2014 €'000
Salaries and other short term benefits:		
Senior management team	584	585
Post-employment benefits (€nil for all)	-	-
	<u>584</u>	<u>585</u>

Pension related deductions of €4,182,310 (2014: €4,219,031) has been deducted from salaries and paid to the Department of Agriculture, Food and the Marine.

In accordance with Department of Public Expenditure and Reform circular 13/2014, the following outlines the employee benefits greater than €60,000 in 2015:

Employee benefits	Group Number of employees
€60,000 to €70,000	222
€71,000 to €80,000	99
€81,000 to €90,000	28
€91,000 to €100,000	37
€101,000 to €110,000	19
€111,000 to €120,000	3
€121,000 to €130,000	-
€131,000 to €140,000	-
€141,000 to €150,000	3
€151,000 to €160,000	1

10. Defined benefit pension plans

Section 9 of the Agriculture (Research, Training and Advice) Act, 1988 provides for the establishment of schemes for the granting of superannuation benefits in respect of staff appointed by Teagasc and staff transferred to Teagasc from An Chomhairle Oilúna Talmhaíochta and from An Foras Talúntais.

Pending the approval of draft superannuation schemes by the Minister for Agriculture, Food and the Marine, the Minister for Finance and the Oireachtas, Teagasc operates superannuation schemes on an administrative basis.

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NOTES TO THE FINANCIAL STATEMENTS

10. Defined benefit pension plans (continued)

Teagasc also administers two superannuation schemes (the Agricultural Colleges Staff Superannuation Scheme 1985 and the Agricultural Colleges Spouses' and Children's Contributory Pension Scheme 1985) in respect of certain staff employed by privately owned Colleges of Agriculture and Horticulture, the cost of whose salaries is borne by the Exchequer through the agency of Teagasc.

The above schemes are defined benefit superannuation schemes. No separate fund is maintained, and no assets are held, to finance the payment of pensions and gratuities. The actuarial estimate of future liabilities accruing in regard to future benefits is shown on the statement of financial position.

The average number of monthly pensions paid during the year was 1,686 (2014 - 1,684).

i. Analysis of total pension costs charged to income and expenditure account

	2015 €'000	2014 €'000
Current service cost	28,775	26,111
Interest on scheme liabilities	25,002	44,325
Past service cost	367	-
Staff contributions	(3,461)	(3,306)
Member contributions remitted to the Department of Public Expenditure and Reform for members of the Single Scheme	203	-
	<u>50,886</u>	<u>67,130</u>

ii. Movement in net pension liability during the financial year

	2015 €'000	2014 €'000
Net pension liability at 1 January	1,327,326	1,276,842
Current service cost	28,775	26,111
Past service cost	367	-
Benefits paid	(44,184)	(43,651)
Interest on scheme liabilities	25,002	44,325
Actuarial loss/ (gain)	(174,088)	23,699
Net pension liability at 31 December	<u>1,163,198</u>	<u>1,327,326</u>

iii. Deferred funding asset for pensions

Teagasc recognises as an asset an amount corresponding to the unfunded deferred liability for pensions on the basis of the set of assumptions described below and a number of past events. These events include the statutory basis for the establishment of the superannuation schemes, and the policy and practice currently in place in relation to funding public service pensions including contributions by employees and the annual estimates process. While there is no formal agreement regarding these specific amounts with the Department of Agriculture, Food and the Marine, Teagasc has no evidence that this funding policy will not continue to meet such sums in accordance with current practice.

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NOTES TO THE FINANCIAL STATEMENTS

10. Defined benefit pension plans (continued)

Net deferred funding for pensions in the year

	2015	2014
	€'000	€'000
Funding recoverable in respect of current years pensions	54,144	70,436
Resources applied to pay pensions	(44,184)	(43,651)
	<u>9,960</u>	<u>26,785</u>

The deferred funding asset for pensions as at 31 December 2015 was €1,163m (2014: €1,327m).

iv. History of defined benefit obligations

	2015	2014	2013	2012
	€'000	€'000	€'000	€'000
Experience gain	55,428	129,274	26,988	6,571
Percentage of present value of scheme liabilities	4.7%	9.7%	2.1%	0.5%
Changes in assumptions	118,660	(152,973)	-	(329,741)
Percentage of present value of scheme liabilities	10.2%	11.5%	0%	25.3%
Actuarial (loss)/ gain recognised in other comprehensive income	174,088	(23,699)	26,988	(323,170)

The cumulative actuarial loss recognised in the Statement of Total Comprehensive Income amounts to €33.999m (2014: €208.087m).

v. General description of the scheme

The pension scheme is a defined benefit final salary pension arrangement with benefits and contributions defined by reference to current "model" public sector scheme regulations. The scheme provides a pension (eightieths per year of service), a gratuity lump sum (three eightieths per year of service) and spouse's and children's pensions. Normal retirement age is a member's 65th birthday, and pre 2004 members have an entitlement to retire without actuarial reduction from age 60. Pensions in payment (and deferment) normally increase in line with general public sector salary inflation.

With effect from 1 January 2013 all new entrants, as well as former public servants returning to the public service after a break of more than 26 weeks, are required to join the Single Public Service Scheme. Retirement for those entrants will be compulsory on reaching age 70.

The valuation used for disclosures has been based on an actuarial valuation by a qualified independent actuary on 2 February 2016 in order to assess the scheme liabilities at 31 December 2015.

NOTES TO THE FINANCIAL STATEMENTS

10. Defined benefit pension plans (continued)

The principal actuarial assumptions used to calculate liabilities are as follows:

	2015	2014
	% per annum	% per annum
Inflation rate increase	1.75	1.75
Salary rate increase	3.25	3.25
Pension rate increase – Main Scheme	2.50	2.50
Pension rate increase – Single Scheme	1.75	-
Scheme liabilities discount rate	2.30	1.90

The mortality basis adopted allows for improvements in life expectancy over time, so that life expectancy at retirement will depend on the year in which a member attains retirement age (age 65). The below table shows the life expectancy for members attaining age 65 in 2015 and 2040.

	2015	2040
Year of attaining 65		
Life expectancy - males	88.1	91.1
Life expectancy - females	89.7	92.1

On the basis of these and other assumptions and applying the projected unit method the present value of pension scheme liabilities is as follows:

	2015	2014
	€'000	€'000
Total accrued pension liability	<u>1,163,198</u>	<u>1,327,326</u>

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NOTES TO THE FINANCIAL STATEMENTS

11. Tax on profit on ordinary activities

	2015 €'000	2014 €'000
Based on results for the year:		
Current tax charge	28	6
Under provision in prior years	-	1
Deferred tax (Note 23)	18	81
	<u>46</u>	<u>88</u>

The tax charge for the year is lower than the charge that would result from applying the standard rate of Irish corporation tax to the profit on ordinary activities. The differences are explained as follows:

	2015 €'000	2014 €'000
(Loss)/ profit on ordinary activities before taxation	(870)	639
Profit on ordinary activities multiplied by Standard rate of corporation tax in Ireland -12.5%	(109)	80
Effects of:		
Excess of capital allowances over depreciation	(11)	(16)
Higher tax rate on profits	6	3
Income not subject to taxation	149	(47)
Utilisation of tax losses	(7)	(14)
Current tax charge for the year	<u>28</u>	<u>6</u>

12. Authority members' fees and emoluments

	2015 €'000	2014 €'000
Cawley, Dr. Noel, Chairman	21	21
Christie, Ms. Marie	-	8
Pierce, Dr. Karina	-	-
Collins, Mr. Tom	-	12
Downey, Mr. Eddie	-	1
Tynan, Mr. Tom	-	10
Jago, Mr. Alan	12	12
Fitzgerald, Prof. Gerald	-	-
Gleeson, Mr. Brendan	-	-
Cooke, Mr. Tommy	12	12
Gibbons, Mr. Pdraig	12	12
O'Leary, Mr. Tim	12	11
Larkin, Mr. Joseph	-	-
Woulfe, Mr. Liam	8	-
Murphy, Ms. Cliona	-	-
	<u>77</u>	<u>99</u>
Total expenses paid to Authority members	44	35

Department of Public Expenditure and Reform guidelines on One Person One Salary were implemented in 2015. Ms. Cliona Murphy, who was entitled to a fee in 2015, waived her right to the entitlement.

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NOTES TO THE FINANCIAL STATEMENTS

13. Property, plant and equipment

GROUP

	Land €'000	Buildings €'000	Assets under construction €'000	Plant and equipment €'000	Total €'000
Cost or valuation					
At 1 January 2014	6,381	118,640	4,852	78,115	207,988
Additions	-	333	3,573	2,358	6,264
Buildings completed	-	7,811	(7,811)	-	-
Disposals	-	(1,187)	-	(430)	(1,617)
At 31 December 2014	6,381	125,597	614	80,043	212,635
Additions	-	1,149	2,051	3,144	6,344
Buildings completed	-	-	-	-	-
Disposals	-	-	-	(285)	(285)
At 31 December 2015	6,381	126,746	2,665	82,902	218,694
Accumulated depreciation and impairment losses					
At 1 January 2014	-	47,366	-	61,461	108,827
Charge for year	-	2,972	-	3,909	6,881
Impairment losses	446	37	-	-	483
Disposals	-	(770)	-	(354)	(1,124)
At 31 December 2014	446	49,605	-	65,016	115,067
Charge for year	-	3,239	-	4,009	7,248
Impairment losses	-	-	-	-	-
Disposals	-	-	-	(279)	(279)
At 31 December 2015	446	52,844	-	68,746	122,036
Carrying value					
At 31 December 2015	5,935	73,902	2,665	14,156	96,658
At 31 December 2014	5,935	75,992	614	15,027	97,568

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NOTES TO THE FINANCIAL STATEMENTS

13. Property, plant and equipment (continued)

TEAGASC	Land €'000	Buildings €'000	Assets under construction €'000	Plant and equipment €'000	Total €'000
Cost or valuation					
At 1 January 2014	6,381	114,254	4,852	73,647	199,134
Additions	-	248	3,573	1,959	5,780
Buildings completed	-	7,811	(7,811)	-	-
Disposals	-	(1,187)	-	(430)	(1,617)
At 31 December 2014	6,381	121,126	614	75,176	203,297
Additions	-	1,024	2,050	2,921	5,995
Buildings completed	-	-	-	-	-
Disposals	-	-	-	(285)	(285)
At 31 December 2015	6,381	122,150	2,664	77,812	209,007
Accumulated depreciation and impairment losses					
At 1 January 2014	-	45,080	-	57,470	102,550
Charge for year	-	2,823	-	3,779	6,602
Impairment losses	446	37	-	-	483
Disposals	-	(770)	-	(354)	(1,124)
At 31 December 2014	446	47,170	-	60,895	108,511
Charge for year	-	3,086	-	3,866	6,952
Impairment losses	-	-	-	-	-
Disposals	-	-	-	(278)	(278)
At 31 December 2015	446	50,256	-	64,483	115,185
Carrying value					
At 31 December 2015	5,935	71,894	2,664	13,329	93,822
At 31 December 2014	5,935	73,956	614	14,281	94,786

Included in the opening balances is land totaling 522.8 ha (1,291.3 acres) transferred by the Department of Agriculture, Food and the Marine at nominal values, and certain other assets which were revalued at 31 December 1975 or 1 July 1980. Teagasc has the use of 34.15 ha (84 acres) of land owned by the Department of Agriculture, Food and the Marine, while the Department has the use of 27.1 ha (67 acres) owned by Teagasc. There is no charge to either party arising from these arrangements.

Certain fixed assets entrusted to Teagasc are protected by statute, and may not be sold.

Teagasc has a total of 54 offices/ centres of which 50 are owned by Teagasc and the remaining 4 are under rental agreements. Three of the rental agreements are short term and expire within one year and the remaining agreement is a long term lease with the end date yet to be finalised.

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NOTES TO THE FINANCIAL STATEMENTS

13. Property, plant and equipment (continued)

Disposal of Fixed Assets

	Proceeds/ costs 2015 €'000	Proceeds/ costs 2014 €'000
Proceeds from sale of property		
Property sales during year	-	570
Cost of sales	-	(48)
	-	522
Proceeds from sale of other assets	69	129
	69	651
Net book value of fixed assets disposed		
Property assets	-	(417)
Other assets	(7)	(76)
	(7)	(493)
Surplus on disposal of fixed assets	62	158

There was no transfer to the Exchequer of asset sales proceeds in 2015.

14. Heritage Assets

Group and Teagasc

Certain heritage assets pertaining to Johnstown Castle, including the Castle, Agricultural Museum and Walled-In Garden were not recognised in the statement of financial position as information on the cost or value of these heritage assets cannot be obtained at a cost which is commensurate with the benefits to users of the financial statements. There is currently no comparable assets which Teagasc can utilise to help in assessing the value of these heritage assets.

15. Investments

	Group		Teagasc	
	2015 €'000	2014 €'000	2015 €'000	2014 €'000
Investment in quoted shares	285	144	285	144
Investment in unquoted shares	130	140	131	141
	415	284	416	285
Investments in quoted shares				
	2015 €'000	2014 €'000	2015 €'000	2014 €'000
Fair value at 1 January	144	-	144	-
Additions	70	144	141	144
Gain on fair value movement in the year*	71	-	-	-
Fair value at 31 December	285	144	285	144

*The number of shares in one entity had been understated in 2014. This has been corrected in 2015 and recognised as an addition of €70,000. The fair value adjustment relates to upward movement in share prices in 2015.

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Investments in unquoted shares

	Group		Teagasc	
	2015	2014	2015	2014
Value at acquisition date	€'000	€'000	€'000	€'000
At 1 January	140	1	141	2
Additions*	41	139	41	139
Adjustment	-	-	-	-
Disposals	(51)	-	(51)	-
At 31 December	<u>130</u>	<u>140</u>	<u>131</u>	<u>141</u>

*The number of shares in one entity had been understated in 2014. This has been corrected in 2015 and recognised as an addition of €14,000.

Provision for diminution in value

	Group		Teagasc	
	2015	2014	2015	2014
Value at acquisition date	€'000	€'000	€'000	€'000
At 1 January	-	-	-	-
Increase/ (decrease) in provision	-	-	-	-
At 31 December	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

Net book value

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
At 1 January	140	1	141	2
(Decrease)/ increase in provision	(10)	139	(10)	139
At 31 December	<u>130</u>	<u>140</u>	<u>131</u>	<u>141</u>

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NOTES TO THE FINANCIAL STATEMENTS

15. Investments (continued)

Analysed as:

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
Moorepark Technology Ltd	-	-	1	1
Wexford Creamery	-	5	-	5
Wexford Milk Producers Ltd	25	71	25	71
Lakeland Dairies Co-Operative Society Ltd	5	5	5	5
Aurivo Co-Operative Society Ltd	2	2	2	2
Glanbia plc	246	114	246	114
Glanbia Co-Operative Ltd	14	-	14	-
Kerry Co-Operative Ltd	1	1	1	1
Kerry Group plc	39	30	39	30
Carbery Creameries Ltd	16	-	16	-
Barryroe Co-Operative Ltd	1	-	1	-
Dairygold Co-Operative Society Ltd	36	29	36	29
Dairygold Co-Operative Society Ltd (Revolving fund)	30	27	30	27
	<u>415</u>	<u>284</u>	<u>416</u>	<u>285</u>

Details of investments:

Company name	Country of incorporation	Registered number	Number of shares	Nominal value per share at 31.12.2015	Dividend received	Nature of business of company
Moorepark Technology Ltd	Ireland	168270	5,100	€0.127	2015 - €nil 2014 - €nil	Provision of services for R&D
Wexford Milk Producers Ltd	Ireland	2640R	24,536	€1.00	2015 - €nil 2014 - €13,220	Milk production and supply
Lakeland Dairies Co-Operative Society Ltd	Ireland	4622R	104,371	€0.05	2015 - €52 2014 - €52	Milk production and supply
Aurivo Co-Operative Society Ltd	Ireland	5113R	1,715	€1.00	2015 - €34 2014 - €34	Milk production and supply
Glanbia plc	Ireland	129933	14,510	€16.95	2015 - €1,662 2014 - €1,509	Global nutrition company
Glanbia Co-Operative Ltd	Ireland	4928R	14,371	€1.00	2015 - €1,526	Milk production and supply
Kerry Group plc	Ireland	111471	522	€74.54	2015 - €243 2014 - €217	Provider of taste and nutrition technologies
Kerry Co-Operative Ltd	Ireland	3618R	87	€1.25	2015 - €174 2014 - €131	Milk production and supply
Carbery Creameries Ltd	Ireland	2899R	7,371	€2.21	2015 - €nil	Milk production and supply
Barryroe Co-Operative Ltd	Ireland	1736R	1,000	€1.00	2015 - €nil	Milk production and supply
Dairygold Co-Operative Society Ltd	Ireland	4621R	35,733	€1.01	2015 - €nil 2014 - €nil	Milk production and supply

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15. Investments (continued)

Teagasc has invested €650 in Moorepark Technology Limited and has a 57% holding in the paid up share capital of the company.

The percentage shareholding in all of the other organisations listed is negligible and does not give Teagasc a controlling interest.

16. Inventories

	2015 €'000	2014 €'000
Livestock	3,985	3,917
Farm produce, fertilisers and feeding stocks	491	538
General supplies	199	234
	<u>4,675</u>	<u>4,689</u>

Stocks are stated after provision for impairment of €nil (2014: €nil).

Reconciliation of movements in livestock:

	2015 €'000	2014 €'000
Balance at start of year	3,916	3,641
Purchases	820	836
Sales	(2,399)	(2,203)
Births	720	484
Deaths	(150)	(123)
Fair value adjustments	1,078	1,282
Balance at end of year	<u>3,985</u>	<u>3,917</u>

17. Assets held for sale

At 31 December, Teagasc held the following assets for sale:

	Carrying amount at 31 December 2015 €'000	Carrying amount at 31 December 2014 €'000
Site at Raheen, Co. Limerick	125	125
Site at Athenry, Co. Galway	-	-
	<u>125</u>	<u>125</u>

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NOTES TO THE FINANCIAL STATEMENTS

18. Receivables

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
Trade receivables	6,590	6,695	6,397	6,557
Other receivables	135	111	108	111
Accrued income	10,856	8,031	10,856	7,905
Prepayments	2,662	2,158	2,650	2,145
VAT and other taxes	10	-	10	-
Amounts due from group companies	-	-	-	-
	<u>20,253</u>	<u>16,995</u>	<u>20,021</u>	<u>16,718</u>

All amounts included above fall due within one year.

Amounts due from group companies are unsecured, interest free, have no fixed date of repayment and are repayable on demand.

Trade receivables are stated after provision for impairment of €110,849 (2014: €102,586).

19. Cash and cash equivalents

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
Cash at bank and in hand	9,185	7,261	8,076	6,454
Short-term deposits	<u>9,000</u>	<u>15,796</u>	<u>9,000</u>	<u>15,796</u>
	<u>18,185</u>	<u>23,057</u>	<u>17,076</u>	<u>22,250</u>

Short-term deposits have an original maturity of 3 months or less. At the balance sheet date the average maturity of the deposits was 9 months (2014: 6 months). The average interest rate was 0.70% (2014: 0.94%).

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20. Payables – amounts falling due within one year

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
Trade payables	2,746	871	2,725	829
Other payables and accruals	12,764	11,497	12,647	11,405
PAYE/ PRSI	2,250	2,218	2,250	2,218
Value added tax	969	1,128	953	1,125
Corporation tax	25	1	-	-
Withholding tax	367	122	367	122
Research advances	-	6	-	6
Other payroll deductions	942	961	942	961
Refundable deposits	508	210	508	210
	<u>20,571</u>	<u>17,014</u>	<u>20,392</u>	<u>16,876</u>
Payables for taxation and social welfare included above	<u>3,620</u>	<u>3,483</u>	<u>3,584</u>	<u>3,479</u>

Included in the other payables and accruals of €12.65m are: wages and salaries and other employee costs €2.83m (includes an annual leave accrual of €1.90m), equipment and capital items €2.20m, repairs and maintenance €1.90m, professional fees including legal and analytical services €1.56m, student grants €1.33m, general operating costs including utilities €0.84m, ICT costs €0.67m, farm running costs €0.54m, public relations and advertising €0.33m, other accruals €0.23m and travel and subsistence €0.22m.

The repayment of trade payables vary between on demand and ninety days. No interest is payable on trade payables.

PAYE/ PRSI, value added tax and withholding tax are subject to terms of relevant legislation. Interest accrues on late payment of taxes in line with the terms of relevant legislation. No interest was due at the end of the financial year.

Other amounts included with payables not covered by specific note disclosures are unsecured, interest free and repayable on demand.

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NOTES TO THE FINANCIAL STATEMENTS

21. Deferred income due within one year

Teagasc carries out public funded research in accordance with contracts with other State Institutions, principally the Department of Agriculture, Food and the Marine. Grants in respect of such research are taken into account as income when the corresponding expenditure has been incurred under each contract. At 31 December the source and amount of deferred income in respect of research and other projects was as follows:

		Group		Teagasc	
	Note	2015 €'000	2014 €'000	2015 €'000	2014 €'000
Department of Agriculture, Food and the Marine - advance for FIRM projects	4	3,187	4,872	3,187	4,872
Department of Agriculture, Food and the Marine - advance for Stimulus projects	4	5,230	6,375	5,230	6,375
European Science Foundation - Food Safety Promotion		73	125	73	125
Other research related deferrals		5,096	6,912	5,053	6,885
Course fee deferrals		1,654	1,065	1,654	1,065
Amounts received in advance for work associated with the completion of sale of land at Athenry		1,114	1,114	1,114	1,114
		<u>16,354</u>	<u>20,463</u>	<u>16,311</u>	<u>20,436</u>

22. Deferred income due after more than one year

	Group		Teagasc	
	2015 €'000	2014 €'000	2015 €'000	2014 €'000
At beginning of year	434	471	-	-
Grants received	-	10	-	-
Released to profit and loss account	(47)	(47)	-	-
Course fee deferrals	<u>98</u>	<u>45</u>	<u>98</u>	<u>45</u>
At end of year	<u>485</u>	<u>479</u>	<u>98</u>	<u>45</u>

Grants totalling €3,167,987 were received to date by MTL from FEOGA, Enterprise Ireland, Irish Dairy Board and Teagasc. Under certain circumstances set out in those agreements, some or all of these grants may become repayable to these agencies.

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NOTES TO THE FINANCIAL STATEMENTS

23. Provision for liabilities

Deferred tax

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
At beginning of year	81	-	-	-
Charged to profit or loss account	19	81	-	-
Charged to other comprehensive income	-	-	-	-
Utilised during the year	-	-	-	-
At end of year	100	81	-	-

Components of deferred taxation

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
Accelerated capital allowance	19	81	-	-
Others	-	-	-	-
	19	81	-	-

24. Capital Account

The balance on this account represents the unamortised value of funds used to purchase fixed assets.

25. Income and expenditure account

The income and expenditure account represents cumulative comprehensive income recognised as at reporting date.

26. Non-controlling interest

The non-controlling interest comprises shares in Moorepark Technology Limited.

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NOTES TO THE FINANCIAL STATEMENTS

27. Leases

Operating leases

At 31 December Teagasc had future minimum lease payments under non-cancellable operating leases as follows:

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
Leases which expire:				
Within one year	462	472	434	432
Between two and five years	1,187	1,285	1,187	1,257
After five years	<u>1,508</u>	<u>1,767</u>	<u>1,508</u>	<u>1,757</u>
	<u>3,157</u>	<u>3,524</u>	<u>3,129</u>	<u>3,446</u>

28. Reconciliation of profit to cash flow from operating activities

	2015	2014
	€'000	€'000
(Deficit)/ surplus for the year	(870)	639
Depreciation expense	7,248	6,881
Impairment losses on tangible fixed assets	-	483
Fair value adjustments on biological assets	(1,078)	(1,282)
Fair value adjustments on investments	(71)	(24)
Adjustments to opening value of investments	(84)	-
Gain on disposal of tangible fixed assets	(62)	(158)
Interest income	(111)	(224)
Transfer from capital account	<u>(964)</u>	<u>(1,798)</u>
Total operating cash flows before movements in working capital	4,008	4,517
Decrease in inventory	1,092	1,034
(Increase) in receivables	(3,258)	(1,259)
(Decrease)/ increase in payables	<u>(546)</u>	<u>436</u>
Cash flow from operating activities	<u>1,296</u>	<u>4,728</u>

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29. Private colleges

Teagasc provides support to three private agricultural colleges as follows:

	2015	2014
	€'000	€'000
Grants to private colleges	3,367	2,719
Salary costs of staff seconded to private colleges (included in the total pay expenditure in Note 7 above)	862	592
External service provider costs for teaching services provided to private colleges (included in the general operating expenditure in Note 8 above)	96	130
	<u>4,325</u>	<u>3,441</u>

Grants to private colleges are shown net of the cost of workbooks provided by Teagasc to private colleges being €92,300 (2014: €98,000).

30. Commitments

Capital commitments

Teagasc had capital commitments outstanding at 31 December 2015 amounting to €4.371m which relate to construction of buildings and facilities at Ashtown €1.550m, Grange €1.203m and Moorepark €1.618m (2014 - €nil).

Grant commitments

Teagasc had grant commitments outstanding at 31 December 2015 amounting to €10.384m which relate to Walsh Fellows €5.845m, Private College Grants €3.473m and Other Grants €1.066m (2014 - €9.149m).

31. Authority members – disclosure of transactions

The Authority has adopted procedures in accordance with the guidelines issued by the Department of Finance in relation to the disclosure of interest by Authority members and the Authority has adhered to these procedures. There were no transactions in the year in relation to the Authority's activities in which board members were involved.

32. Contingent liabilities

The Authority has been notified of a number of claims from (a) clients resulting from the provision of services and (b) in respect of certain industrial relations matters.

The Authority has made provision in the financial statements reflecting its best estimate of the liability arising. The Authority believes that disclosure of information on its provisions would prejudice the outcome of litigation arising from the claims.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

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NOTES TO THE FINANCIAL STATEMENTS

33. Related party transactions

The following transactions were carried out with related parties:

Sales of goods and services:

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
Subsidiary	-	-	31	56
Key management personnel	-	-	-	-
Close family members	-	-	-	-
Other related parties	-	-	-	-
	<u>-</u>	<u>-</u>	<u>31</u>	<u>56</u>

Purchases of goods and services:

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
Subsidiary	-	-	716	368
Key management personnel	-	-	-	-
Close family members	-	-	-	-
Other related parties	-	-	-	-
	<u>-</u>	<u>-</u>	<u>716</u>	<u>368</u>

Year-end balances arising from related parties:

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
Receivable from related parties				
Subsidiary	-	-	-	-
Key management personnel	-	-	-	-
Close family members	-	-	-	-
Other related parties	-	-	-	-
	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

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NOTES TO THE FINANCIAL STATEMENTS

33. Related party transactions (continued)

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
Payable to related parties				
Subsidiary	45	30	45	30
Key management personnel	-	-	-	-
Close family members	-	-	-	-
Other related parties	-	-	-	-
	<u>45</u>	<u>30</u>	<u>45</u>	<u>30</u>

The receivables and payables arise mainly from sales and purchase transactions, respectively. The receivables and payables are unsecured in nature and bear no interest. No provisions are held against receivables from related parties during the year (2014: €nil).

Under the terms of the Moorepark Technology Promoter's Agreement, Teagasc has undertaken to provide from its own resources specified staff requirements to include the Manager, the Company Secretary and one technician. Teagasc also provides the remuneration of the Managing Director from its resources and so the remuneration above is not charged in these accounts.

34. Financial instruments

The Group and Teagasc have the following financial instruments:

	Group		Teagasc	
	2015	2014	2015	2014
	€'000	€'000	€'000	€'000
Financial assets that are equity instruments measured at fair value through profit and loss				
Listed fixed asset investments	285	144	285	144
Unlisted fixed asset investments	130	140	131	141
Financial assets that are debt instruments				
Trade receivables	6,590	6,695	6,397	6,557
Other receivables	135	111	108	111
Cash at bank and in hand (including short-term deposits)	18,185	23,057	17,076	22,250
Financial liabilities measured at amortised cost				
Trade payables	2,746	871	2,725	829
Other payables	12,764	11,497	12,647	11,405

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35. Transition to FRS 102

This is the first year that the Group and Teagasc have presented results under FRS 102. The last financial statements under Irish GAAP were for the year ended 31 December 2014. The date of transition to FRS 102 was 1 January 2014. Set out below are the changes in accounting policies which reconcile profit for the financial year ended 31 December 2014 and the total equity as at 1 January 2014 and 31 December 2014 between Irish GAAP as previously reported and FRS 102.

Reconciliation of capital and reserves

		Group		Teagasc	
		As at 1 January 2014 €'000	As at 31 December 2014 €'000	As at 1 January 2014 €'000	As at 31 December 2014 €'000
Capital and reserves as previously stated		105,614	104,441	105,614	104,441
Consolidation of subsidiary	a	3,020	3,196	-	-
Holiday pay accrual	b	(1,885)	(1,970)	(1,880)	(1,959)
Tuition fees	c	(946)	(1,111)	(946)	(1,111)
Capital and reserves (as restated)		105,803	104,556	102,788	101,371
Reserves attributable to Teagasc		102,988	101,668	102,788	101,371
Reserves attributable to non-controlling interest		2,815	2,888	-	-
		105,803	104,556	102,788	101,371

Net income reconciliation

	Group 31 December 2014 €'000
Net income for the financial year as previously reported	625
Consolidation of subsidiary	176
Holiday pay accrual	(85)
Tuition fees	(165)
Total adjustments for the financial year	(74)
Net income for the financial year under FRS 102	551

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(a) Consolidation of subsidiary

Teagasc owns a 57% share in Moorepark Technology Limited. It had previously been accounted for as a joint venture on the basis that the corporate structure and size of Moorepark Technology Limited was very different from Teagasc. Under FRS 102, Moorepark Technology Limited is accounted for as a subsidiary and as a result its assets, liabilities and results are included in the consolidated financial statements. The financial statements disclose the breakdown of reserves as between those owned by Teagasc and those owned by the non-controlling interest. The impact of this change is an increase of €3.02m in group reserves at the transition date and €3.196m at 31 December 2014 representing the value of Moorepark Technology Limited net assets on those dates. The surplus is increased by €0.176m in the year-ended 31 December 2014 to reflect the Moorepark Technology Limited surplus for the year. The valuation of the non-controlling interest is the capital contribution of €2.66m plus 43% of remaining reserves.

(b) Holiday pay accrual

Teagasc had previously not accrued for holiday pay earned by employees but not availed of at the reporting date. Under FRS 102, the financial statements must recognise such accruals. The impact of this change is an increase of €1.885m in creditors at the transition date and €1.970m at 31 December 2014. The surplus is reduced by €0.085m in the year-ended 31 December 2014.

(c) Tuition fees

Historically Teagasc had accounted for tuition fees on a cash receipts basis. Under FRS 102, revenue for tuition fees is recognised over the period of instruction. The impact of this change is an increase of €0.946m in creditors at the transition date and €1.111m at 31 December 2014. The surplus is reduced by €0.165m in the year-ended 31 December 2014.

36. Events after the reporting period

There have been no significant events, outside the ordinary course of business, affecting the Group since 31 December 2015.

37. Approval of the financial statements

The Authority approved the financial statements on 2 March 2016.





