



Annual Report 2017

& FINANCIAL STATEMENTS



Introduction

The 2017 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.

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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 recognised as the knowledge provider of choice for Ireland's agri-food sector.



Speakers at the Agricultural Economics Society 2017 Annual Conference, Brexit and Beyond: Professor Peter Midmore, University of Aberystwyth; Dr. Noel Cawley, Chairman Teagasc along with Dr. Trevor Donnellan, Principal Research Economist, Teagasc; Dr. Tim Lloyd, President of the Agricultural Economics Society; Phil Hogan, EU Commissioner for Agriculture and Rural Development; Mairead McGuinness, MEP and Vice President of the European Parliament; Professor Alan Matthews, Department of Economics, Trinity College, Dublin and Professor Alan Swinbank, Agricultural Economics Society.

Chairman's Statement

The Teagasc National Farm Survey showed that average farm income rose to over €31,300 in 2017, an increase of over €7,500 on the 2016 average farm income. However, this rise in average farm income is almost completely driven by the very large increase in income on dairy farms, and more than two thirds of farms saw little change in their income in 2017 in comparison with 2016.

The average income on dairy farms increased from just over €52,000 in 2016, to over €86,000 in 2017. More than 70% of dairy farms achieved an income in excess of €50,000 in 2017.

Results for the two cattle systems presented in the Teagasc NFS report (Cattle Rearing and Cattle Other) indicate very little change in income in 2017 relative to 2016, with average income per farm in 2017 of about €12,500 and €16,500 respectively.

In the case of sheep farms in 2017 average income increased by about €1,000 to €17,000, largely due to the increase in support provided to the sector via the Sheep Welfare Scheme.

The average income on tillage farms also increased from the €31,000 in 2016 to €37,200 in 2017, due to higher yields and lower production costs. Given that tillage farms are typically larger in size than other farm types, the average income on tillage farms in 2017 remained low.

The profitability challenge facing Irish tillage farmers was at the centre of discussions and demonstrations at the Crops and Cultivation 2017 Open Day which took place in June at the Teagasc Crops Science Research Centre at Oak Park in Carlow. Development of resistance to crop protection products, in combination with reduced availability of products as a result of

changes in legislation, is making control ever more difficult.

A Teagasc 'People in Dairy Project Report' identifies the need for 6,000 people to enter dairy farming over the coming nine years. This is made up of 2,000 new employment opportunities and 4,000 people to provide for replacement of existing dairy farmers.

To provide detailed information on all aspects of employing people, Teagasc in collaboration with the Workplace Relations Commission (WRC), produced an 'Employing People Manual' in 2017. This manual, addresses all the issues that an employer must take into consideration in advance of employing staff and includes advice on managing staff effectively.

A new Teagasc People Strategy (2018-2022) builds on the achievements of the two previous Human Resource strategies. This new five-year Teagasc People Strategy is focused on enablers of high performance and on new capabilities that deliver greater value for our clients, stakeholders, staff

and the organisation at an individual and at a team level.

Highly engaged staff understand the importance of leading and delivering in a complex organisation and industry environment. The central focus of this strategy is: (i) supporting self-directed, purpose driven staff and (ii) supporting teams to utilise the strengths and capabilities of all its members to the full.

It is a tribute to Teagasc generally, and Prof. Gerry Boyle in particular that he was honoured as Chevalier des Palmes Académiques by Mr. Jean-Pierre Thébault, Ambassador of France to Ireland at a ceremony at the French Residence in May. The Ordre des Palmes Académiques (Order of Academic Palms) is an order of knighthood of France for academics and cultural and educational figures.



Mr. Jean-Pierre Thébault, Prof. Gerry Boyle, Mr. Michael Creed, TD, Minister for Agriculture, Food, and the Marine, Dr. Noel Cawley.

Report of the Director



The expansion in the Irish dairy industry over the last three years has been of significant financial benefit to Irish family farms, the wider rural economy and the national economy; 2017 was a banner year for dairy farmers. Further expansion will depend on the adoption of Resilient Technologies. This was the theme for the Teagasc Moorepark Open Day, which attracted over ten thousand farmers from all over the country and from abroad. Our ability to produce high quality grass, sustainably, is a key competitive advantage for beef and sheep producers as well as dairy farmers.

Grass10 is a four-year campaign launched in 2017 to promote sustainable grassland excellence for all Irish ruminant livestock. It aims to increase grass utilisation on all Irish livestock farms. The objective is to increase the number of annual grazings per paddock to 10 and the amount of grass utilised to 10 tonnes grass dry matter per hectare.

There are four important pillars to the Grass10 campaign: soil fertility, sward composition, reseeding and grassland management and grazing infrastructure. Livestock farmers who want to get the most from grassland will need to address all four areas and this campaign aims to provide the technical knowledge and required skills to all interested farmers. The Teagasc Grass10 campaign is supported by the Department of Agriculture, Food and the Marine and industry partners.

The Government announced funding in 2017 for the Science Foundation Ireland (SFI) VistaMilk Centre. The VistaMilk Centre will be hosted by Teagasc, in partnership with the Tyndall National Institute, Ireland's National Microelectronics Institute, the Telecommunications Software & Systems Group (TSSG) at Waterford Institute of Technology and the Insight Centre for Data Analytics (at UCD, NUIG, DCU). VistaMilk

represents a unique collaboration between Agri-Food and ICT research institutes as well as nearly 50 leading Irish/multinational food and ICT companies. The project is valued at about €40 million and is the first such project to be supported by SFI in the agri-food sector. The announcement by the Minister for Agriculture, Food and the Marine, Michael Creed, TD, that €8.8m of exchequer funding will be provided from the Department's capital allocation on a phased basis over 2018 and 2019 to fund the development of the National Food Innovation Hub was hugely welcome.

Teagasc colleagues outlined our dairy and nutrition research to Chinese food companies at seminars organised by Enterprise Ireland in Shanghai and Beijing in China in February. The seminars were planned to promote Ireland's dairy product offerings on the Chinese market and to champion Ireland as a location for Chinese investment in the dairy industry.

Representatives from Glanbia Ingredients Ireland, Kerry, Ornua, Aurivo, Carbery, and Dairygold also attended the two seminars. Apart from Teagasc, presentations were also made by representatives from Moorepark Technology Limited, the APC Microbiome Institute, Food for Health Ireland, Bord Bia, the Department of Agriculture, Food and the Marine and Enterprise Ireland and the Irish Embassy in Beijing.

Pig production is the third largest economic contributor to Gross Agricultural Output (GAO) in Ireland, after milk and beef. It accounts for around 6% of Gross Agricultural Output and the value of Irish pigmeat exports in 2016 was €615 million. A €3.5 million pig research facility was opened by the Minister for Agriculture, Food and the Marine, Michael Creed, TD, in Teagasc Moorepark, in May. The state-of-the-art research facility, covers 6,000 square metres and can accommodate a 200 sow integrated herd, producing over 5,500 pigs per year.

Meat Technology Ireland (MTI) is an €8.1 million five-year research and innovation programme, developed by industry and co-funded by Enterprise Ireland and a consortium of nine beef and sheepmeat processing companies. MTI is hosted by Teagasc at the Food Research Centre, Ashtown, in Dublin with Dublin Institute of Technology (DIT), Dublin City University (DCU),

University College Cork (UCC) and the Irish Cattle Breeders Federation (ICBF) involved as research partners.

Teagasc will receive €8.8m of funding from the exchequer for a new Food Innovation Hub based at Teagasc Moorepark. The primary objective of the National Food Innovation Hub is to create a business innovation network involving dairy companies and public-private partnership R&D programmes with a research focus on food processing, quality and nutrition.

The National Food Innovation Hub will be directly linked to both the Teagasc Food Research Centre and MTL to encourage close collaboration between the research centres and the companies located on the Teagasc Moorepark campus.

Teagasc held a national Knowledge Transfer (Advisory) Conference in Kilkenny that was attended by close to 200 Teagasc advisors/Walsh Fellows/Specialists and other colleagues. A key component of the conference was a series of participative workshops on topics including: Challenging Clients to Achieve More; the Impact of Social Media; Discussion Group Dynamics; Maximising Advisor impact with Clients and Media; Career Progression; Technology Transfer for the Future.

Just over 7,000 learners participated across Teagasc further education (full-time, part-time and distance education) and Teagasc-linked higher education programmes in 2017. The Teagasc Education Vision – meeting future needs – project was completed in 2017. This major exercise describes the Teagasc Vision for education over coming decades.

Teagasc provides a GLAS service to 15,000 clients through a service agreement with National Co-Op Farm Relief Services Limited (NCFRS). 13,500 clients continue to participate in GLAS. Nutrient management plans were completed and submitted to DAFM for 11,200 clients by the end of 2017.

The ‘Sustainability Support and Advisory Programme’ is a new approach to achieving improvement in water quality involving the establishment and joint funding of Agricultural Sustainability Advisors.

Through a commitment from Minister for Agriculture, Food and the Marine, Mr. Michael Creed TD, and the Minister for Housing, Planning and Local Government, Mr. Eoghan Murphy TD, and support from industry, the advisors will work within a unified partnership structure which encompasses Teagasc, the Co-ops and LAWCO - the local authorities Water and

Communities Office. The new Sustainability Advisors will proactively advise and work with farmers to protect and improve water quality.

In 2017 a total of 24 people died in accidents on Irish farms an increase of three over 2016. Teagasc works closely with a number of partners to promote Health and Safety on farms. Teagasc won a tender to provide health and safety training to all KT group facilitators, and 10,000 KT group participants completed a health and safety/work organisation plan. We continue to provide H&S courses for TAMS applicants as required.

Teagasc assisted the Health and Safety Authority (HSA) in the production of a revised version of the “Code of Practice for Preventing Injury and Occupational Ill-Health in Agriculture” (Farm Safety Code of Practice). Teagasc and Mental Health Ireland (MHI) launched a joint publication ‘Coping with the Pressures of Farming’.

The Teagasc National Safety Conference took place in Clare in November. The Keynote address was given by Professor James Phelan, Health and Safety Authority board member, on the topic ‘Understanding Fatality Trends for Future Action’.

Teagasc, in association with the suicide prevention charity Pieta House, exhibited a show garden for the first time at the 2017 annual Bloom event in the Phoenix Park in June. This gave Teagasc the opportunity to combine its horticultural talents from across the organisation to deliver a show garden. It also gave us the opportunity to work with and support Pieta house by designing and delivering the ‘Teagasc Garden of Hope’.

The garden won a Gold Medal for best Medium Show Garden followed by the Best in Category Gold Medal and finally topped it off with the People’s Choice Award which was the public’s choice of best garden from the 22 exhibits.

Teagasc produced a new publication in 2017 called Teagasc Women in STEM as part of its activities for Science Week. This publication highlights women in Teagasc who are working in STEM (Science, Technology, Engineering and Mathematics) and will provide female students with role models. The publication shows that Teagasc women scientists work in a very wide variety of areas across our four research programmes.

I would like to thank all of my colleagues, in all roles and functions across Teagasc, for their commitment and hard work in 2017.



Authority Members

Teagasc Authority

Members of the Teagasc Authority: Front row: Mr. Alan Jagoe, Ms. Cliona Murphy, Chairman Dr. Noel Cawley, Professor Gerald Fitzgerald.

Back row: Mr. Pdraig Gibbons, Mr. Tommy Cooke, Mr. Liam Woulfe, Mr. Joseph Larkin, Mr. Richard Kennedy.



Mr. Brendan Gleeson



Dr. Karina Pierce

Senior Management



Professor Gerry Boyle
Director



Professor Frank O'Mara
Director of Research

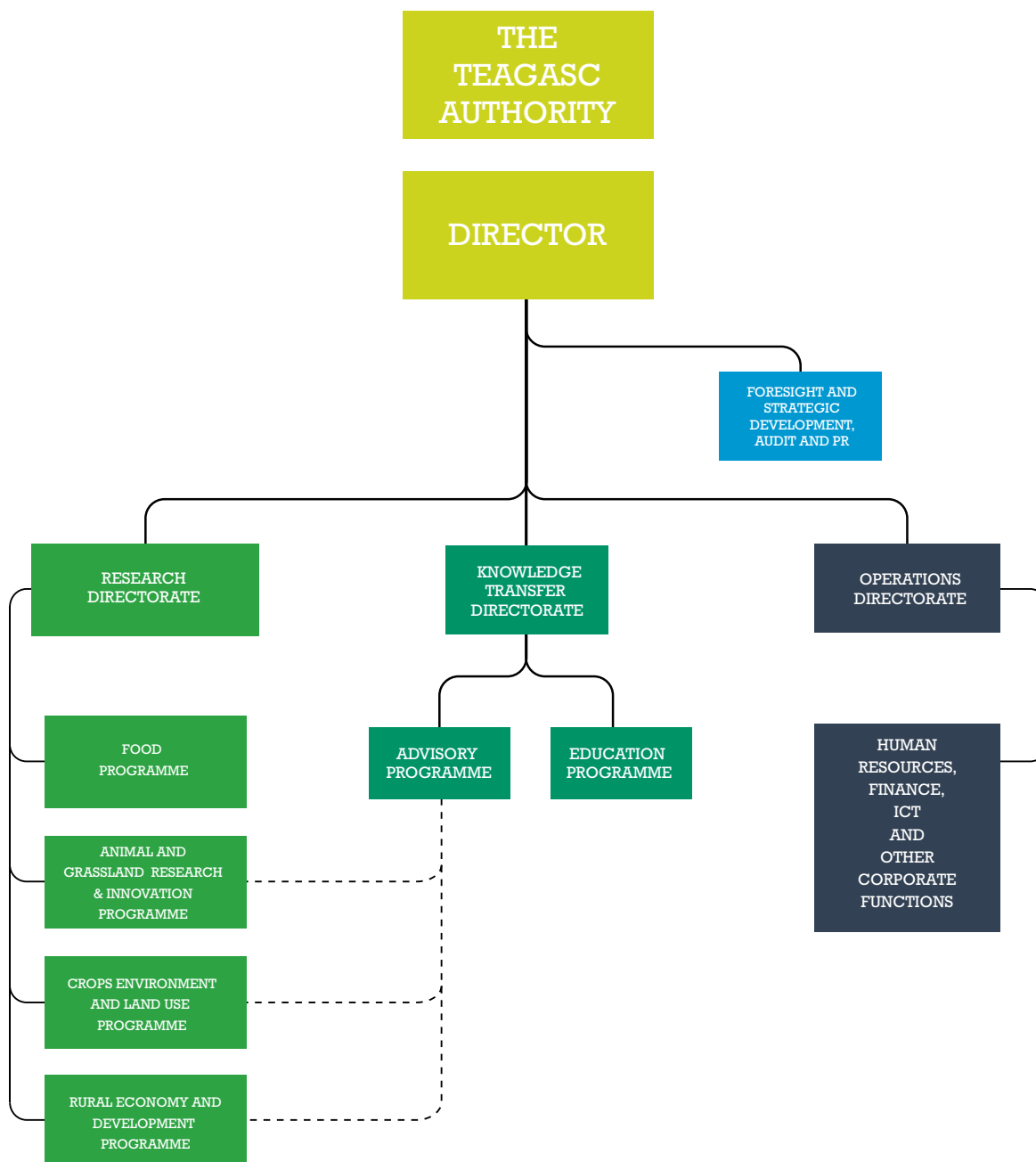


Mr. Tom Doherty
Chief Operating Officer

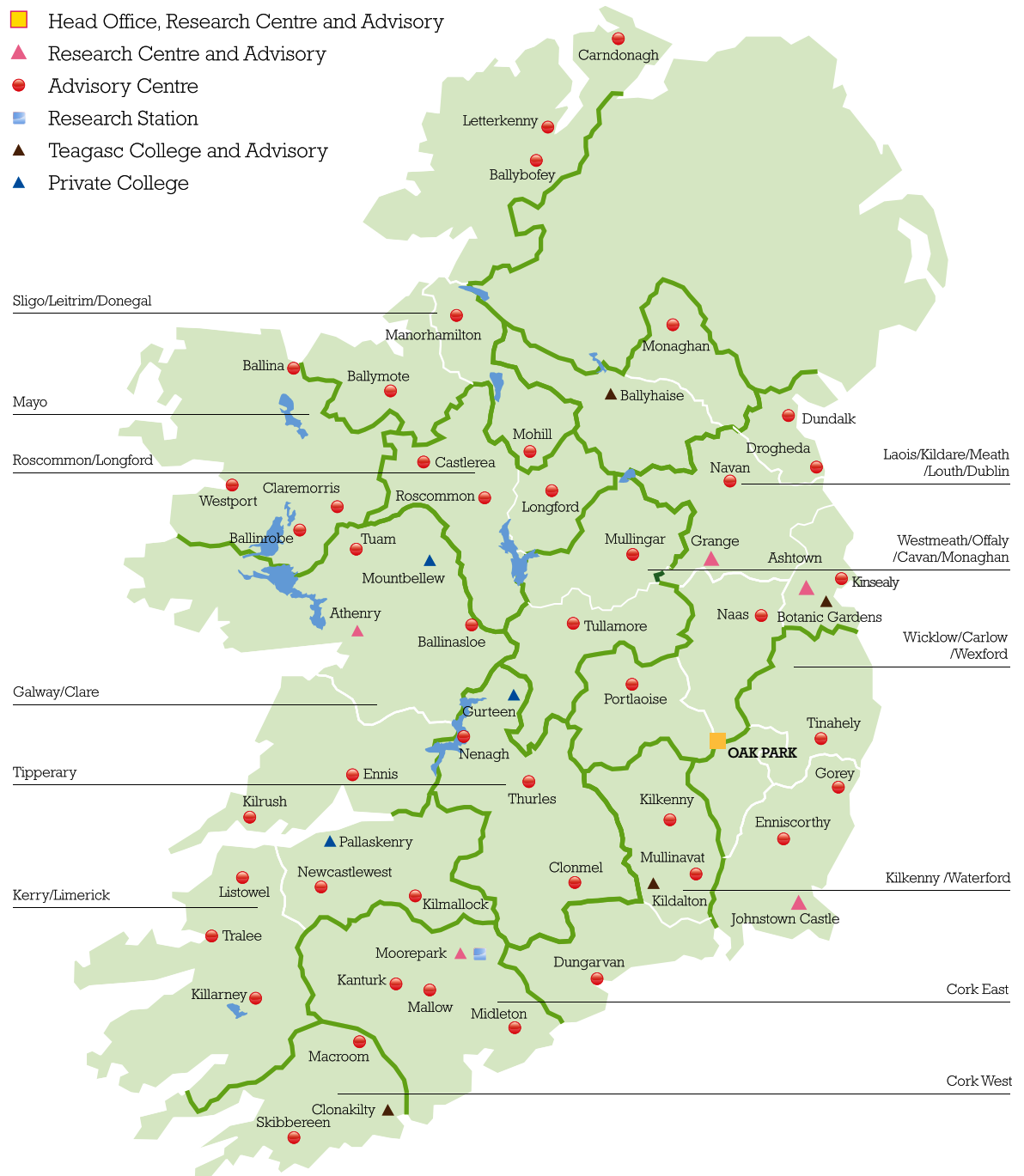


Professor Tom Kelly
Director of Knowledge Transfer

Organisational Chart



Teagasc Offices and Centres





Goal

1

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

BEEF

BETTER Farm Beef Programme

Phase III of the Teagasc/Irish Farmers Journal BETTER Farm Beef Programme programme including 27 host farms was launched in 2017. The first two phases have delivered for both the farmer participants in the Programme, and for the thousands of beef farmers who have visited the farms and read about the impact of the technologies that have been adopted. The BETTER Farm Beef Challenge is supported by ABP, Dawn Meats, FBD and Kepak.

The gross margins of host farmers participating in Phase 2 of the Better Farm Beef Programme have increased by 52% since they joined the programme in 2012. Technical efficiencies delivered 83% of this improvement. Cattle farmers in every region of the country have had the opportunity to see improvements implemented on these farms.

Phase III of the programme focuses on targeting improvements in specific measurable areas. Four-year farm plans, nutrient management plans and herd health plans have been completed for all farms and all are measuring grass and recording it on Teagasc's PastureBase Ireland.

BeefCow

The BeefCow project, led by Teagasc Grange, takes an all-Ireland approach to suckler herd fertility, and how it can be improved. The project includes research into the impact of AI (artificial insemination); pathogens; trace element status and heifer nutrition.

A comprehensive whole-farm bio-economic model is being generated in order to more-accurately inform reproductive decisions at herd level. Partners in the Department of Agriculture, Food and the Marine funded program include the Irish Cattle Breeding Federation, the Agri-Food and Biosciences Institute in Northern Ireland and the Irish Farmers Journal.

Teagasc National Beef Conference 2017

'Planning for healthy profits' was the theme for the Teagasc National Beef Conference. Topics covered at the conference included: Improving the control of liver and rumen fluke; successfully using AI in a 100 cow suckler herd; Grassland Management; Beef Research Updates; and the impact of Brexit on the Irish Beef Industry.

Speakers at the conference included: Dr. Theo de Waal, University College Dublin; Matthew Murphy, manager of the Dawn Meats/Teagasc Newford Suckler Demonstration Farm; John Maher, Teagasc Co-ordinator of the Grass10 campaign; John Heslin, Teagasc Grange; Stephen Connolly, ABP; Dr. Mark McGee, Teagasc Grange; and Dr. Kevin Hanrahan, Teagasc Rural Economy Programme.



Pictured at the Teagasc Beef Conference: Pearse Kelly, Head of Beef Knowledge Transfer, Dr. David Graham Animal Health Ireland, Prof. Tom Kelly Teagasc Head of Knowledge Transfer, and Teagasc Regional Manager, Con Feighery.



A section of the audience at the Teagasc Beef Conference.

Newford Herd

Hundreds of farmers in 32 Knowledge Transfer beef groups attended four KT Group Open Days at the Newford Suckler Herd in Athenry, established by Dawn Meats and Teagasc. How the farm has managed to switch to 100% AI to avail of the top beef genetics was a key attraction.

Teagasc/Animal Health Ireland

Prevention is better than cure was the theme for a series of events held by Teagasc and Animal Health Ireland on participating farms across the country. On each farm the host and his vet discussed the On-farm Health Plan, including vaccination policy. A key aim is to keep stock healthy while reducing reliance on antibiotics. The benefits from taking faecal samples in parasite control strategies and Neospora control and elimination were also key themes.

Suckler and Beef Event

Farmers viewed the beef systems operating at the Teagasc Kildalton Agricultural College, Piltown, Co. Kilkenny in September. In addition to the 60 cow spring calving suckler herd there was the opportunity to hear about the four cattle systems operating at the College:

- Continental cross Bull beef finished at 16 months
- Continental cross Steer beef finished at 24 months
- Continental cross Heifers finished at 18-20 months
- Dairy beef 0-1 and 1-2 year olds in a leader follower system finished at 24 months

Paul Hennessy, Principal of Kildalton College:

“The focus will be on autumn management of the Kildalton herd including weaning, grassland management and finishing cattle off grass. The walk will also examine the physical and financial performance of the suckler herd, including the various beef finishing systems in the College.”



Paul Hennessy, addressing one of the many groups of farmers attending the Teagasc Kildalton Open Day.

SHEEP

Sheep Conferences

Technical performance in terms of ewe productivity, grassland management, stocking rate and flock health are all important drivers of profitability and must be the focus of all sheep producers, particularly in times of uncertainty. That was the message from the Teagasc National Sheep Conferences which took place in Carrick-on-Shannon (Lowland), County Leitrim (Hill), and in Carlow (Lowland).



A cross section of the audience at the Teagasc National Sheep Conference in Killarney.

Technical Efficiency on Sheep Farms

Modest improvements in a number of key technologies have very significant impacts on productivity and profitability on sheep farms. That was the message at the Teagasc Athenry Sheep Open Day which showcased new information on breeding, grassland management, flock health and hill sheep.



Speakers at the Teagasc National Hill Sheep Conference in Killarney: Catherine Keena, Declan Byrne, Professor Gerry Boyle, Kevin O'Sullivan of Teagasc, Tim Kirby of Bimeda, John Horgan, Teagasc Regional Manager. Seated Dr. Anne McClaren of SRUC.

Data from the Teagasc 2016 National Farm Survey showed an average gross margin of €595 per hectare for lowland mid-season lambing flocks. Teagasc Sheep Enterprise Leader, Michael Diskin pointed out that the top one third of flocks generated a gross margin of €1,329 per hectare compared to €268 per hectare for the bottom one third of flocks.

Professor Diskin said:

“This indicates that there is significant scope to increase income by improving technical efficiency on many farms. Gross margin per hectare was almost five times higher on the top farms compared to the bottom farms.”

Michael Gottstein, Head of Sheep Knowledge Transfer in Teagasc said:

“Technical performance in terms of ewe productivity, grassland management, stocking rate and flock health are all important drivers of profitability and must be the focus of all sheep producers, particularly in times of uncertainty.”

Publications

A Compendium of drugs for parasite control in sheep: *Products licensed for control of parasites in sheep in the Republic of Ireland* was produced in 2017. Two new leaflets by Dr. Barbara Good were also produced in conjunction with DAFM and the sheep industry to highlight the importance of having clean sheep brought to slaughter.



Teagasc advisor James Mimmagh discusses ewe productivity at the Teagasc Athenry, Sheep Open Day.



GRASSLAND

Grass10

Launching the Teagasc Grass10 campaign in Moorepark, were (l to R) John O' Doherty, AIB; Prof. Gerry Boyle, Teagasc Director; Michael Creed, Minister for Agriculture, Food and the Marine; Liam Woulfe, Grassland Agro; Jack Kennedy, Irish Farmers Journal; Hugh Ryan, FBD.

Grass10 is a four-year campaign to promote sustainable grassland excellence for Irish livestock. It aims to increase grass utilisation on Irish livestock farms. Its objective is to increase the number of grazings annually per paddock to 10 and the amount of grass utilised to 10 tonnes grass dry matter per hectare.

Grass10 incorporates the roll-out and promotion of the re-launched PastureBase Ireland online grassland database. Livestock farmers can use this platform to record their grass covers, and to easily monitor their performance in relation to the Grass10 targets. The Teagasc Grass10 campaign is supported by AIB, FBD Trust, Grassland Agro the Department of Agriculture, Food and the Marine and the Irish Farmers Journal.

Grassland Farmer of the Year

The Grassland Farmer of the Year competition is an initiative within Grass10. The first ever overall winner of the Grassland Farmer of the Year Award is Eddie O'Donnell from Golden, Cashel, Co Tipperary. The Grassland Farmer of the Year competition recognises those farmers who are achieving high levels of grass utilisation in a sustainable manner.

At the launch of Grass10, Teagasc Director Prof. Gerry Boyle said:

“There are four important pillars to the Grass10 campaign: soil fertility, sward composition and reseeding, grassland management and grazing infrastructure. Livestock farmers who want to get the most from grassland will have to address all four areas and this campaign aims to provide the technical knowledge and skills to all farmers to achieve that goal.”



Mr. Michael Creed, TD, Minister for Agriculture, Food and the Marine (centre) pictured with Grassland Farmer of the Year 2017, Eddie O'Donnell (right), pictured with his wife Fiona, parents Nora and Denis and children Muireann, Meabh and baby Eddie.

DAIRYING

Teagasc Moorepark 17

The expansion in the Irish dairy industry over the last three years has been of a significant financial benefit to both Irish family farms and the wider rural economy. That was the message from Director of Teagasc, Professor Gerry Boyle speaking at the Teagasc Moorepark Dairy Open Day in Fermoy, County Cork. Further expansion will depend on the adoption of Resilient Technologies which was the theme for the Open Day, which was sponsored by FBD Insurance, and which attracted thousands of farmers from all over the country and from abroad.

At the event attended by over 10,000 farmers, Minister for Agriculture, Food and the Marine, Michael Creed TD said: "Irish dairy farming is in a very positive position, but we must continue to focus on resilient technologies which allow us to maintain our competitive advantage in milk production. Our unique grass-based milk production, from family farms in Ireland, is a sustainable model. 2017 is designated as the 'Year of Sustainable Grassland' to celebrate this most important productive and sustainable source of livestock nutrition. The benefits of growing and

utilising grass to its optimum, is well demonstrated by Teagasc here in Moorepark today."

Teagasc, with the support of Ulster Bank, published a new 'Dairy Farm Infrastructure Handbook', which was available for farmers visiting the Teagasc Moorepark '17 Dairy Open Day. Good dairy farm infrastructure is essential in producing quality milk from healthy animals, using management practices that are sustainable from an animal welfare, labour efficiency, economic and environmental perspective.



Teagasc researcher Dr. Brendan Horan describes 'The Perfect Cow' at the Moorepark 2017 Open Day.

Teagasc National Dairy Conference

Milk production in Ireland has gone from 5.5 billion litres to over 7 billion litres and that trend is set to continue. That was the opening message from Michael Hanley, chief executive of Lakeland Dairies as he delivered the key note address at the Teagasc National Dairy Conference in Cavan, one of the two venues for the well-attended conference.



Over 10,000 attended the Teagasc Moorepark Open Day on July 4.



Michael Creed, TD, Minister for Agriculture, Food and the Marine, and Professor Gerry Boyle pictured at the Teagasc Moorepark Open Day.

Michael Hanley's message was echoed by Sean Molloy, Glanbia who delivered the keynote address at the Kilkenny conference. He outlined both the challenges and opportunities faced by Glanbia in the marketplace and how Glanbia are responding to these. He also presented findings from a recent Glanbia supplier survey.

'Seizing Opportunities for a Better Future' was the theme for the two events and, in addition to the keynote addresses, an expert panel of speakers explored the issues that will shape the future of dairy farming in Ireland. A series of workshops ensured exceptional interaction with the farmer attendees.

People in Dairying

A Teagasc 'People in Dairy Project Report' identified the need for 6,000 people to enter dairy farming over the coming nine years. This is made up of 2,000 new employment opportunities and 4,000 people to provide for replacement of existing dairy farmers.

To provide detailed information on all aspects of employing people, Teagasc in collaboration with the Workplace Relations Commission (WRC), produced a 'Teagasc Labour Manual' in 2017. This manual, addresses all the issues that an employer must take into consideration in advance of employing staff and includes advice on managing staff effectively.



Maria Ross, Pat Clarke, Valerie Farrell and Professor Gerry Boyle at the launch of the Teagasc Labour Manual.

Cow's Own Worth

ICBF and Teagasc launched a new decision support tool, the C.O.W. (Cow's Own Worth), to aid in culling and retention decisions of dairy cows on the 31st of October. The launch took place at the Paddy O'Keeffe Innovation Centre, Teagasc Moorepark with speakers including Prof. Pat Dillon Teagasc, Dr. Margaret Kelleher ICBF, Prof. Donagh Berry Teagasc, Alan Jagoe farmer, Fiachra Liston farmer, Dr. Doreen Corridan Animal Health Ireland and Prof. Dorian Garrick New Zealand.

ProWelCow

ProWelCow is a year-long desk-based project to identify risks and protective strategies for cow welfare associated with dairy herd expansion. It concluded that poor Body Condition Score, overcrowding during housing and lameness are potential causes of poor cow welfare in expanding, low-cost, pasture based systems.

In the medium term, research will be needed to identify animal-based indicators relevant to pasture-based systems, new welfare traits, new ways of deriving weightings for such traits in breeding indices and ways of improving routine access to data on these or correlated traits.

Calf Rearing

During 2017 Teagasc published the Teagasc Calf-Rearing Manual, a technical guide to best practise in calf-rearing.

Aoife Healy Advisor, Teagasc Cork West



Aoife grew up on a farm in West Cork. She graduated from University College Dublin in 2015 with a degree in Agricultural Science, and progressed on to study for a Masters Degree in Agricultural Extension and Innovation.

As part of her Walsh Fellowship funded Masters, she was based in the Teagasc Kerry/Limerick advisory region under the supervision of dairy advisor Nora O'Donovan where she gained invaluable experience.

In February 2016 Aoife started work on a two year temporary contract as a teacher at Teagasc Clonakilty Agricultural College. She spent ten months working on the Distance Education and Level 5 Certificate in Agriculture course there.

In November 2016 she became a permanent Teagasc staff member as a Dairy Advisor in the Cork West Regional Unit. She works primarily with young farmers and has been involved in setting up and running a discussion group with students and graduates from Clonakilty Agricultural College and liaising and organising events in conjunction with Macra Na Feirme.

TILLAGE

Tillage Conference

The Teagasc Tillage Conference took place during a difficult economic period for producers. Global demand for grain has increased steadily for the last 15 years but in the last four years production has exceeded demand, resulting in increased carry-over stocks. Farmers, researchers and industry experts explored solutions.

Farmer David Walsh-Kemmis, from Stradbally, Co. Laois, described how he has been forward selling grain, achieving an average grain price of €15 and €20 per tonne higher than the green grain price at harvest, in each year. He also explained how he has been changing his cropping pattern to avail of as many premium grain markets as possible.

Sarah Clarke, from ADAS in the UK, described markets there for grain for alcohol production, including wheat for bioethanol and whiskey. She explained how low protein, soft wheat improves alcohol yield per tonne and processability and indicated that with the correct variety choice, Irish wheat would be well suited for alcohol production.

Teagasc Crops Researcher, Dermot Forristal, demonstrated the rotational benefits of break crops, increased profitability from rotation and identified potential market expansion for both oilseed rape and beans. He emphasised the need for an industry-wide approach to developing these markets.

Kevin Cunningham of DLF presented the new Maize Guide, with the most up-to-date information on maize production and utilisation from the Maize Industry Group. He also described an example of a maize contract which can be used to formalise and facilitate the farm-to-farm trading of maize.

Teagasc plant pathologist, Dr. Steven Kildea, outlined the current situation regarding fungicide resistance across the main cereal diseases and what can be done to slow the development of resistance. Dr. Liz Glynn, from the Teagasc Crops Science Department, Oak Park, demonstrated that by using the correct timings for fungicide sprays, rates of application can be reduced, presenting significant opportunities for cost savings to the grower. On-going work at Teagasc, Oak Park, to

develop varieties with improved resistance to Septoria was presented by Dr. Ewen Mullins and Ger Hehir.



Teagasc researcher Dr. Liz Glynn pictured presenting at the Teagasc Tillage conference.



A large number of tillage farmers and industry professionals attended the Teagasc conference during a difficult period for the industry.



Teagasc staff at the Tillage Conference. Michael Hennessy, Dr. Steven Kildea, Dr. Liz Glynn, Joseph Lynch, Ger Heir, Louise McNamara, Prof. Gerry Boyle, Roisin Byrne, Henry Creissen, Ronan Byrne and Dr. Ewen Mullins

Herbicide Resistance

Initial findings of a national survey being carried out by researchers at Teagasc Oak Park discovered herbicide resistance among some grass weed populations of wild oats and black grass. Controlling the spread of resistance and managing resistant weeds may cause input costs to rise, reducing profit margins for growers.

The first step following initial tests will be to determine the response of the resistant populations to varying doses of herbicides which will indicate the level of resistance in these populations. The research is part-funded by the Irish Seed Trade Association and results were presented at the Tillage Conference.

Further experiments, in conjunction with Rothamsted Research in the UK, aim to investigate the genetic basis for herbicide resistance in Irish grass weeds.

Malting Barley Seminar

Farmers from across the South East attended a Malting Barley Seminar organised by Teagasc in Bunclody, County Wexford. The seminar took place against a backdrop of low incomes for tillage farmers. However the demand for malting barley continues to grow with the distilling sector on an upward trajectory.

“Teagasc have a commitment to support the malting barley sector to develop and meet the demands coming from industry,”

said Michael Hennessy, Head of the Teagasc Crops Knowledge Transfer Programme. The seminar focussed on the technical aspects of producing malting barley for brewing (beer) and distilling (whiskey) markets.

Technologies for Tillage Farms

The profitability challenge facing Irish tillage farmers was at the centre of all the discussions and demonstrations at the Crops and Cultivation 2017 Open Day which took place in June at the Teagasc Crops Science Research Centre at Oak Park in Carlow.

Head of the Teagasc Crops Research Programme, John Spink, said:

“Profitable tillage production in Ireland is dependent on high yields. The effective control of weeds, pests and diseases is critical. However in all cases, development of resistance to crop protection products, in combination with reduced availability of products as a result of changes in legislation, is making control ever more difficult.”

Tillage BETTER Farms

Tillage BETTER Farms were used throughout the year to deliver precision tillage farming messages. Considerable work was undertaken on measurements within fields and the results were presented at three key Open Days through the year. Greater precision can yield cost savings and improved sustainability.



A Crops and Cultivation Open Day was held at Teagasc, Oak Park, in June.

PIGS

A €3.5 million pig research facility was officially opened by the Minister for Agriculture, Food and the Marine, Michael Creed TD in Teagasc Moorepark, Fermoy, in May. The state-of-the-art research facility, covers 6,000 square metres and can accommodate a 200 sow integrated herd, producing over 5,500 pigs per year.



Pictured at the official opening of a new Teagasc pig research facility at Moorepark, Fermoy, are Mr. Michael Creed TD, Minister for Agriculture, Food and the Marine, Ciaran Carroll, Head of the Teagasc Pig Development Department, Dr. Noel Cawley, Chairman, Teagasc, Professor Gerry Boyle, Teagasc Director and Mr. Michael Berkery, Chairman of the Teagasc Pig Stakeholder Group.

Opening the new pig research facility, Minister Creed said:

“Pig production is the third largest economic contributor to Gross Agricultural Output (GAO) in Ireland, after milk and beef. It accounts for around 6% of Gross Agricultural Output and the value of Irish pigmeat exports in 2016 was €615 million.”

Teagasc Director, Professor Gerry Boyle, outlined the current and future research programme being undertaken by Teagasc to support the pig sector. This includes work on pig nutrition and management, sow productivity, animal health and welfare, genetics and environment.

Prof. Boyle said:

“We work closely with commercial pig producers and we are linked to other research institutions and universities both in Ireland and internationally. This ensures our research programme is innovative, practical and applied, while also giving us access to the best science available around the world.”



Addressing the pig producers and industry personnel present for the launch, Head of the Teagasc Pig Development Department, Ciaran Carroll spoke about the key elements of the Teagasc Pig Research, Advisory, Education and Training Programme 2016-2020:

“The education and training courses for those working in the industry, along with the farm advisory programme, are critical to transferring the knowledge gained through research out onto farms. Maintaining a competitive pig production sector in Ireland will be built on science backed research.”

Teagasc provides an advisory service to the pig industry, via on-farm visits, e-newsletters, and discussion groups and other communication activities.

Under a Joint Programme agreed between Teagasc and the IFA Pig Committee producers contribute 10 cent per pig towards Teagasc Pig Research, Knowledge Transfer and Education/ Training. This money helps fund staff (Research, Advisory & Technical) to carry out a Teagasc/IFA agreed Joint Programme. The money is collected via an addition to the existing statutory Bord Bia levy.

Environment Enrichment

The European Commission has issued a recommendation regarding management of tail biting in pigs stating that enrichment materials should be edible, chewable, investigable and manipulable, and should retain the interest of the pigs. Teagasc researchers are investigating options to provide environmental enrichment for pigs, aiming to prevent tail-biting.

Their work concluded that Irish pig producers are open to using wood blocks as environmental enrichment, which is appropriate for slatted systems. Spruce, the softest wood investigated was the most attractive to pigs, and will be investigated further.

FORESTRY

Promotion and Advice



Andrew Doyle, TD, Minister of State at the Department of Agriculture, Food and the Marine on the Teagasc stand at the Forestry 2017 event.

The multi-functional role of forestry and its capacity to deliver economic, social and environmental benefits is being increasingly recognised. Teagasc promotes the integration of forestry as a sustainable and complementary farm enterprise.

The Teagasc Forestry Development Department showcased its extensive advisory, research, training and education services at TIMBER 2017, the biennial Irish Forestry, Woodland & Bio Energy Show 2017.

A series of nationwide forestry advisory clinics was held during in 2017, with over 900 attendees. These clinics provided one-to-one support to landowners considering afforestation as well as advice on best forest management for existing forest owners.

Teagasc strengthened its association with the Royal Dublin Society Forestry and Woodland Awards in 2017 through its sponsorship of a new Teagasc Farm Forest Award Category. The award recognises and promotes the sustainable use of land that incorporates both farming and forestry.

Support for Forest Management

The Forestry Development Department promotes active forest management to the farm forest sector from early management to timber harvesting. It continues to facilitate the development and training needs of Forest Owner Groups; providing on-going support, event co-ordination and technical forestry advice. It supported and promoted the roll-out of the new DAFM Knowledge Transfer Groups on Forest Certification and Wood Mobilisation during 2017.

The Forestry Development Department supported the farm forestry sector in relation to thinning and marketing their timber during 2017 by organising three national Timber Marketing Events. Two of these events, 'Talking Timber' held in counties Cavan and Tipperary focused on the marketing of conifer timber. A third event, 'Talking Hardwoods' placed emphasis on marketing and adding value to timber from broadleaf forests. These highly popular events combined a mixture of demonstrations with a seminar with a focus on opportunities for forest owners to network with timber buyers and the wider industry.

Forestry Research

Research work progressed during 2017 on screening and selecting individual tree genotypes of ash which show resistance/tolerance to ash dieback disease (Chalara). These will be used them to bulk up stocks of resistant trees vegetatively, as well as for establishing seed producing orchards with resistant parent trees.

Teagasc and GMIT: The President of GMIT, Dr. Fergal Barry, and the Director of Teagasc Professor Gerry Boyle signed a Memorandum of Understanding (MOU) at the Letterfrack campus in Connemara, the National Centre for Excellence in Furniture Design & Technology, attended by staff from both GMIT and Teagasc. While the initial MOU will focus on aligning Teagasc broadleaf tree improvement, silviculture and management research programmes with industry and hardwood end user needs, the agreement allows for the future development of a range of collaborative activities in other areas.

Focus on Thinning: While trees are initially planted at ca. 2,500 stems per hectare, competition and natural selection reduces the number of trees over time. Thinning is the practice of removing inferior quality trees to concentrate timber production on trees with superior form. Recent Teagasc research suggests that thinning in conifer forests should focus on increased removal of inferior quality trees earlier in the forest life cycle.

HORTICULTURE

Teagasc wins with 'Garden of Hope' at Bloom 2017.

Teagasc, in association with the suicide prevention charity Pieta House, exhibited a show garden for the first time at the 2017 annual Bloom event in the Phoenix Park in June. Developing a show garden at Bloom 2017 was an appealing challenge on two fronts; it afforded Teagasc the opportunity to combine its horticultural talents from across the organisation to deliver a show garden; it gave the opportunity to work with and support Pieta House by designing and delivering the 'Teagasc Garden of Hope.' The garden won a gold medal for Best Medium Show Garden followed by the Best In Category Gold Medal and finally topped it off with the People's Choice Award from the 22 exhibits.

Key drivers of change in 2017

Brexit:

2017 will be remembered as the year that the implications of the UK decision to leave the EU started to be appreciated and scenario analysis began in earnest. With significant capital investment and specialisation in horticultural production in the last decades, trade with the UK is crucially important.

In the mushroom sector, continued exchange rate volatility impacted the sector in 2017 but the range of volatility has narrowed. Also producers have tried to minimise their exposure to exchange rate volatility through use of various financial instruments including, the forward purchase of sterling. Teagasc has focused on assisting growers to become more efficient through the joint industry programme with Commercial Mushroom Producers (CMP).

Pictured at Bloom: Louise Jones (Horticulture lecturer, Teagasc College at the National Botanic Gardens), Laura Cassin (Horticulture lecturer, Teagasc Kildalton college), President Michael D. Higgins and his wife Sabina Higgins, Brian Higgins (CEO Pieta House), Linda Murphy, (Horticulture lecturer, Teagasc College at the National Botanic Gardens).



In 2017 there has been a renewed focus on management practices on commercial mushroom farms in order to sustain and repair profit levels. It culminated in an Industry specific and agency funded Lean Management Programme. Several Teagasc workshops have been conducted and significant numbers of production facilities have participated in Lean Farm Assessments and implementation where savings have been identified.

Labour

Horticulture is a labour-intensive industry and producers require both full-time and seasonal staff. According to growers surveyed by Teagasc in 2017, the problem of recruiting and retaining staff is becoming increasingly difficult.

In many cases, the capacity of the farms to harvest the crop in 2017 was impacted. Horticulture research in future will reflect requirements for more application of ICT, training for recruitment and retention, variety selection around labour efficiency, and technology adoption of picker automation, robotics and labour saving devices.

Competitiveness

Irish horticultural production units are on average significantly smaller than those in the UK or Europe. Membership of Producer Organisations (PO) in Ireland is mostly focussed on the mushroom sector. This means that Irish growers are operating at a cost disadvantage relative to imported products which are usually produced under a PO scheme.

Teagasc horticulture research is focussed on cost competitiveness, for instance mushroom compost utilisation, where understanding genetic expression during the cropping cycle may unlock more potential from compost. Reducing crop losses due to pest and disease across all sub-sectors through entomology and pathology research and advice will help to maintain the viability of enterprises. Teagasc have a direct responsibility to facilitate Research and KT on Integrated Pest Management across the horticultural sectors.

Teagasc facilities completed

The new facilities at Teagasc, Ashtown include a new 1,700m² glasshouse, a mushroom research facility and horticultural polytunnels and utility building. The mushroom research centre and glasshouse research facility will be used to deliver EU, DAFM, Teagasc and Industry funded research.

FOOD

Meat Technology Ireland



Minister for Agriculture, Food and the Marine, Michael Creed, TD, with John Malone, Chairman, Meat Technology Ireland; Minister for Jobs, Enterprise and Innovation, Mary Mitchell O'Connor, TD; Professor Gerry Boyle, Director of Teagasc; CEO Enterprise Ireland, Julie Sinnamon and Dr. Noel Cawley, Chairman Teagasc, pictured at the launch of Meat Technology Ireland, (MTI) a strategic research and innovation base in beef and sheep meat processing in Ireland. MTI is a new industry-led initiative with funding from Enterprise Ireland and industry to create a 'one-stop shop' for meat processing research and technology.

Meat Technology Ireland (MTI) is a new industry-led initiative to create a 'one-stop shop' for meat processing research and technology.

Meat Technology Ireland is an €8.1 million five-year research and innovation programme, developed by industry and co-funded by Enterprise Ireland and a consortium of nine beef and sheepmeat processing companies. The MTI is hosted by Teagasc at its Ashtown Food Research Facility in Dublin involving collaboration with the Dublin Institute of Technology (DIT), Dublin City University (DCU), University College Cork (UCC) and the Irish Cattle Breeders Federation (ICBF).

The companies behind the initiative are ABP Ireland, Ashbourne Meat Processors, Dawn Meats Group, Dunbia (Ireland), Hilton Foods Ireland, Irish Country Meats, Kepak Group, Liffey Meats, and Slaney Foods International.

Meat Technology Ireland emerged from a five-year research vision from IBEC's Meat Industry Ireland industry group which was presented to Enterprise Ireland. John Malone was appointed Chairman of Meat Technology Ireland in 2016 and Dr. John Colreavy was appointed as Director.

ICoMST

Teagasc hosted the 63rd International Congress of Meat Science and Technology (ICoMST) in collaboration with UCC in 2017. Over 400 participants attended, including food scientists, engineers, food industry professionals, thought-leaders, decision-makers, regulatory authorities and students from 55 countries.

Award



Declan Troy

The American Meat Science Association (AMSA) selected Declan J. Troy, Assistant Director of Research at Teagasc, to receive the 2017 AMSA International Lectureship Award. The International Lectureship Award was established to honour an individual for internationally recognized contributions to the field of meat science and technology.

A one-day workshop on Meat Co-products took place at the Teagasc Food Research Centre, Ashtown. The workshop was organised by the ReValueProtein project team and shared ideas, knowledge and skills in the areas of animal (non-dairy) protein extraction, for the development of high value products and applications.

ReValueProtein is a nationally funded research project bringing together a multidisciplinary team to support innovation in the Irish meat industry. The partners in the project are Teagasc, UCC, UCD, NUIG, IT Tralee/Shannon Applied Biotechnology Centre and DAFM.



Dr. Maria Hayes and Ciaran Carroll of Teagasc at the ReValue Protein workshop.

Food Innovation Hub



From left: Dr. Mark Fenelon, Head of the Teagasc Food Research Programme, Professor Frank O'Mara, Teagasc Director of Research, An Taoiseach Leo Varadkar, TD, and the Minister for Agriculture, Food and the Marine, Michael Creed, TD, discuss the new National Food Innovation Hub planned for Teagasc Moorepark.

Teagasc will receive €8.8m of funding from the exchequer for a new Food Innovation Hub based at Teagasc Moorepark. **Speaking at the launch, An Taoiseach Leo Varadkar, TD, said:**

“Small and medium sized agri-food businesses are already preparing for Brexit by taking an innovative approach and opening up new European and international markets beyond the UK. This new National Innovation Hub will help Irish businesses to innovate and expand, keeping our agri-food sector competitive and attracting investment in a post-Brexit world.”

Minister for Agriculture, Food and the Marine, Michael Creed, TD, said:

“FoodWise 2025 identified research, development and innovation as key drivers of competitiveness in the agri-food sector. In this context it recommended collaboration between industry and the research community to advance research and new product innovation.”

The primary objective of the National Food Innovation Hub is to create a business innovation network involving dairy companies and public-private partnership R&D programmes with a research focus on food processing, quality and nutrition. It involves constructing up to 12 customer application suites containing office and laboratory space, so that each company can have an on-campus presence to conduct new-product development.

The National Food Innovation Hub will be directly linked to both the Teagasc Food Research Centre and MTL to engender close collaboration between Teagasc Scientists and the companies located on the Teagasc Moorepark campus.

VistaMilk

The Government announced funding for the Science Foundation Ireland (SFI) VistaMilk Centre, bringing to 17 the total number of funded SFI research centres. The VistaMilk Centre will be hosted by Teagasc, in partnership with scientific partners the Tyndall National Institute, Ireland's national microelectronics institute at UCC, the Telecommunications Software & Systems Group (TSSG) at Waterford Institute of Technology and the Insight Centre for Data Analytics at UCD, NUIG and DCU.

VistaMilk represents a unique collaboration between Agri-Food and ICT research institutes as well as leading Irish/multinational food and ICT companies.

Microbiome

Scientists at the Science Foundation Ireland-funded APC Microbiome Institute in Cork have confirmed that gut microbes play a role in heart health. They also demonstrated that we should consume porridge regularly to get the benefits of oat beta glucan for heart and gut health!



Prof. Noel Caplice, Prof. Catherine Stanton and Dr. Paul Ryan highlighting the health benefits of eating porridge.

“These results show we need to consider effects on the microbiome when treating cardiovascular disease through either food or medication” said Prof. Catherine Stanton, leader of the research at the APC Microbiome Institute and Teagasc Food Research Centre, Moorepark. “The message is to take porridge regularly to reduce your risk of cardiovascular disease whilst also protecting your gut microbiota.”

Processing fish

There is growing demand among consumers for healthier and safer products with a longer shelf life. Fatty fish species such as mackerel, which have a high nutritional value due to their omega-3 polyunsaturated fatty acids levels. However these compounds can be oxidised, reducing sensorial quality and shelf life.

Teagasc researchers investigating high pressure processing (HPP) and smoking have concluded that these technologies in combination enhance the quality attributes of mackerel, and contribute to the maintenance of its nutritional quality, and is a promising treatment to extend the shelf life of mackerel.



Food Wise 2025

Teagasc was invited by the Department of Agriculture, Food and the Marine to exhibit at the Food Wise 2025 conference. Pictured are Shane O'Donnell, PhD student Teagasc Moorepark, Dr. Mark Fenelon, Teagasc Head of Food Research, Michael Creed, TD, Minister for Agriculture, Food and the Marine, and Dr. Tim Guinee of Teagasc Moorepark.



At the Teagasc Exhibition Area at the Department of Agriculture Food and the Marine, Food Wise 2025 Conference, Dr. Karl Richards (right) is describing research into farmland habitats to Mr. Andrew Doyle, TD, Minister of State at the Department of Agriculture, Food and the Marine.

Advisory Services

Advisory Conference



Tillage advisor Martin Bourke in conversation with a Teagasc new entrant.

A Teagasc national Knowledge Transfer (Advisory) Conference was held in Kilkenny and was attended by close to 200 Teagasc Advisors/ Walsh Fellows/Specialists and other colleagues. A key component of the conference was a series of highly participative workshops on topics including: Challenging Clients to Achieve More; the Impact of Social Media; Discussion Group Dynamics; Maximising Advisor impact with Clients and Media; Career Progression; Technology Transfer for the Future. Dr. Seán McCarthy, of Kerry Agribusiness, concluded the conference with his thoughts on the future of Knowledge Transfer.

Knowledge Transfer Advisory Activities and Outputs 2017

	Total	B&T Dairy	B&T Drystock	B&T Tillage	Soils & Agri Env.
Number of advisors on 31/12/2017	236.4	84	116	13.9	22.5
Clients	43,452	11,683	23,866	2,267	5,636
Visits	14,409	6,911	5,482	1,055	961
Consultations	73,985	25,952	34,917	4,278	8,838
Discussion /Project Groups	764	300	377	41	46
Number of farmers in groups	11,808	4,542	5,922	627	717
Farm Planning activities					
BPS submitted - own	38,987	10,732	20,404	1,882	5,969
BPS submitted - outsourced	3,423	3,423	0	0	0
Profit Monitors	9,747	4,144	4,513	478	612
My Farm My Plan completed	386	250	98	13	25
KT Farm Improvement Plans	5,727	2,031	3,110	387	199
Environment / regulation activities					
Derogations - own	504	452	30	5	17
Derogations - outsourced	3,295	3,064	173	13	45
TAMS- own ¹	787	427	233	104	23
TAMS - outsourced ¹	479	332	116	22	9
Inspection Support – own ¹	1,375	380	715	165	115
Inspection Support – outsourced ¹	19	0	10	0	9
Other activities					
GLAS clients trained	10,000				
Target for recruitment of new advisory clients	1340 ²				
No. of BETTER/Monitor Farms	100	49	48	3	0
Total No. of Meetings/Seminars	363	165	149	25	24
Total No. Farm Walks/Demos/Other events	349	227	84	27	11

¹ Demand-led activity

² Includes 803 new and 537 returning clients



CECRA modules are delivered in a highly interactive and informal way

CECRA

CECRA stands for Certificate for European Consultants in Rural Areas and is a competence development programme for advisors and consultants. The aim of the programme is to create a standard within advisory skills across Europe. CECRA helps participants to enhance their advisory and extension techniques.

Teagasc is the approved provider of CECRA training in Ireland. A series of advisory skills training modules have been developed for an Irish context and are now available for consultants and advisors in Ireland. Participation is open to both Teagasc and external advisors/consultants. In 2017, the following CECRA modules were delivered by Teagasc staff who are accredited CECRA trainers.

Module Theme	No. of times run	Participants
CECRA - Arrangement of Advisory Processes/Extension Methods	2	26
CECRA - Facilitation and Discussion Group Management	6	62
CECRA - Marketing and Public Relations	1	10
CECRA - Personality Development/My Advisory Profile	1	11
CECRA - Self and Time Management	2	22
CECRA - Communications/Client Relations	1	12
CECRA - Teamwork and Team Leadership	1	10
	14	153



Professionals working in rural areas such as these Credit-Union staff have access to technical training and updating through Teagasc ConnectEd.

ConnectEd

Teagasc ConnectEd has been developed to provide professionals working within the agri-food sector structured access to high quality education programmes and Teagasc knowledge resources. The name ConnectEd is derived from the objective of the programme: to create stronger linkages (Connect) between Teagasc and businesses that support the agri-food sector. The programme develops networking opportunities for different professions while at the same time providing high quality professional development opportunities. By the end of 2017, membership reached 550, representing 305 companies.

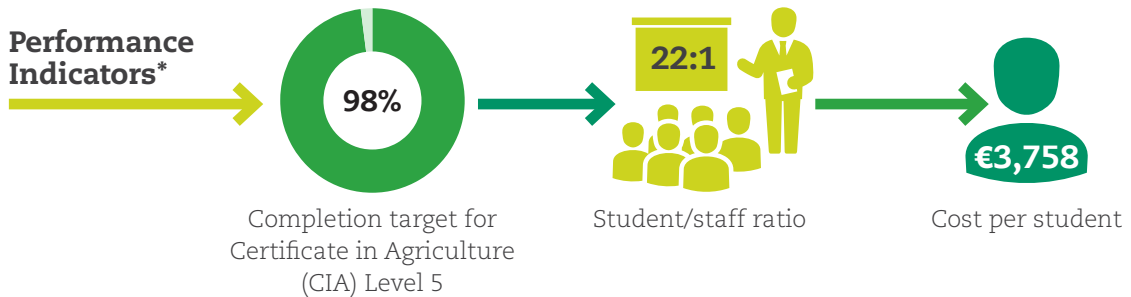
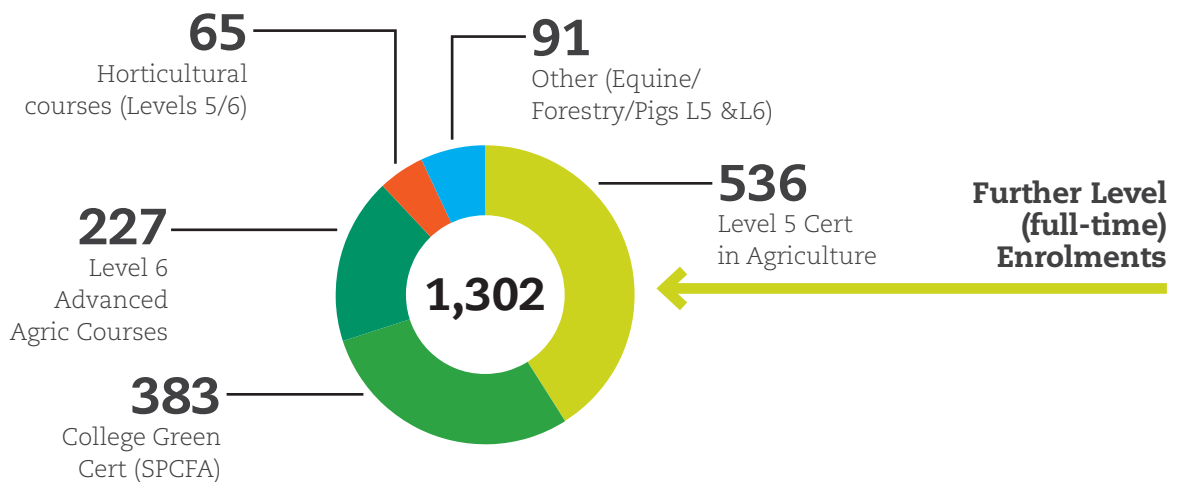
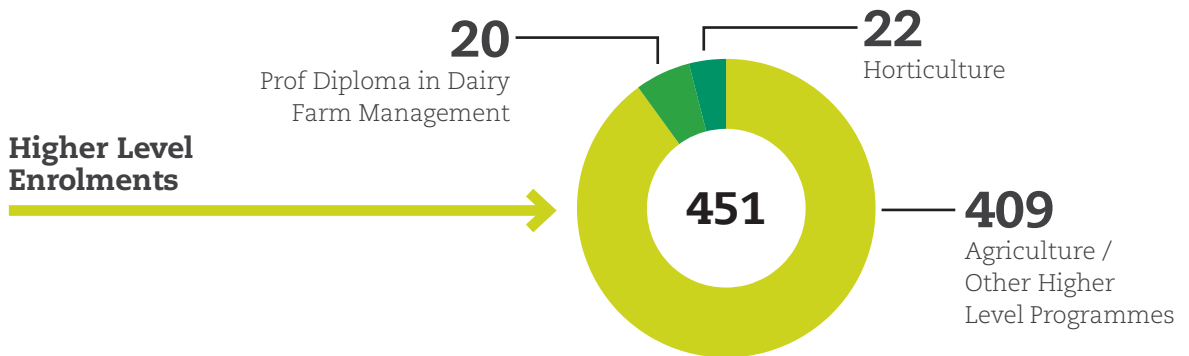


Pictured at the 2017 Education Staff Conference 2017 'Positioning Teagasc Education for 2050' are Tony Pettit, Teagasc Head of Education, Dr. Terry Barrett, Prof. Tom Kelly, Dr. Domhnall Fleming, and Frank Murphy, Head of Teagasc Curriculum Development.

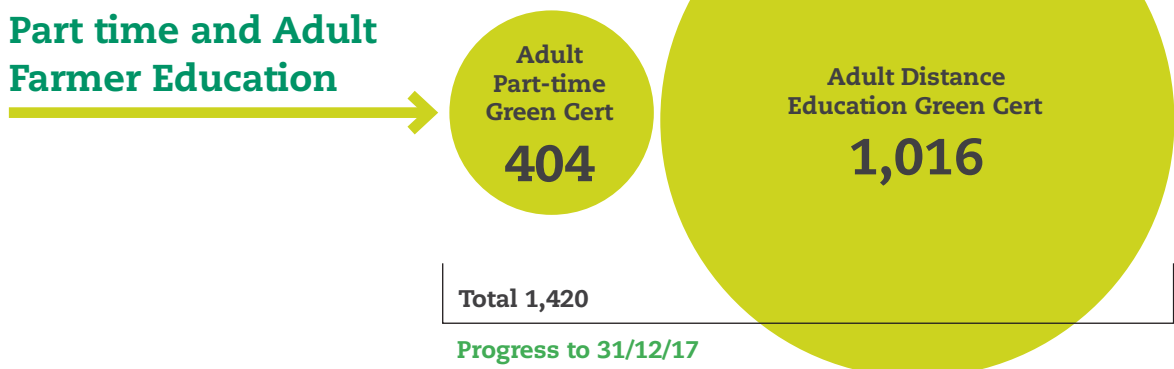


Farmers who completed the Teagasc/UCD Michael Smurfit course in Business Strategy at their graduation ceremony in UCD, Belfield, with Professor Gerry Boyle of Teagasc (red) and Professor Pat Gibbons of the UCD Michael Smurfit Business School.

Activity Indicators for Agricultural and Horticultural Colleges Relating to Full-time Awards



Part time and Adult Farmer Education





Brexit and the Irish Agri-food sector

Dr. Kevin Hanrahan, Head Rural Economy Development Programme

The UK decision to leave the EU and uncertainty relating to the nature of the economic relationship between the UK and the EU continued through 2017 and into 2018. Negotiations between the EU (represented by the European Commission) and the UK Government on issues including the nature of the future EU-UK trade relationships are ongoing as part of the Article 50 withdrawal process. The impact on Irish agriculture and the wider Irish agri-food sector of the UK exit from the EU (Brexit) will be negative. The outcome of the negotiations will determine the severity of the economic impact on the Irish agri-food economy. Teagasc is undertaking research and providing analysis on an on-going basis to the Irish Government and the wider Irish agri-food sector on the impact of Brexit on Irish agriculture and farm incomes.

Teagasc analysis has identified four channels through which Brexit will, in the medium term, have a negative impact on the Irish agri-food sector and Irish farm incomes.

The first channel is through the impact of the Brexit decision on the euro/sterling currency exchange rate. The decline in the value of the

pound sterling relative to the euro since the June 2016 referendum has already had a negative impact on the value (in euro) of Irish exports to the UK and reduced the competitiveness of Irish goods on the UK market.

The second channel through which Brexit impacts Irish agriculture is via the impact of Brexit on the EU budget and the resources available to the Common Agricultural Policy (CAP). Recent proposals from the European Commission in relation to the EU Multiannual Financial Framework (MFF) for the period 2021-2027 have sought to mitigate the impact of the Brexit on the overall EU budget. Ongoing negotiations relating to this budget and regarding the future shape of the CAP post 2020 will determine the magnitude of this EU policy related Brexit impact.

The third channel through which Brexit will affect the Irish agri-food sector will be via changes to the nature of the trade relationship between the UK and the EU. EU-UK trade is currently unencumbered by either tariff or regulatory or custom barriers because of our mutual membership of the EU Customs Union

and Single Market. The most benign Brexit outcome from the perspective of the Irish agri-food sector is one in which the UK leaves the EU but chooses to remain part of the Single Market and the EU Customs Union. It seems likely however that this outcome will not be possible and that some tariff and non-tariff barriers to trade between the UK and the EU (including Ireland) will emerge given the UK intention to leave the EU Single Market and Customs Union.

The magnitude of the Brexit tariff and non-tariff barriers to trade between the EU and the UK (and their evolution in the future) and the associated loss of preferential market access will be determined by i) whether or not the EU and the UK agree a withdrawal agreement, ii) the content of the withdrawal agreement reached (if any), and iii) UK policy choices relating to trade relationships with non-EU countries and on-going alignment with the EU regulatory environment (rules of the Single Market).

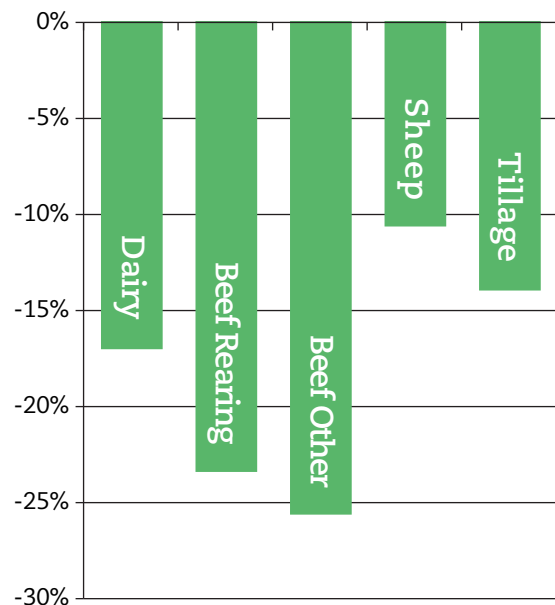
The loss (or diminution) of preferential market access to the UK as a result of Brexit will have a negative impact on the value of and volume of Irish exports to the UK. The attractiveness of Irish goods to UK importers will be negatively affected by Brexit, either because of the imposition of tariff and non-tariff barriers on EU-UK trade or because of the lowering of tariff and non-tariff barriers by the UK on imports into the UK from non-EU countries. Irish agri-food output that in the absence of Brexit would have been exported to the UK will as a result of Brexit be diverted to remaining EU and Rest of World markets. As a result of Brexit the value and volume of Irish agri-food exports to the UK will decline. The value per tonne of agri-food exports to other EU markets is also likely to decline as commodities previously exported to the UK are diverted to EU27 markets and depress prices in these markets relative to the levels that might have been expected to prevail if Brexit was not to occur.

Teagasc analysis has shown that the impact of Brexit on Irish family farm incomes will be significant and negative. The magnitude of the negative impact on Irish farm incomes varies by farm system and also, within, farm systems.

Variation in the impact of Brexit across Irish farm systems will be due to the differing dependence on the UK market and because of the differences across commodities in the magnitude of current tariff protection vis-à-vis world markets. Those farm systems producing output that is predominantly exported to the

UK and/or producing output that is afforded high levels of tariff protection within the EU are likely to see the largest declines in farm gate prices. Farm systems producing output that has lower levels of tariff protection and/or a lower dependence on the UK market are likely to experience smaller negative price impacts as a result of Brexit.

Brexit Farm Gate Price Shock: Static Impact Analysis using Teagasc NFS data (2013-2015)



Source: Donnellan, Hanrahan and Thorne (2017)

Teagasc scenario analysis of the potential impact of Brexit on Irish agri-food trade and output, input use and income is ongoing. Given the continuing uncertainty regarding future tariff and non-tariff barriers to trade between the EU and the UK, the scenarios being analysed by Teagasc are designed to be illustrative of what could happen as a result of Brexit under specific assumptions about the outcome nature of the future trade relationship between the EU and the UK. The scenarios being analysed include ones where the UK remains within the Single Market and Customs Union, where the UK leaves the EU and fails to agree a Free Trade agreement with the EU and scenarios and where the UK leaves the EU but enters into a free trade agreement with the EU under which preferential access is granted to each other markets. The results of Teagasc analysis of Brexit and its impact on Irish agriculture and farm incomes will continue to be provided to Government and will be disseminated to stakeholders through the active participation of Teagasc REDP researchers in Teagasc stakeholder and other events.



Goal

2

**Support sustainable
farming and the
environment**

SUSTAINABILITY

Sustainability Support and Advisory Programme



Pictured at the launch of the Sustainability Support and Advisory Programme were left to right, front row: John McCarthy (Secretary General, Department of Housing, Planning, Community and Local Government); Eoghan Murphy, TD, (Minister for Housing, Planning and Local Government); Micheal Creed, TD, (Minister for Agriculture, Food and the Marine), Aidan O'Driscoll (Secretary General, Department of Agriculture, Food and the Marine). Back row: Richard Kennedy (Deputy President, IFA), Michael Maloney (Director of Quality Assurance, Bord Bia), Laura Burke (Director General, EPA), Collette Byrne (Chief Executive, Kilkenny County Council), Jim Woulfe (CEO Dairygold / Chairperson, Dairy Industry Ireland), Prof. Gerry Boyle (Director, Teagasc), James Healy (National President, Macra na Feirme).

The Minister for Agriculture, Food and the Marine, Mr. Michael Creed, TD, and the Minister for Housing, Planning and Local Government, Mr. Eoghan Murphy, TD, together with Jim Woulfe, Chairperson of Dairy Industry Ireland, launched an innovative collaboration between Government and industry to promote and encourage sustainable farming while meeting stringent water quality requirements.

The 'Sustainability Support and Advisory Programme' is a new approach to achieving improvement in water quality involving the establishment and joint funding of a resource of 30 Agricultural Sustainability Advisors.

Commenting at the launch, Minister Murphy and Minister Creed stated: "We are delighted to be launching the Sustainability Support and Advisory Programme today. This initiative is another demonstration of the Government's commitment to delivering on the environmental challenges we face. It will be a further step towards putting yet more substance behind our green credentials."

Welcoming the Programme, Minister Creed said:

"This Programme shows that the ongoing development of the agricultural sector, which is critically important to rural communities, and enhanced environmental outcomes can be achieved concurrently."

The Programme supports the goals of the Food Wise 2025 strategy by facilitating increased productivity hand-in-hand with a more sustainable sector. This sustainability and efficiency will be achieved through improved nutrient management with more targeted use of fertiliser, better farmyard practice, more widespread use of sustainability approaches developed by Teagasc and the development of new approaches in critical source areas.

Through a commitment from both Departments and support by industry, the 30 advisors will work within a unified partnership structure which encompasses Teagasc, the Co-ops and LAWCO - the local authorities Water and Communities Office. The new Sustainability Advisors will proactively advise and work with farmers to protect and improve water quality. The Programme will draw on the experience and resources of key sectoral and industry stakeholders, including the two Departments, the local authorities, the Dairy Co-ops, Teagasc, Bord Bia and the farm organisations.

Farm Sustainability Report

A new sustainability report from Teagasc demonstrates the economic, environmental and social sustainability of Irish farms.

The 2015 Sustainability Report is based on data collected as part of the Teagasc 2015 National Farm Survey, and uses this information to quantify the performance of Irish farms over time in a number of areas relevant to agricultural sustainability.

A particular advantage of the report is that it links sustainability with farm profitability, demonstrating how the adoption of new technologies and management practices can reduce environmental impacts and increase profitability.

The report shows that the most profitable farms tend to have lower agricultural greenhouse gas emissions per unit of milk or meat produced, highlighting the positive impact of the practices promoted through the Teagasc – Bord Bia Carbon

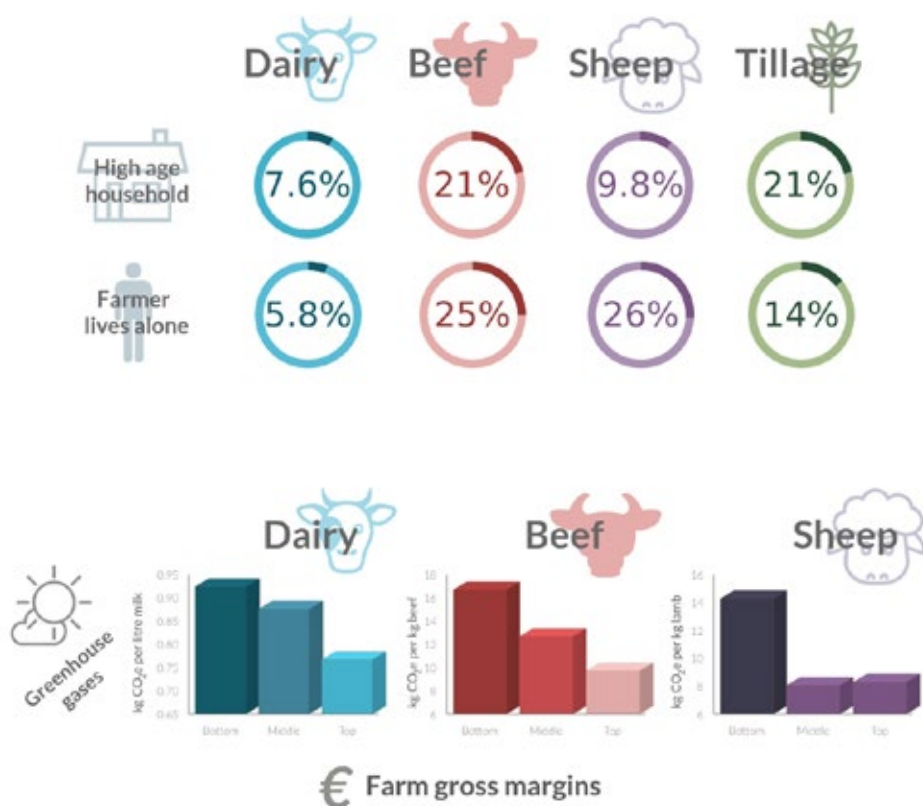


Fig 2: Sustainability indicators about Irish farms, by enterprise, from the Teagasc 2015 Sustainability Report.

Navigator. Similarly, the Sustainability Report shows that the most profitable dairy farms are achieving more milk production for every kg of excess nitrogen applied, illustrating the importance of good farm nutrient management.

The report also draws attention to the social sustainability of farms, with indicators relating to quality of life and working conditions, highlighting where farmers may be at risk of isolation, or where the age of farm families is high, indicative of farms where arranging farm succession may become an issue.

Sustainable Dairy Farm

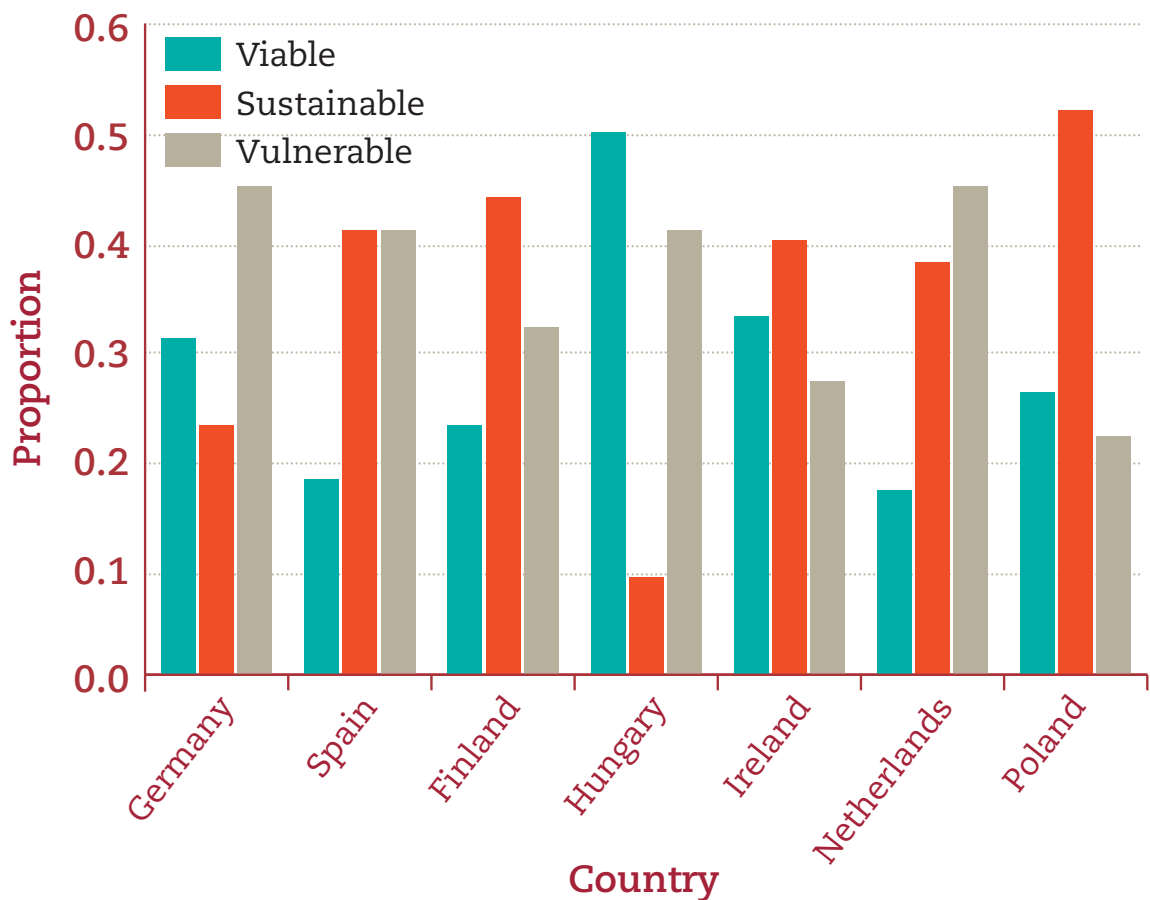
Teagasc and Glanbia Ireland held an Open Day for dairy farmers on the Kildalton Open Source Sustainable Demonstration Farm in October.

The dairy unit at the Teagasc Kildalton Agricultural College, Piltown, Co Kilkenny, is a showcase for sustainable dairying which has been set up in a joint initiative between Teagasc

and Glanbia Ingredients Ireland (GII). The farm demonstrates the best sustainable management practices that will deliver social, economic and environmental benefits on Irish dairy farms.

New farm sustainability indicators have been developed by Teagasc researchers in collaboration with EU counterparts within a project entitled FLINT (Farm Level Indicators for New Policy Topics). Policymakers need to evaluate the trade-offs between different policy objectives, e.g., farm income, environmental impacts and food security.

The FLINT project showed that it is feasible to collect sustainability data within the Farm Accountancy Data Network infrastructure and that policy evaluation in areas such as cross-compliance, greening, climate change, soil management, water, biodiversity, rural development/quality of life, and innovation can be improved with access to better data, while also providing sustainability credentials for the agri-food sector.



ENVIRONMENT



Prof. Tom Kelly, Mr. Paul Good, John Dawson, Dr. Kevin Hanrahan Head of the Teagasc Rural Economy Development Programme with colleagues Dr. Jason Loughrey and Dr. Trevor Donnellan at the launch of a Land Market Review.

GLAS

Teagasc provides a GLAS service to 15,000 clients through a service agreement with National Co-Op Farm Relief Services Limited (NCFRS). 13,500 clients continue to participate in GLAS. Nutrient management plans were completed and submitted to DAFM for 11,200 clients by the end of 2017.

Energy efficiency

The Sustainable Energy Authority of Ireland (SEAI) is collaborating with Teagasc to help dairy farmers reduce their energy use and save on electricity costs. The pilot scheme is funding high efficiency pumps which can dramatically reduce electricity consumption on dairy farms. The total fund is €250,000, with over 80 dairy farms benefiting in 2017. Energy efficient technology will save dairy farmers up to 15% on their energy bills. Projects funded provide valuable data and insights to support evidence based policy. The pilot will also help identify the right approach which can be rolled out to the broader dairy community.

Next Generation Biofuels

Within an EU Research + Development Horizon 2020 programme, Waste2Fuels, Teagasc researchers aim to convert food waste into high value products, mainly biofuels, without competing with feed or food production. The Teagasc, Ashtown, researchers Zhihang Zhang and Brijesh Tiwari are valorising agri-food wastes and by-products from fermentation for biofuels by extracting high-value by-product from them using novel green extraction technologies

such as power ultrasound-assisted extraction, microwave extraction and enzymatic extraction.

Brijesh Tiwari

Teagasc



Brijesh Tiwari is a Principal Research Officer at Teagasc Food Research Centre, Ashtown.

Brijesh completed a BSc(Hons) in Agriculture and Animal Husbandry at Govind Ballabh University of Agriculture and Technology, Pantnagar,

India, and an MSc. (Food Technology) at the Central Food Technological Research Institute, Mysore, India. He then travelled to Ireland to undertake a PhD in Biosystems Engineering at University College Dublin, which he completed in 2009. He commenced work as a Senior Research Officer in Teagasc Ashtown in 2013, after numerous university lecturing and research positions in the UK and India, and became a Principal Research Officer in Teagasc in February 2017.

Brijesh's primary research interests relate to novel food processing, extraction and preservation technologies, with a strong focus on investigation of biochemical and microbial reaction rates in food and food products.

Brijesh was born in Varanasi in India. His father (now retired) was a professor of plant pathology in India and Brijesh followed him into a career in science.

SOILS

Precise Application of Fertilisers

A large number of farmers and fertiliser industry representatives were in Teagasc, Kildalton Agricultural College, Piltown, Co Kilkenny in May for the Fertiliser Association of Ireland (FAI) – Spring Field Meeting. The event focused on good soil fertility management through precise application of fertilisers. Results from a survey of fertiliser use on Irish farms from 2005 to 2015 were also presented.

According to Dr. David Wall, leader of the Soil Fertility Research Programme at Teagasc, Johnstown Castle; “Trends in nitrogen fertiliser use have remained steady over the last decade, while there was a large decline in P and K use on farms from 2006 to 2012 with some recovery in recent years. This has led to a massive decline in soil fertility levels nationally.”

Soil and Plant Microbes

An all-Island stakeholder workshop on the soil and plant microbiome was held on Tuesday, 23 May, at the Teagasc Crops, Environment and Land use centre, Johnstown Castle, Wexford. The aim of the workshop was to identify key opportunities offered to agriculture, the environment and the bioeconomy, by developments in microbiome research.

The workshop brought together a wide range of stakeholders, with a specific interest in the soil and plant microbiome, to discuss how insights into the functioning of communities of organisms living within soils and plants could be harnessed to promote environmental and agronomic sustainability. This included researchers from across the island of Ireland, in addition to some international experts, and stakeholders from the agricultural sector, research funders and companies.

Picture: Patrick Browne



Pictured at a Microbiome stakeholder workshop which was held at Teagasc, Johnstown Castle were from (L to R): Dr. David Wall, Dr. Fiona Brennan, Professor Frank O'Mara, Teagasc, Peter Cotgreave, Dr. Fiona Doohan UCD, Dr. Tim Mauchline and Dr. Paul Cotter Teagasc.

According to Fiona Brennan, Teagasc soil microbiologist:

“The critical importance of soil and plant microbiomes in the functioning of agronomic systems and in the health of the environment cannot be overstated. In many respects they represent the engine of a whole host of soil functions. While their importance has long been known, new technologies are providing exciting and hitherto unattainable insights into the communities of organisms within soils. By understanding how these organisms function, and how they are affected by environmental, management and soil factors, there is great potential to manage soils in such a way as to utilise the benefits these microorganisms inherently bring to agriculture, while at the same time reducing environmental losses.”

RAMIRAN

Recycling of Agricultural, Municipal and Industrial Residues in Agriculture Network (RAMIRAN) is a research and expertise network focused on agronomic and environmental issues. The 17th international RAMIRAN conference was hosted by the Teagasc Crops, Environment and Land Use Programme in September. This was the first time this world-leading biannual conference has been held in Ireland.

Key themes addressed at the Conference included: crop nutrition, gaseous emissions, soil and water quality, adoption and impact, and advances in technology.



Teagasc advisor Tom Kelly, right, helped facilitate forage movement across Mayo during the fodder shortage there in early 2017.

CLIMATE

Climate Change

The impact of climate change represents a significant opportunity for Ireland's dairy sector as well as posing a threat was the conclusion of a safefood sponsored research project which surveyed dairy industry stakeholders to determine their level of awareness of the potential impacts that Climate Change could create.

Principal researcher on the project, Professor Thia Hennessy of University College Cork's Department of Food Business said: "We found that stakeholders from right across the dairy supply chain demonstrated a high level of awareness of climate change as well as a commitment to collective action to avail of any opportunities climate change may bring."

Research collaborator Dr. Trevor Donnellan of Teagasc, said; "The threats identified in the survey included: extreme weather events, the emergence of new diseases and pests. By contrast the development of unfavourable climate conditions in some of the world's key milk producing countries could offer an advantage to the Irish dairy sector, since the Irish climate is likely to be less adversely affected. One of the major recommendations of this research was that more planning is required to deal with extreme weather events."

Greenhouse Gases



Pictured at the launch of the FACCE ERA-GAS greenhouse gas research projects in Wageningen University and Research (WUR) were Órlaith Ní Choncubhair (Teagasc and Consortium Manager for FACCE ERA-GAS), Louise Fresco (President of the Executive Board of WUR), Professor Frank O'Mara (Teagasc and Coordinator of FACCE ERA-GAS), Gudrun Langthaler (Vice Chair of FACCE-JPI) and Huub Löffler (Director International and Accounts of WUR).

ECONOMICS

Brexit and Beyond



Speakers at the Agricultural Economics Society 2017 Annual Conference, Brexit and Beyond: Professor Peter Midmore, University of Aberystwyth; Dr. Noel Cawley, Chairman Teagasc along with Dr. Trevor Donnellan, Principal Research Economist, Teagasc; Dr. Tim Lloyd, President of the Agricultural Economics Society; Phil Hogan, EU Commissioner for Agriculture and Rural Development; Mairead McGuinness, MEP and Vice President of the European Parliament; Professor Alan Matthews, Department of Economics, Trinity College, Dublin and Professor Alan Swinbank, Agricultural Economics Society.

Teagasc economists were among colleagues from over 24 countries at the RDS in Dublin for the Agricultural Economics Society Annual Conference to consider the implications of Brexit on agriculture in the European Union.

Examining the potential impact of Brexit at the farm level, Dr. Fiona Thorne of Teagasc said that while all Irish farm systems would be negatively affected, the Irish beef sector appeared to be particularly vulnerable. Dr. Thorne noted that the beef sector could experience a fall in beef prices due to Brexit and also lose some of its CAP funded direct income support payments.

Teagasc economist, Trevor Donnellan, highlighted the main Brexit concerns of the agri-food sector in Ireland. He said that there was a need for arrangements that ease the transition between current EU-UK trading relationships and those that will prevail following Brexit.

Teagasc National Farm Survey 2017

**84,599
Farms**



Dairy
15,639



Cattle Rearing
19,691



Cattle Other
27,286



Sheep
12,758



Tillage
7,387

Average Family Farm Income

€31,374 Up 32%



Dairy
65%



Tillage
20%



Sheep
8%



Cattle Systems unchanged

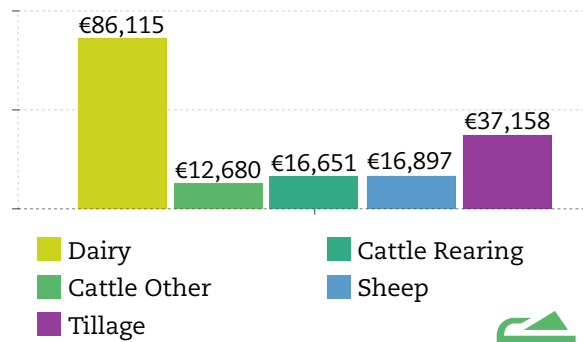


Dairy performance a key driver

€86,115

Average dairy farm income

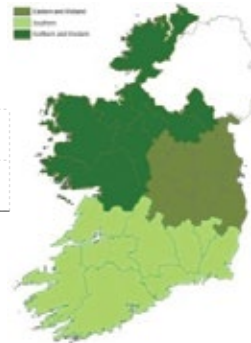
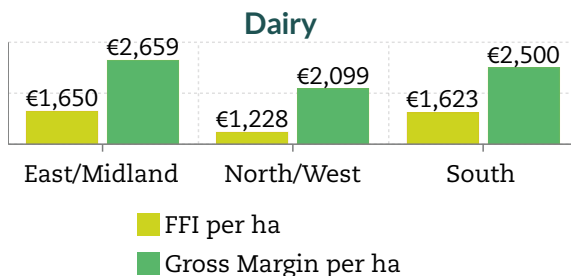
Family Farm Income by System



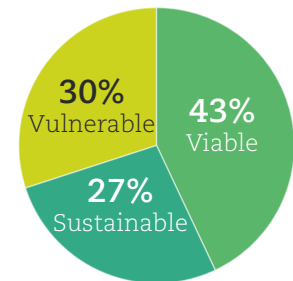
Reductions in fertiliser and feed prices



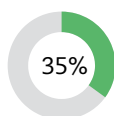
Regional analysis



Farm viability 2017



31% of farmers work off farm



35% of farms earned less than €10,000



Income on Sheep farms boosted by Sheep Welfare Scheme



€806m invested on farms in 2017 - up 17%



50% of farm investment was on dairy farms

The Teagasc National Farm Survey (NFS) has been in operation since 1972 as part of the EU FADN (Farm Accountancy Data Network). The 2017 preliminary results are based on a sample of 800 farms, representing 84,599 farms nationally

<https://www.teagasc.ie/rural-economy/rural-economy/national-farm-survey/>

International development



Pictured at the launch in Teagasc Oak Park of a Potato Manual for Africa are Dr. Lance O'Brien, Teagasc; Professor Gerry Boyle, Director of Teagasc; John Weakliam, CEO of Vita; Kate Foley from Iverk Produce; and John Burke, author.

Irish international development agency Vita launched – “Growing the Potato Crop” by former Teagasc colleague and renowned potato expert John Burke.

The book focusses on improving potato productivity in sub Saharan Africa. It is a training manual for farmers, crop specialists, agronomists and extension workers. It is based on John's own expertise, accumulated through

his vast experience of working with Teagasc, Vita and the potato farmers of Ethiopia and Eritrea.

The printing of the book was sponsored by potato grower John O'Shea from Iverk Produce in Kilkenny who has been a key driver of Vita's potato programme from its start in 2011, alongside other members of the Irish Potato Federation.

New Partnership



Minister of State for the Diaspora and International Development, Mr. Joe McHugh, TD, and Teagasc Director Professor Gerry Boyle, today signed an agreement to renew the partnership between Irish Aid and Teagasc, to enhance Ireland's contribution to global agriculture development.



Conor Coakley from Co. Cork, the Teagasc/FBD Insurance Student of the Year 2017 pictured with Minister for Agriculture, Food and the Marine, Michael Creed, TD, Fiona Muldoon, Chief Executive of FBD Insurance and Professor Gerry Boyle.

At the Teagasc/FBD Insurance Student of the Year Awards Minister for Agriculture, Food and the Marine, Michael Creed, TD, said:

“A significant pillar of our FoodWise 2025 ambitions is ensuring that the sector has the appropriate human capital inside and outside the farm gate to deliver upon its promise. Educating and training the brightest and best young farmers is a crucial part of this approach. I am confident that notwithstanding various challenges, the future is very bright indeed for farming in Ireland as reflected by the calibre of those students who received awards.”



Goal

3

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

HEALTH AND SAFETY

In 2017 a total of 24 people died in accidents on Irish farms which was an increase of three over 2016. Teagasc works closely with a number of partners to promote Health and Safety among rural stakeholders. Activities include:

- Updated protocols on health and safety management for public events were issued to all Teagasc advisory staff, with the responsibilities of safety officers in the Regions updated and clarified. Level 6 QQI training has commenced for safety officers. Teagasc won a tender to provide health and safety training to all KT group facilitators, and this training programme was completed. 10,000 KT group participants completed a health and safety / work organisation plan. Teagasc continues to provide H&S courses for TAMS applicants as required.
- The Health and Safety Authority (HSA) published a revised version of the “Code of Practice for Preventing Injury and Occupational Ill-Health in Agriculture” (Farm Safety Code of Practice). The revised code was developed with assistance from the Farm Safety Partnership and Teagasc.
- Minister of State for Trade, Employment, Business, EU Digital Single Market and Data Protection, Pat Breen, TD, launched a new schedule for training on the revised ‘Farm Safety Code of Practice’. The launch took place at the Health and Safety Authority (HSA) exhibit at the National Ploughing Championships in September. The training was hosted by Teagasc, nationwide in autumn 2017.
- Teagasc and Mental Health Ireland (MHI) launched a joint publication ‘Coping with the Pressures of Farming’. This publication is a valuable reference for those dealing with farmers on a day-to-day basis such as agricultural advisors, vets, DAFM officials, banks, suppliers, accountants and solicitors who must be aware of the mental health impacts of financial burdens and other issues affecting the mental health of rural dwellers.
- Professor Susan Brumby, Director of the Australian Centre for Farmer Health, delivered a seminar on her work at the Teagasc, Head Office, Oak Park, Carlow in May.

Pictured are; Professor Jim Phelan, Chairman of the Farm Safety Partnership, Martin O'Halloran, HSA Chief Executive and Professor Gerry Boyle, Director of Teagasc.

- The Teagasc National Safety Conference took place in Clare in November. The Keynote address was given by Professor James Phelan, Health and Safety Authority board member, on the topic ‘Understanding Fatality Trends for Future Action’. County Clare safety award winning farmer, Michael Callinan, outlined his approach to farm safety. Frank Power, HSA Ergonomist, described strategies to prevent back injuries among farmers.

The farm safety event focussed on:

- Dangers associated with use of farm tractor and quads on farms. Persons being knocked down or crushed in and around farmyards is the most frequent cause of accidents. Tractor visibility issues and ensuring that vehicles are secured were emphasised at the event.
- New regulations now apply to the road use of tractors, trailers and implements. The Gardaí were on hand to give practical advice on the application of the new requirements.
- Health and Safety Authority staff were present to describe Farm Building Maintenance requirements, working at heights, safety with slurry and farm electrical safety.
- Livestock safety, with particular reference to safety around calving time, was demonstrated.
- Practical aspects of chain sawing were demonstrated, including choice of chainsaw protective wear and chainsaw standards and maintenance. The HSA guidelines, training requirements and limitations for tree felling were outlined.

Patrick Griffin, HSA, Senior Inspector in the Operational Compliance and Prevention Division, closed the farm safety event by giving a short talk on practical strategies that farmers can take to prevent farm accidents and ill health.

Teagasc Health and Safety Specialist, John McNamara, said that farmer management of health and safety issues is the essential component in preventing farm accidents. Short-term behavioural actions are needed to ensure safety. On a longer-term basis, farms need to be managed to minimise risk. He stated that under the DAFM TAMS11 scheme considerable grant aid is available to implement health and safety improvement measures on farms.

“One Health”

Better understanding of the connection between human and animal health is vital if lethal outbreaks of disease are to be prevented in future in developing countries, a conference in Dublin to mark World Food Day (WFD), heard.

The inter-connectedness of human health, agriculture, wildlife and the environment was the focus of the event, hosted by the Irish Forum for International Agricultural Development (IFIAD) at the Department of Foreign Affairs in Dublin in October.

“Six out of ten infectious diseases in humans are spread from animals,” said Dr. Lance O’Brien of Teagasc, who is chair of IFIAD. “The issue of ‘One Health’ is therefore critically important to the farming sector, the health profession, research organisations, and agencies involved in development work overseas. In Ireland, we must first of all recognize this, and then take steps to work together more closely.”

“We know about the links between livestock and infections such as TB and BSE in the human population. Overseas, infections that have spread from animals to humans, including Avian flu, Salmonella, Lassa Fever, Nipah Virus, Lyme disease, Ebola and of course HIV, have caused large numbers of fatalities.”

The Irish Forum for International Agricultural Development is a voluntary organisation that brings together representatives from Irish agriculture, the agri-food sector, academia and international development to share knowledge and good practices for the benefit of agricultural development programming and policy in support of Ireland’s development objectives.

Farm Safety Events

Teagasc, in association with the Health and Safety Authority (H.S.A.), held a practical Farm Safety half-day Event at Teagasc, Clonakilty Agricultural College, Co. Cork in November.



Speaker at the Teagasc National Farm Safety Conference: Prof. Tom Kelly, Minister of State for Trade, Employment, Business, EU digital Single Market and Data Protection, Pat Breen, TD, farmer Michael Callinan, Tom Coughlan, HSA Board Chair.



RURAL DEVELOPMENT

Transferring the Family Farm



Seminars on Transferring The Family Farm were held at Clonmel, Blarney, Dungarvan, Enniscorthy, Mullingar, Atherny, and Inishowen. These events proved very popular with total attendance reaching 1,344.

Economic Recovery

Researchers at NUI Galway and Teagasc have undertaken a research study using 2016 Census data to understand the differential Urban-Rural Impact of the economic recovery. A paper based on this study was presented at a seminar hosted by Teagasc entitled Rural Viability: Challenges and Opportunities, at Teagasc Ashtown, in October 2017.

The report highlighted that although the economy has been in recovery for over five years since 2012, the impact has not been consistent across the country. Professor Cathal O'Donoghue of NUI Galway reported a long-term trend of population decline in rural areas from 36% in 1996 to 30% in 2016. Rural towns have increased their share from 26% to 34%, while the cities have declined slightly in share from 38% to 37%. The shares have remained static since the onset of the economic recovery.

While the research paints a stark picture in relation to the challenges for rural areas, opportunities for diversification and small-business start-ups in rural areas were identified by Dr. Mary Ryan, Programme Coordinator for Rural Development in Teagasc.

Dr. Ryan highlighted some of the opportunities supported by Teagasc, LEADER and Local Enterprise Offices as part of the Teagasc Options programme, which provides information to farm families and rural dwellers in relation to on and off-farm diversification opportunities, training and up-skilling for employment opportunities and improving farm and household financial management.

DIVERSIFICATION

Options

An analysis of over 1,000 participants in the Teagasc Options programme analysed by Dr. Mary Ryan revealed that the areas where participants see most potential include tourism (accommodation and activity tourism), artisan food, business start-ups, organics and improving financial management skills.

Expand Your Horizons

An innovative series of evening seminars titled 'Expand Your Horizons 2017', was jointly organised by Teagasc and the National Rural Network (NRN). The aim of the events was to foster increased dialogue and information sharing in rural areas.

The 28 evening seminars, which took place across the country, aimed to increase awareness of the supports available from rural agencies, for rural dwellers who wish to explore new possibilities for improved economic and social development for their own lives and for the betterment of their community.

Organic farming

A nationwide series of eight organic demonstration farm walks organised by Teagasc, in conjunction with the Department of Agriculture, Food, and the Marine, showcased successful organic operations across a range of enterprises.

Eight dedicated organic beef KT groups were facilitated by Teagasc organic contact advisors with support from Teagasc organic specialists.

Teagasc advisor Padraig Fitzgerald (left) with the Croom, Co Limerick, Organic Beef Discussion Group.



Économusée



Mayo's first Économusée was officially opened in October, at Kelly's Butchers, Newport by Maireád Lavery, Editor Irish Country Living – Irish Farmers Journal. It's just the third food Économusée in Ireland.

Dr. Kevin Heanue (left) who is leading the project for Teagasc commented, "The ÉCONOMUSÉE concept is an innovative model of rural enterprise support which helps artisan producers diversify their businesses into the cultural tourism market by providing them with a six step template to help them structure the visitor experience and also links them with an international network of like-minded artisan producers. The network will benefit greatly from a producer with the reputation of Kelly's becoming a member."

Equine husbandry

Teagasc equine husbandry specialists supported the industry in 2017 by working with private group facilitators in: Nutrition & Grassland Management, Capoull Oir breeding index, Health and safety. They held autumn demonstrations on: "Breeding the High Performance Horse" and "Breeding the Traditional Horse" which attracted over 200 participants.

They also facilitated a five-day educational tour to Germany including Holstein stud book stallion inspections and stud farm visits.

A Level 7 degree in Stud Farm Management Apprenticeship was approved and launched in 2017.



Happy farmers

In a scientific paper published in the Journal of Agricultural Economics Teagasc economists Emma Dillon, Kevin Heanue and David Meredith in the Rural Economy Development Programme, Teagasc, (together with Peter Howley of the University of York) reported on factors influencing how satisfied farmers are with their quality of life.

Their research found that farm income, subjective perceptions relating to the adequacy of household income, debt, health and personal characteristics such as age and relationship status are significantly associated with farmers' self-reported life satisfaction.

While significantly associated with farm income, farm size, farm type and the presence of a farm successor were not found to be significantly related with life satisfaction. The results suggested that farmers who are more risk-averse enjoy significantly lower levels of both life satisfaction and farm income than their more risk-seeking or risk-neutral counterparts.

The authors suggested that, in the same way that risk aversion inhibits farmers from making choices that could lead to an increase in their income, it may also constrain farmers from engaging in certain types of behaviours that could lead to an increase in their self-reported quality of life.

They concluded that while farm income is significantly related to self-reported life satisfaction, the direct correlation between these variables is weak, suggesting that farmer life satisfaction can be distinct from business success.

Food Supply Chains

Teagasc is the Irish partner in sister projects Short Food Supply Chains (SKIN) and CERERE (Cereal Renaissance in Rural Europe) both funded by Horizon 2020. Totalling in value at €4 million, the projects bring Irish farmers and innovation support professionals in direct contact with the best available knowledge on good practices for the establishment and operation of Short Food Supply Chains.

The aim is to generate practice-ready knowledge for producers to enter into arrangements that support their economic viability. Increasingly, primary producers are improving their profitability by reducing costs but also by adding value through strategies such as demonstrating commitment to environmental principles and highlighting special social and cultural significance.

BIA Innovator Campus

BIA Innovator Campus CLG supported by Galway County Council and Teagasc was awarded just under €2.5 million from Enterprise Ireland as part of the Regional Development Fund announced in December 2017 by Heather Humphreys, TD, Minister for Business, Enterprise, and Innovation.

The project will be rolled out over three years and is due to commence in 2018. It will create 360+ jobs in over 40 businesses across the West of Ireland, providing much needed facilities to help the food industry in the West.

Galway and the West of Ireland has been designated as European Region of Gastronomy for 2018. Both Galway County Council and Teagasc are two of the four key partners leading this designation, working closely with Galway City Council and GMIT.



Dr. Maeve Henchion, Teagasc, with Bart Bonsall, TCBB RESOURCE, Dr. Laura Devaney, Teagasc, Dr. Kevin McDonnell, University College Dublin, and Paul O'Reilly, Dublin Institute of Technology, who were speaking at the final dissemination event of the BioÉire project, which took place Monday 20th March, in the Teagasc Food Research Centre in Ashtown.

BioÉire

BioÉire was launched in April 2015, funded by the Department of Agriculture, Food and the Marine, to provide part of the knowledge base necessary to develop a national bioeconomy strategy for Ireland. The project was led by Teagasc, with partners across UCD, DIT and tcbb RESOURCE.

For Dr. Maeve Henchion of Teagasc, Principal Investigator on BioÉire, government agreement on a national policy statement on the bioeconomy in December 2017 marked the end of a high impact two-year desk study.

“Our abundant natural resource base and innovative technological capacity are natural strengths for Ireland which will help us avail of the significant market opportunities that exist within the bioeconomy and also in helping us to move towards a more sustainable economic future,” she concluded.

Damien Frewer

College Lecturer, Teagasc Kildalton.



Damian completed a two year certificate in agricultural science in WIT and then completed an Ag science degree in UCD, graduating in 2001. He then completed a Masters in Crop Science in UCD (Lyons estate). Following

that he worked as a research assistant in Lyons estate carrying out crop research trials.

In 2004 Damian joined the Department of Agriculture as an Assistant Agricultural Inspector and spent four years working on research funding.

Since 2008 he has been teaching in Teagasc Kildalton College. He is joint course coordinator for the Advanced Machinery and Crop Management course and manages the tillage enterprise. He teaches Level 5 and 6 agriculture students as well as agriculture and agricultural science students from WIT.

HUMAN NUTRITION

China

Teagasc outlined its dairy and nutrition research to Chinese food companies at seminars organised by Enterprise Ireland in Shanghai and Beijing in China in February. The seminars were planned to promote Ireland's dairy product offerings on the Chinese market and to champion Ireland as a location for Chinese investment in the dairy industry.

Representatives from Glanbia Ingredients Ireland, Kerry, Ornua, Aurivo, Carbery, and Dairygold also attended the two seminars. Apart from Teagasc, presentations were also made by representatives from Moorepark Technology Limited, the APC Microbiome Institute, Food for Health Ireland, Bord Bia, Department of Agriculture, Food and the Marine and Enterprise Ireland and the Irish Embassy in Beijing.

The seminars provided an opportunity to outline to Chinese Dairy and Infant Formula Manufacturing companies details of the exciting areas of dairy and nutrition research happening in Ireland, and how Chinese companies can collaborate with Ireland's Dairy and Nutrition Centres of Excellence.



Pictured at the Teagasc Food Gateways event in China were: Dr. Pat Dillon, Head of Teagasc animal and Grassland, Research and Innovation programme; Dr. Mark Fenelon, Head of the Teagasc Food Research Programme; Catherine Stanton, Teagasc Food research; Prof. Gerry Boyle, Teagasc Director; and Mr. Song Miao, Teagasc Food Research.

Dairy Consumption and Health

Researchers in Teagasc and UCC are examining how dairy foods are incorporated into our diets by analysing the National Adult Nutrition Survey, which contains details of the consumption patterns of over 1,500 Irish adults.

The researchers found that nearly 99% of the population included dairy products in their diet; milk being the most widely consumed product. On average, Irish adults meet the dietary recommendations for dairy food and are consuming a glass of milk, a portion of cheese and a pot of yogurt most days of the week.

However, when grouped by the type and pattern of dairy foods consumed, the research shows that not all consumers eat dairy in the same way. Some people, generally sport-orientated men, tend to drink more than a pint of full fat milk a day while not consuming most other dairy products such as cheese or yogurt. Younger consumers prefer just cheese, while more women prefer to eat yogurts. Most of those who consumed high amounts of dairy foods were motivated to follow a healthy diet. Nearly a quarter of the population consumed very little dairy products while others only used it in tea and coffee.

However, nearly one quarter of Irish adults consume very little dairy products at less than 100g per day, well below the recommended three servings from the milk cheese and yogurt food group. These consumers need to ensure that they consume adequate calcium to maintain bone health and prevent health issues such as osteoporosis later in life.

Identifying these profiles of dairy consumers can present exciting opportunities for new product development by consumers with tailored dairy products to suit their dietary targeting preferences and requirements.

Tackling Obesity

According to a Health Ireland survey in 2015, 60% of the population aged 15 years and over are now either overweight or obese. A team of Teagasc researchers, led by Kanishka Nilaweera at Teagasc Ashtown, have shown that dietary whey proteins reduce body weight gain. They have identified that Whey Protein Isolate (WPI) can influence the expression of genes involved in glucose transport and fatty acid deposition.

Also, the composition of gut microbiota was altered, with populations linked to the development of obesity reduced in abundance in the group receiving WPI. The data suggest that reduced sugar intake and consuming whey may help to reduce weight.



Teagasc Walsh Fellow
Sinead Morrin, winner
of the RDS medal 2017

Goal

4



TEAGASC GOLD MEDAL

The 2017 winner of the Teagasc Gold Medal is Connie Conway. The Teagasc Gold Medal is awarded on an annual basis to a member of staff who has made an exceptional contribution to Teagasc and to the agriculture and food sectors. Connie is the Administrative Officer for the Teagasc Crops, Environment and Land Use Research Programme.

Teagasc Chairman, Dr. Noel Cawley, presented Connie with the Gold Medal at the Authority's March meeting in Oak Park, Carlow. In presenting the medal, Dr. Cawley said: "Connie Conway was awarded the Teagasc Gold Medal for her unparalleled service to the organisation in an administration role; a role that has been characterised by honest effort, flexibility, teamwork and a tremendous desire to support the organisation in carrying out its remit. She is a very worthy recipient of the Teagasc Gold Medal."

The Teagasc Authority also recognised the contributions of John O'Connor, Technician at Teagasc Kildalton College, and Vincent O'Sullivan, ICT Applications Analyst based in Teagasc Head Office in Carlow. Both John and Vincent have made significant contributions in their respective fields to the organisation during their professional careers. The Teagasc Chairman presented John and Vincent with Silver Medals.



Pictured at the opening of a new extension at Teagasc's Middleton Advisory Office - Dermot McCarthy Head of Teagasc Advisory Services, Ger McMahon, Regional Manager, David Stanton TD, Minister of State for Equality, Immigration and Integration and Teagasc Director, Professor Gerry Boyle.

People Strategy

The Teagasc People Strategy (2018-2022) was launched on 6 December 2017. This new strategy builds on the achievements of the two previous Human Resource strategies.

This new five-year Teagasc People Strategy is focused on enablers of high performance and on new capabilities that deliver greater value for our clients, stakeholders, staff and the organisation at an individual and at a team level.

Highly engaged staff understand the importance of leading and delivering in a complex organisation and industry environment. The central focus of this strategy is based around: (i) supporting self-directed, purpose driven staff and (ii) supporting teams to utilise the strengths and capabilities of all members to the full.

New Facilities

A newly Extended Teagasc Advisory office in Midleton, Co Cork was officially opened in November by David Stanton TD, Minister of State for Equality, Immigration and Integration.

The investment of €320,000 in the extra office accommodation was necessary in Midleton as some of the staff who had moved from Farranlea Road in Cork in 2010 were accommodated in portacabins.

The Teagasc Midleton office serves an important farming area, in dairying, drystock and tillage that now extends from Youghal to Kinsale, up to Ballinhassig and to Knockraha and Glanmire. The Teagasc activities in Midleton Office catchment area include; 18 farmer Discussion Groups, 11 of which are in the Department of Agriculture, Food and the Marine's Knowledge Transfer Scheme. There are 284 farmers in Discussion Groups, facilitated from this office with around 150 discussion group meetings held on farms each year. In addition six farm walks are organised each year, and three seminars, attracting a total attendance at these events of over 2,250 farmers.

BT Young Scientists



The winners of the Teagasc special award at BTYSTE 2017, Asa Curran, Tiarnan Collins and Jack Ryan-Purcell from Schull Community College in Co. Cork, pictured with Dr. Lance O'Brien.

The winners of the Teagasc special award at BTYSTE 2017 were Asa Curran, Tiarnan Collins and Jack Ryan-Purcell from Schull Community College in Co Cork, who were also highly commended in their category placing them in the top 15% of entries. Their project investigated the potential of agroforestry to offset carbon emissions from other agricultural sources. Their science teacher and mentor is Larissa Kelly.

The Teagasc award is presented to the project that best demonstrates a thorough understanding of the science of agricultural or food production, or the use of science to improve technologies available to agricultural or food production. There were 550 projects accepted to take part in the finals this year from a total of 2,091 entries. The event took place at the RDS, Dublin, with students from 375 schools entered in the competition.

The students were prompted to undertake this project when they heard that Ireland was to face a hefty fine from the EU for failing to meet its carbon emissions reduction targets. They decided to investigate the use of agroforestry (trees are grown in combination with agriculture on the same land) as a possible solution to offsetting some of the emissions associated with agricultural production.

Working with farmer Liam Beechinor in Lyre, Clonakilty, Co Cork, they compared three different land uses for the sequestration of carbon: conventional pasture, agroforestry and conventional forestry for soil carbon. The students also looked at the amount of carbon stored in the biomass of the trees. They feel that agroforestry is an attractive way for farmers to grow trees without tying up their land in forestry for long periods of time, as agricultural activity can co-exist with tree production.

They found that 3.3% of farm emissions could be offset per year by the growth of agroforestry. They also found that agroforestry resulted in an increase in soil organic matter and therefore carbon. They concluded that agroforestry could be an attractive way for farmers to offset some of their greenhouse gas emissions by sequestering carbon, thus helping to reduce the contribution of greenhouse gases to global warming.

Walsh Fellowships

The winner of the best oral presentation and winner of RDS medal was Sinead Morrin who is based at the Teagasc Food Research Centre, Moorepark, Fermoy, and at University College Dublin. The title of her presentation was: Milkybiotics: modulating the intestinal surface to increase colonisation of health promoting bacteria. She was presented with her medal by Tom Kirley, on behalf of the RDS.

Sinead Morrin also won the Best Food research presentation and the Institute of Food Science and Technology Ireland (IFSTI) medal. She was presented with the IFSTI medal by Declan Troy.

The award for the best poster went to Zhuning Wu who is based at the Teagasc Food Research Centre, Ashtown and also works with the National University of Galway. The title of Zhuning's presentation was: biophysical, biochemical and biological properties of pepsin soluble type II collagen from mammalian and marine tissue sources for cartilage regeneration.

Fiona Hegarty

Accountant, Teagasc Moorepark.



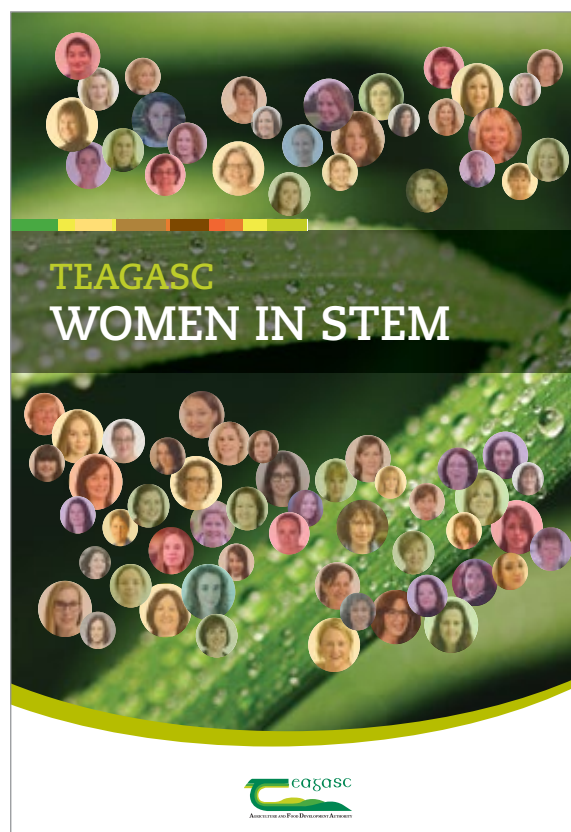
Fiona Hegarty is Research Grants Finance Manager, based in Teagasc Moorepark. She manages a team of four staff members and the contract of an external service provider, and is responsible for the provision of financial support for the

planning, management, reporting and compliance of all externally funded research projects granted to Teagasc. With Teagasc for over three years she started in a budgeting role and moving into her current position in December of 2016. She is a Certified Public Accountant and completed her accountancy training with KPMG and has worked in various finance roles with PepsiCo, IBM and the Marriott hotel group.

Science Week

Teagasc hosted a series of exciting events for Science Week (November 12-19). Teagasc research centres opened their doors for school and college visits where students were able to perform hands-on experiments and find out about careers in Science, Technology, Engineering and Mathematics (STEM).

In addition Teagasc hosted two events for the general public – in Dublin ‘A Taste of Food Science & More’ held at Teagasc Ashtown’ and Carlow ‘60 Minute Science’. Both events attracted hundreds of visitors.



Teagasc produced a new publication called Teagasc Women in STEM as part of its activities for Science Week 2017. This publication highlights women who are working in STEM (Science, Technology, Engineering and Mathematics) and will provide female students with potential role models that they can relate to. It also highlights the diverse range of careers available in agri-food research arising from studying science-related courses at second and third level. The publication shows that women scientists in Teagasc work in a very wide variety of areas across its four research programmes.

Launching **Teagasc Women in STEM**, Teagasc Director, Professor Gerry Boyle said:

“STEM skills are crucial for providing solutions to the global problems we face in today’s world. People working in STEM are changing the face of the world we live in. Studying STEM subjects provides you with key skills including critical thinking, problem solving, creativity, innovation, design and communications, all of which are highly valued by employers for many different jobs.”

Fulbright Awards

The Fulbright-Teagasc Awardee is Ms. Jaswinder Kaur, a PhD candidate with the Shannon Applied Biotechnology Centre at Limerick Institute of Technology. As a Fulbright-Teagasc Awardee, she will be based at Michigan State University, investigating the use of genome sequences of fungi and identifying crucial genes responsible for the production of putative enzymes for industrial applications.

Another successful candidate, and recipient of the prestigious Fulbright Scholar Award sponsored by the Environmental Protection Agency (EPA), was Dr. Laura Devaney, a postdoctoral researcher in the Department of Agrifood Business and Spatial Analysis in Teagasc. Dr. Devaney's work examines development pathways for the Irish and European bioeconomy working as part of the widely publicised Department of Agriculture Food and Marine funded BioÉire project and, most recently, the EU-funded CASA project. Using renewable biological resources to meet future food, feed, fuel and fibre needs, development of the bioeconomy holds the potential to reduce societal reliance on fossil

fuels and mitigate environmental impact whilst still achieving economic growth. Promising value chains identified for Ireland include the use of agricultural crops for biochemical production; marine discard for functional food and feed purposes; forestry residues for decentralised heat generation; and agricultural and food waste for bioenergy creation.

Commenting on Dr. Devaney's scholarship, Dr. Maeve Henchion, Teagasc, remarked:

"We are delighted that one of our researchers has secured this prestigious international scholarship to progress the fundamental bioeconomy research undertaken in Teagasc. Laura's work on BioÉire has fed directly into the development of the national bioeconomy policy statement for Ireland and I look forward to her return from the US to share her experience and learnings."

Dr. Emma Dillon

Teagasc Athenry.



Since joining Teagasc as an economist in 2007 Emma has been involved in a broad range of policy relevant research at the farm-level, primarily relating to agricultural sustainability and animal health. A key area of

interest relates to farmer behaviour with regard to technology adoption and she is currently leading a project in this area which explores more broadly the issue of labour input and economic efficiency on expanding dairy farms. Outside of research, Emma is a member of the Agricultural Economics Society of Ireland (AESI) council and served as secretary for a number of years.

Major honour

Prof. Gerry Boyle, Teagasc Director, was presented as Chevalier des Palmes Académiques by Mr. Jean-Pierre Thébault, Ambassador of France to Ireland at a ceremony at the French Residence in May.

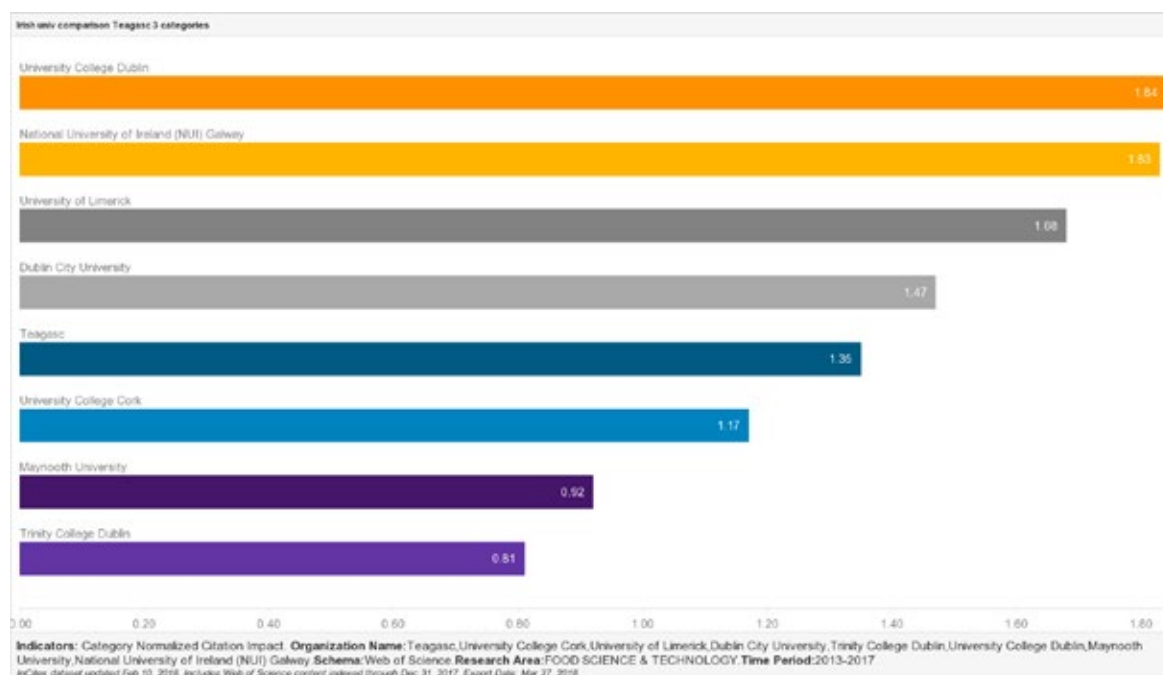
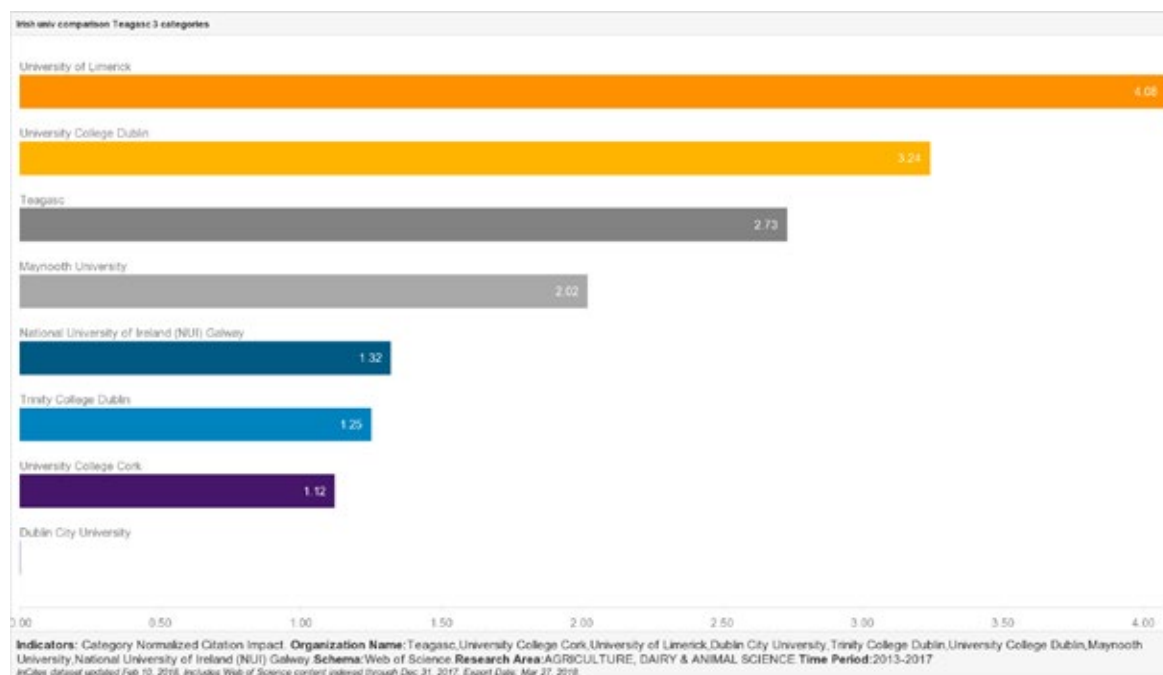


Picture on the occasion were Jean-Pierre Thébault, Ambassador of France to Ireland, Prof. Gerry Boyle, Teagasc Director, Michael Creed TD, Minister for Agriculture, Food and the Marine, Charlie Flanagan, Minister for Foreign Affairs and Dr. Noel Cawley, Chairman of Teagasc. The Ordre des Palmes Académiques (Order of Academic Palms) is an order of knighthood of France for academics and cultural and educational figures.

Citation Impact

Research organisations such as Teagasc, need to evaluate their research output to justify investments, guide decisions on the direction of future research and understand how their performance compares to similar organisations. Teagasc is monitoring its research impact and compiling that data for stakeholders. Teagasc Head Librarian, Maire Caffrey, points to Normalised Citation Impact as a key metric.

Two categories of relevance to Teagasc are: (a) Agriculture, dairy and animal sciences and (b) Food science and technology. To place our performance in a national context we can compare Teagasc performance with that of the Irish universities within these subject categories.





The Teagasc Authority was paid a visit by former Taoiseach Enda Kenny in December.



Pictured visiting the Agricultural Museum at the Teagasc Johnstown Castle campus were (LtoR); Kevin Baird, Chief Executive of the Irish Heritage Trust; Paul Kehoe TD, Minister of State at the Departments of the Taoiseach and Defence; Heather Humphries TD, Minister for Rural Development, Rural Affairs, Arts and the Gaeltacht ; Tom Doherty Chief Operations Officer, Teagasc and Frank Staples, Mayor of Wexford.



Photography competition

In 2017 the Teagasc Research Support Office held a photography competition for staff and students. Organised by Dr. Kim Reilly, the aim was to find the most innovative and compelling images showcasing the range of research and innovation activities taking place across Teagasc. The best images were used to create a highly visual calendar.

The winning image (above) by Juliette Maire who was working on a DAFM funded project shows urine and dung patch detection from grazing dairy cows in Johnstown Castle farm collected the image using an Unmanned Aerial Vehicle (UAV) from 35m height. Urine and dung patches are easily noticeable on the left field. The image was captured as part of a project investigating approaches to scaling reactive nitrogen mitigation in grasslands systems.

Annual Energy Usage Report 2017

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 82% of total consumption.

In 2017, Teagasc consumed 26,607.7 MWh of energy consisting of:

- 10,904.8 MWh of electricity or 41.0% of total energy
- 9,048.1 MWh of fossil fuel for space heating or 34.0% of total energy
- 4,763.5 MWh of vehicle fuel (agricultural, commercial transport and car fleet) or 17.9% of total energy
- 1,891.2 MWh of renewable fuels or 7.1 % of total energy

Teagasc has an on-going program in place to upgrade the building fabric of its facilities to reduce heat loss (double glazing, roof and wall insulation etc.). This program will continue in 2018. Renewable fuel sources accounted for 7.1 % of total energy use in 2017. This figure does not take account of the portion of purchased electricity which is generated from renewable resources or the renewable fuel element of purchased transport fuels. A formal energy management system has been put in place with the aim to reduce energy usage in line with national targets.



Teagasc Consolidated Financial Statements

**Report of the Authority and
Consolidated Financial Statements**

**Financial Year ended
31 December 2017**

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS
FINANCIAL YEAR ENDED 31 DECEMBER 2017

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TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

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

Opinion on financial statements

I have audited the financial statements of Teagasc for the year ending 31 December 2017 as required under the provisions of 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, including a summary of significant accounting policies.

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 at 31 December 2017 and of its income and expenditure for 2017 in accordance with Financial Reporting Standard (FRS) 102 - *The Financial Reporting Standard applicable in the UK and the Republic of Ireland*.

Basis of opinion

I conducted my audit of the financial statements in accordance with the International Standards on Auditing (ISAs) as promulgated by the International Organisation of Supreme Audit Institutions. My responsibilities under those standards are described in the appendix to this report. I am independent of Teagasc and I have fulfilled my other ethical responsibilities in accordance with the standards.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Report on information other than the financial statements, and on other matters

Teagasc has presented certain other information together with the financial statements. This comprises the annual report including the governance statement and the statement on internal control. My responsibilities to report in relation to such information, and on certain other matters upon which I report by exception, are described in the appendix to this report.

Non compliance with procurement rules

I draw attention to the statement on internal control in which the Authority discloses that, during 2017, it incurred expenditure of €1.35 million where the procurement procedures employed did not comply with public procurement guidelines. The non-compliant procurement was identified by the Authority after it reviewed the compliance status of all contracts with an annual value greater than €25,000. The statement sets out the steps taken or planned by the Authority to address the matter.

Seamus McCarthy
Comptroller and Auditor General
21 June 2018

Appendix to the report

Responsibilities of Authority members

The governance statement and Authority members' report sets out the Authority members' responsibilities. The Authority members are responsible for

- the preparation of financial statements in the form prescribed under Section 12 of the Agriculture (Research, Training and Advice) Act, 1988
- ensuring that the financial statements give a true and fair view in accordance with FRS102
- ensuring the regularity of transactions
- assessing whether the use of the going concern basis of accounting is appropriate, and
- such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Responsibilities of the Comptroller and Auditor General

I am required under the Agriculture (Research, Training and Advice) Act, 1988 to audit the financial statements of Teagasc and to report thereon to the Houses of the Oireachtas.

My objective in carrying out the audit is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement due to fraud or error. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with the ISAs, I exercise professional judgment and maintain professional scepticism throughout the audit. In doing so,

- I identify and assess the risks of material misstatement of the financial statements whether due to fraud or error; design and perform audit procedures responsive to those risks; and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- I obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal controls.
- I evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures.

- I conclude on the appropriateness of the use of the going concern basis of accounting and, based on the audit evidence obtained, on whether a material uncertainty exists related to events or conditions that may cast significant doubt on Teagasc's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my report. However, future events or conditions may cause Teagasc to cease to continue as a going concern.
- I evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

Information other than the financial statements

My opinion on the financial statements does not cover the other information presented with those statements, and I do not express any form of assurance conclusion thereon.

In connection with my audit of the financial statements, I am required under the ISAs to read the other information presented and, in doing so, consider whether the other information is materially inconsistent with the financial statements or with knowledge obtained during the audit, or if it otherwise appears to be materially misstated. If, based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact.

Reporting on other matters

My audit is conducted by reference to the special considerations which attach to State bodies in relation to their management and operation. I report if there are material matters relating to the manner in which public business has been conducted.

I seek to obtain evidence about the regularity of financial transactions in the course of audit. I report if there is any material instance where public money has not been applied for the purposes intended or where transactions did not conform to the authorities governing them.

I also report by exception if, in my opinion,

- I have not received all the information and explanations I required for my audit, or
- the accounting records were not sufficient to permit the financial statements to be readily and properly audited, or
- the financial statements are not in agreement with the accounting records.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

STATEMENT ON INTERNAL CONTROL

Scope of responsibility

On behalf of Teagasc I acknowledge the Authority's responsibility for ensuring that an effective system of internal control is maintained and operated. This responsibility takes account of the requirements of the Code of Practice for the Governance of State Bodies (2016).

Purpose of the system of internal control

The system of internal control is designed to manage risk to a tolerable level rather than to eliminate it. The system can therefore only provide reasonable and not absolute assurance that assets are safeguarded, transactions authorised and properly recorded and that material errors or irregularities are either prevented or detected in a timely way.

The system of internal control, which accords with guidance issued by the Department of Public Expenditure and Reform, has been in place in Teagasc for the year ended 31 December 2017 and up to the date of approval of the financial statements.

Capacity to handle risk

Teagasc has an Audit and Risk Committee (ARC) comprising three Authority members, one of whom is the Chair, and one external member with financial and audit expertise. The ARC met four times in 2017.

Teagasc has also established an internal audit function which is adequately resourced and conducts a programme of work agreed with the ARC.

The ARC has developed a risk management policy which sets out its risk appetite, the risk management processes in place and details the roles and responsibilities of staff in relation to risk. The policy has been issued to all staff who are expected to work within Teagasc's risk management policies, to alert management on emerging risks and control weaknesses and assume responsibility for risks and controls within their own area of work.

Risk and control framework

Teagasc has implemented a risk management system which identifies and reports key risks and the management actions being taken to address and, to the extent possible, to mitigate those risks.

A risk register is in place which identifies the key risks facing Teagasc and these have been identified, evaluated and graded according to their significance. The register is reviewed and updated by the ARC on a quarterly basis. The outcome of these assessments is used to plan and allocate resources to ensure risks are managed to an acceptable level.

The risk register details the controls and actions needed to mitigate risks and responsibility for operation of controls assigned to specific staff. I confirm that a control environment containing the following elements is in place:

- procedures for all key business processes have been documented,
- financial responsibilities have been assigned at management level with corresponding accountability,
- there is an appropriate budgeting system with an annual budget which is kept under review by senior management,
- there are systems aimed at ensuring the security of the information and communication technology systems,
- there are systems in place to safeguard the assets, and
- control procedures over grant funding to outside agencies ensure adequate control over approval of grants and monitoring and review of grantees to ensure grant funding has been applied for the purpose intended.

STATEMENT ON INTERNAL CONTROL

Ongoing monitoring and review

Formal procedures which have been established for monitoring control processes and control deficiencies are communicated to those responsible for taking corrective action and to management and the Authority, where relevant, in a timely way. I confirm that the following ongoing monitoring systems are in place:

- key risks and related controls have been identified and processes have been put in place to monitor the operation of those key controls and report any identified deficiencies,
- reporting arrangements have been established at all levels where responsibility for financial management has been assigned, and
- there are regular reviews by senior management of periodic and annual performance and financial reports which indicate performance against budgets/ forecasts.

Procurement

I confirm that Teagasc has procedures in place to ensure compliance with procurement rules and guidelines. During 2017 Teagasc reviewed the compliance status of all contracts with an annual value greater than €25,000. Of the 390 contracts reviewed, out of €42m general operating expenditure, 19 were found to be non-compliant and the annual value of these non-compliant contracts was €1.35m. Tendering exercises have since been completed for the majority of those contracts and they are now compliant. Teagasc is currently upgrading its procurement systems with a view to minimising the risk of non-compliance in future.

Review of effectiveness

I confirm that Teagasc has procedures to monitor the effectiveness of its risk management and control procedures. Teagasc's monitoring and review of the effectiveness of the system of internal financial control is informed by the work of the internal and external auditors, the Audit and Risk Committee which oversees their work and the senior management within Teagasc responsible for the development and maintenance of the internal financial control framework.

I confirm that the Authority conducted an annual review of the effectiveness of the internal controls for 2017.

Internal control issues

No weaknesses in internal control, apart from those noted under Procurement, were identified in relation to 2017 that require disclosure in the financial statements.

Dr. Noel Cawley
Chairman
11 June 2018

GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT

Governance

The Authority of Teagasc was established under the Agriculture (Research, Training and Advice) Act, 1988. The functions of the Authority are set out in the First Schedule of this Act. The Authority is accountable to the Minister for Agriculture, Food and the Marine and is responsible for ensuring good governance and performs this task by setting strategic objectives and targets and taking strategic decisions on all key business issues. The regular day-to-day management, control and direction of Teagasc are the responsibility of the Director and the senior management team. The Director and the senior management team must follow the broad strategic direction set by the Authority, and must ensure that all Authority members have a clear understanding of the key activities and decisions related to the entity, and of any significant risks likely to arise. The Director acts as a direct liaison between the Authority and management of Teagasc.

Authority responsibilities

The work and responsibilities of the Authority are set out in Agriculture (Research, Training and Advice) Act, 1988, which also contain the matters specifically reserved for Authority decision. Standing items considered by the Authority include:

- declaration of interests,
- reports from committees,
- financial reports/ management accounts,
- performance reports, and
- reserved matters.

Section 12(1) of the Agriculture (Research, Training and Advice) Act, 1988 requires the Authority of Teagasc to keep, in such form as may be approved by the Minister for Agriculture, Food and the Marine with consent of the Minister for Public Expenditure and Reform, all proper and usual accounts of money received and expended by it.

In preparing these financial statements the Authority of Teagasc is required to:

- select suitable accounting policies and 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 it will continue in operation, and
- state whether applicable accounting standards have been followed, subject to any material departures disclosed and explained in the financial statements.

The Authority is responsible for keeping adequate accounting records which disclose, with reasonable accuracy at any time, its financial position and enables it to ensure that the financial statements comply with Section 12(1) of the Agriculture (Research, Training and Advice) Act, 1988. The maintenance and integrity of the corporate and financial information on the Teagasc website is the responsibility of the Authority.

The Authority is responsible for approving the annual plan and budget. An evaluation of the performance of Teagasc by reference to the annual plan and budget was carried out on 07 March 2018.

The Authority is also responsible for safeguarding its assets and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The Authority considers that the financial statements of Teagasc give a true and fair view of the financial performance and the financial position of Teagasc at 31 December 2017.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT

Authority structure

The Authority consists of a Chairperson and ten ordinary members, all of whom are appointed by the Minister for Agriculture, Food and the Marine. The members of the Authority were appointed for a period of five years and meet on a monthly basis. The table below details the appointment period for the Authority members in place during 2017:

	Role	Date Appointed
Cawley, Dr. Noel	Chairperson	17 September 2013
Kennedy, Mr. Richard	Ordinary Member	25 May 2016
Jagoe, Mr. Alan	Ordinary Member	15 September 2013
Cooke, Mr. Tommy	Ordinary Member	05 October 2016
Gibbons, Mr. Pdraig	Ordinary Member	15 September 2013
Woulfe, Mr. Liam	Ordinary Member	29 April 2015
Murphy, Ms. Cliona	Ordinary Member	29 April 2015
Larkin, Mr. Joseph	Ordinary Member	10 October 2014
Fitzgerald, Prof. Gerald	Ordinary Member	15 September 2013
Gleeson, Mr. Brendan	Ordinary Member	09 January 2013
Pierce, Dr. Karina	Ordinary Member	09 January 2013

The Authority has established five committees, as follows:

1. Audit and Risk Committee (ARC): comprises three Authority members and one external member. The role of the ARC is to support the Authority in relation to its responsibilities for issues of risk, control and governance and associated assurance. The ARC is independent from the financial management of the organisation. In particular the committee ensures that the internal control systems including audit activities are monitored actively and independently. The ARC reports to the Authority after each meeting and formally in writing annually. The Authority members of the Audit and Risk Committee during 2017 were: Mr. Liam Woulfe, Chairperson, Mr. Pdraig Gibbons and Mr. Brendan Gleeson. There were four meetings of the ARC in 2017.

2. Operations Committee (OC): comprises four Authority members. The role of the OC is to support the Authority in reviewing and considering matters relating to the Operations Programme in Teagasc and to report and make recommendations to the Authority, as well as adopting good practice. The Authority members of this committee were: Mr. Tommy Cooke, Chairperson, Dr. Noel Cawley, Ms. Cliona Murphy and Mr. Joe Larkin. There were three meetings of the OC in 2017.

3. Advisory & Education Committee (AEC): comprises six Authority members. The role of the AEC is to support the Authority in reviewing and considering matters relating to the Advisory and Education Programmes in Teagasc and to report and make recommendations to the Authority, as well as adopting good practice. The Authority members of this committee during 2017 were: Mr. Alan Jagoe, Chairperson, Mr. Pdraig Gibbons, Mr. Joe Larkin, Mr. Richard Kennedy, Mr. Tommy Cooke and Dr. Karina Pierce. There were two meetings of the AEC in 2017.

4. Research Committee (RC): comprises five Authority members. The role of the RC is to support the Authority in reviewing and considering matters relating to the Research Programmes in Teagasc and to report and make recommendations to the Authority, as well as adopting good practice. The members of this committee during 2017 were: Dr. Karina Pierce, Chairperson, Mr. Richard Kennedy, Mr. Joe Larkin, Prof. Gerald Fitzgerald, Mr. Alan Jagoe. There were two meetings of the RC in 2017.

5. Nominations Committee (NC): comprises five Authority members. The role of the NC is to consider vacancies on the Teagasc Authority and make recommendations on how best to fill the vacancies. The members of this committee during 2017 were: Dr. Noel Cawley, Chairperson, Prof. Gerald Fitzgerald, Mr. Tommy Cooke, Dr. Karina Pierce and Mr. Pdraig Gibbons. There was one meeting of the NC in 2017.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT

Schedule of attendance, fees and expenses

Schedules of attendances at the Authority and Committee meetings for 2017 is set out below including the fees and expenses received by each member:

Authority Meetings 2017	04-Jan	01-Feb	01-Mar	05-Apr	03-May	07-Jun	05-Jul	06-Sep	04-Oct	01-Nov	06-Dec	Fees 2017 €	Expenses 2017 €
Cawley, Dr. Noel	√	√	√	√	√	√	√	√	√	√	√	20,520	2,477
Cooke, Mr. Tommy	√	√	√	√	√	√	√	√	-	√	√	11,970	665
Gibbons, Mr. Padraig	√	√	√	√	√	√	√	√	√	√	√	11,970	6,223
Gleeson, Mr. Brendan	√	√	-	-	-	√	√	-	√	√	√	-	1,369
Pierce, Dr. Karina	√	√	√	√	√	√	√	√	√	√	√	-	2,445
Fitzgerald, Prof. Gerald	√	√	√	√	√	√	√	√	√	-	√	-	1,643
Jago, Mr. Alan	-	√	√	√	-	√	√	√	√	√	√	11,970	5,572
Kennedy, Mr. Richard	√	√	√	-	√	√	√	√	√	√	√	11,970	1,676
Larkin, Mr. Joe	√	√	√	√	√	√	√	√	√	√	√	-	2,915
Murphy, Ms. Cliona	√	√	√	-	√	√	-	√	√	-	√	-	2,067
Woulfe, Mr. Liam	-	√	√	√	-	√	√	√	-	√	√	11,970	2,778
												80,370	29,830

There were four Authority members who did not receive a fee under the One Person One Salary (OPOS) principle. Ms. Cliona Murphy, who was entitled to a fee in 2015, 2016 and 2017 waived her right to the entitlement.

Research Committee	07-Jun	06-Dec
Pierce, Dr. Karina	√	√
Kennedy, Mr. Richard	-	√
Larkin, Mr. Joe	√	√
Fitzgerald, Prof. Gerald	√	√
Jago, Mr. Alan	√	√

Nominations Committee	05-Dec
Cawley, Dr. Noel	√
Fitzgerald, Prof. Gerald	√
Cooke, Mr. Tommy	√
Pierce, Dr. Karina	√
Gibbons, Mr. Padraig	√
Murphy, Ms. Cliona	√

Advisory & Education Committee	30-Mar	17-Oct
Jago, Mr. Alan	√	√
Gibbons, Mr. Padraig	√	√
Larkin, Mr. Joe	√	√
Kennedy, Mr. Richard	√	√
Cooke, Mr. Tommy	√	√
Pierce, Dr. Karina	√	√

Operations Committee	13-Mar	28-Aug	15-Dec
Cooke, Mr. Tommy	√	√	√
Cawley, Dr. Noel	√	√	-
Murphy, Ms. Cliona	√	√	√
Larkin, Mr. Joe	√	-	√

Audit & Risk Committee	24-Feb	05-Jul	25-Oct	25-Nov
Woulfe, Mr. Liam	√	√	√	√
Gibbons, Mr. Padraig	√	√	√	√
Gleeson, Mr. Brendan	-	-	√	-
O'Connell, Mr. Noel	√	√	√	√

Key Personnel Changes

There were no new members added to the Authority, and no members resigned, during 2017.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT

Disclosures required by the Code of Practice for the Governance of State Bodies (2016)

The Authority is responsible for ensuring that Teagasc has complied with the requirements of the Code of Practice for the Governance of State Bodies ("the Code"), as published by the Department of Public Expenditure and Reform in August 2016. The following disclosures are required by the Code:

Consultancy costs

Consultancy costs include the cost of external advice to management and exclude outsourced 'business-as-usual' functions.

	2017
	€'000
Legal advice	448
Financial/ tax advice	175
Pensions/ human resources	18
Architectural/ engineering advice	887
Research advice	401
Other	345
Total consultancy costs	2,274
Consultancy costs capitalised	324
Consultancy costs charged to Income and Expenditure and Retained Revenue Reserves	1,950
Total	2,274

Legal costs and settlements

The table below provides a breakdown of amounts recognised as expenditure in the reporting period in relation to legal costs, settlements and conciliation and arbitration proceedings relating to contracts with third parties. This does not include expenditure incurred in relation to general legal advice received by Teagasc which is disclosed in Consultancy costs above.

	2017
	€'000
Legal fees – legal proceedings	-
Settlements	227
Total	227

Travel and subsistence expenditure

Travel and subsistence expenditure is categorised as follows:

	2017	2016
	€'000	€'000
Domestic		
Authority	30	34
Employees	4,594	4,240
International		
Authority	-	-
Employees	770	725
	5,394	4,999

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT

Hospitality expenditure

The Income and Expenditure Account includes the following hospitality expenditure:

	2017 €'000
Staff hospitality	20
Client hospitality	5
Total	<u>25</u>

In accordance with their employment/ placement agreements some staff and students are entitled to meals in college canteens. The cost of provision of these meals in 2017 was €32,219.

Teagasc has a 10 year premium seat sponsorship agreement with Croke Park at an annual cost of €4,800 for staff incentive and stakeholder entertainment. The costs attributable to staff incentives in 2017 was €4,800.

Statement of compliance

The Authority has adopted the Code of Practice for the Governance of State Bodies (2016) and has put procedures in place to ensure compliance with the Code. Teagasc was in compliance with the Code of Practice for the Governance of State Bodies for 2017.

Dr. Noel Cawley
Chairman
11 June 2018

Mr. Joe Larkin
Member of the Authority
11 June 2018

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

CONSOLIDATED STATEMENT OF INCOME AND EXPENDITURE YEAR ENDED 31 DECEMBER 2017

	Notes	2017 €'000	2016 €'000
Income			
Oireachtas grants	4	142,591	143,208
EU funding	5	2,016	1,898
Sale of livestock		3,926	3,064
Operational income	6	33,603	32,774
Net deferred funding for retirement benefits	10	(3,507)	2,562
(Loss)/ gain on disposal of fixed assets	12	(192)	1,062
Other grants, donations and voluntary levies		3,222	3,779
Sale of goods		71	127
Research and technology services		1,488	1,182
Total Income		<u>183,218</u>	<u>189,656</u>
Expenditure	7	<u>(178,195)</u>	<u>(181,706)</u>
Operating surplus		5,023	7,950
Interest receivable		18	4
Surplus before transfers and taxation		5,041	7,954
Transfer to Capital Account		<u>(2,597)</u>	<u>(1,760)</u>
Surplus for the financial year before taxation		2,444	6,194
Taxation	11	<u>(46)</u>	<u>(42)</u>
Surplus for the financial year		<u>2,398</u>	<u>6,152</u>
Surplus attributable to			
Teagasc		2,280	6,041
Non-controlling interest		118	111
		<u>2,398</u>	<u>6,152</u>

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.

Dr. Noel Cawley
Chairman
11 June 2018

Professor Gerry Boyle
Director
11 June 2018

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME YEAR ENDED 31 DECEMBER 2017

	Notes	2017 €'000	2016 €'000
Surplus for the financial year		2,398	6,152
Actuarial loss on retirement benefit liabilities	10	(59,741)	(66,845)
Adjustment to deferred retirement benefit funding	10	<u>59,741</u>	<u>66,845</u>
Total comprehensive income for the year		<u>2,398</u>	<u>6,152</u>
Teagasc		2,280	6,041
Non-controlling interest		<u>118</u>	<u>111</u>
		<u>2,398</u>	<u>6,152</u>

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.

Dr. Noel Cawley
Chairman
11 June 2018

Professor Gerry Boyle
Director
11 June 2018

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

STATEMENT OF FINANCIAL POSITION AS AT 31 DECEMBER 2017

		Group		Teagasc	
		2017	2016	2017	2016
	Note	€'000	€'000	€'000	€'000
Non-current assets					
Property, plant and equipment	12	101,369	98,518	98,179	95,582
Investments	14	438	421	439	422
		<u>101,807</u>	<u>98,939</u>	<u>98,618</u>	<u>96,004</u>
Current assets					
Inventories	15	5,862	4,819	5,862	4,819
Receivables: amounts falling due within one year	17	26,913	23,642	26,528	23,290
Cash and cash equivalents	18	20,995	20,757	19,410	19,623
		<u>53,770</u>	<u>49,218</u>	<u>51,800</u>	<u>47,732</u>
Payables: amounts falling due within one year					
Payables and accruals	19	20,145	17,297	19,906	17,104
Deferred income	20	18,887	19,560	18,753	19,497
		<u>39,032</u>	<u>36,857</u>	<u>38,659</u>	<u>36,601</u>
Net current assets		<u>14,738</u>	<u>12,361</u>	<u>13,141</u>	<u>11,131</u>
Total assets less current liabilities		116,545	111,300	111,759	107,135
Provisions for liabilities					
Deferred tax	22	110	101	-	-
Payables: amounts falling due after one year					
Deferred income	21	468	611	175	272
		<u>115,967</u>	<u>110,588</u>	<u>111,584</u>	<u>106,863</u>
Deferred retirement benefit funding	10	1,288,839	1,232,605	1,288,839	1,232,605
Retirement benefit liabilities	10	<u>(1,288,839)</u>	<u>(1,232,605)</u>	<u>(1,288,839)</u>	<u>(1,232,605)</u>
Net assets		115,967	110,588	111,584	106,863
Capital and reserves					
Capital account		98,179	95,582	98,179	95,582
Statement of income and expenditure account		14,744	12,346	13,405	11,281
Capital contribution		3,044	2,660	-	-
		<u>115,967</u>	<u>110,588</u>	<u>111,584</u>	<u>106,863</u>
Reserves attributable to Teagasc		112,344	107,467	111,584	106,863
Non-controlling interest		3,623	3,121	-	-
		<u>115,967</u>	<u>110,588</u>	<u>111,584</u>	<u>106,863</u>

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.

Dr. Noel Cawley
Chairman
11 June 2018

Professor Gerry Boyle
Director
11 June 2018

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

CONSOLIDATED STATEMENT OF CHANGES IN CAPITAL AND RESERVES AS AT 31 DECEMBER 2017

GROUP

		Capital account	Revenue reserves	Capital contribution	Total	
			Group	Non- controlling interest	Non- controlling interest	
	Note	€'000	€'000	€'000	€'000	
At 1 January 2016		93,822	5,844	350	2,660	102,676
Surplus for the year		-	6,041	111	-	6,152
Actuarial loss on retirement benefit liabilities	10	-	(66,845)	-	-	(66,845)
Adjustment to deferred retirement benefit funding	10	-	66,845	-	-	66,845
Total comprehensive income		-	6,041	111	-	6,152
Amounts capitalised in respect of purchased assets	12	8,871	-	-	-	8,871
Net amount released on disposals	12	(55)	-	-	-	(55)
Less: amortised in line with asset depreciation	12	(7,056)	-	-	-	(7,056)
At 31 December 2016		95,582	11,885	461	2,660	110,588
		107,467		3,121		110,588
Surplus for the year		-	2,280	118	-	2,398
Actuarial loss on retirement benefit liabilities	10	-	(59,741)	-	-	(59,741)
Adjustment to deferred retirement benefit funding	10	-	59,741	-	-	59,741
Total comprehensive income			2,280	118	-	2,398
Addition to capital contribution		-	-	-	384	384
Amounts capitalised in respect of purchased assets	12	9,732	-	-	-	9,732
Net amount released on disposals	12	(296)	-	-	-	(296)
Less: amortised in line with asset depreciation	12	(6,941)	-	-	-	(6,941)
Reversal of impairment loss	12	102	-	-	-	102
At 31 December 2017		98,179	14,165	579	3,044	115,967
		112,344		3,623		115,967

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

STATEMENT OF CHANGES IN CAPITAL AND RESERVES AS AT 31 DECEMBER 2017

TEAGASC

		Capital account	Revenue reserves	Total
	Note	€'000	€'000	€'000
At 1 January 2016		93,822	5,387	99,209
Surplus for the year		-	5,894	5,894
Actuarial loss on retirement benefit liabilities	10	-	(66,845)	(66,845)
Adjustment to deferred retirement benefit funding	10	-	66,845	66,845
Total comprehensive income		-	5,894	5,894
Amounts capitalised in respect of purchased assets	12	8,871	-	8,871
Net amount released on disposals	12	(55)	-	(55)
Less: amortised in line with asset depreciation	12	(7,056)	-	(7,056)
At 31 December 2016		95,582	11,281	106,863
Surplus for the year		-	2,124	2,124
Actuarial loss on retirement benefit liabilities	10	-	(59,741)	(59,741)
Adjustment to deferred retirement benefit funding	10	-	59,741	59,741
Total comprehensive income		-	2,124	2,124
Amounts capitalised in respect of purchased assets	12	9,732	-	9,732
Net amount released on disposals	12	(296)	-	(296)
Less: amortised in line with asset depreciation	12	(6,941)	-	(6,941)
Reversal of impairment loss	12	102	-	102
At 31 December 2017		98,179	13,405	111,584

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

CONSOLIDATED STATEMENT OF CASH FLOW AS AT 31 DECEMBER 2017

GROUP

	Note	2017 €'000	2016 €'000
Cash flow from operating activities	27	10,100	10,817
Taxation paid		<u>(37)</u>	<u>(41)</u>
Net cash flow from operating activities		<u>10,063</u>	<u>10,776</u>
Cash flow from investing activities			
Payments to acquire tangible fixed assets		(10,316)	(9,298)
Receipts from sales of tangible fixed assets		104	1,117
Payments to acquire investments		(16)	(27)
Interest received		18	4
Receipt of capital contribution		<u>385</u>	<u>-</u>
Net cash used in investing activities		<u>(9,825)</u>	<u>(8,204)</u>
Net increase in cash and cash equivalents		238	2,572
Cash and cash equivalents at 1 January		<u>20,757</u>	<u>18,185</u>
Cash and cash equivalents at 31 December		<u>20,995</u>	<u>20,757</u>
Cash and cash equivalents consists of:			
Cash at bank and in hand	18	20,995	20,757
Short term deposits	18	<u>-</u>	<u>-</u>
Cash and cash equivalents at 31 December		<u>20,995</u>	<u>20,757</u>

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.

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 2017 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).

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 14.

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 2017

NOTES TO THE FINANCIAL STATEMENTS

Advisory fees

Teagasc receives income for annual advisory service contracts, annual discussion group contracts and additional advisory services provided. Income from annual advisory service contracts is recognised in the accounting period when the relevant invoice has issued. Income in relation to discussion group contracts and additional advisory services is recognised in the accounting period in which the service is rendered and the outcome of the contract can be estimated reliably.

Accrued income

Income earned on goods/ services delivered, but unbilled, is recognised in accordance with contractual terms as accrued income on the Statement of Financial Position. Income earned on research projects, but unclaimed, is recognised as accrued income on the Statement of Financial Position, taking into account the individual rules of all funding bodies.

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.

Comparative figures

Comparative figures have been regrouped and reanalysed, where necessary, on the same basis as those for the current period.

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 Statement of Financial Position date.

Teagasc also operates the Single Public Services Pension Scheme (Single Scheme), which is the defined benefit scheme for pensionable public servants appointed on or after 1 January 2013. Single Scheme members' contributions are paid over to the Department of Public Expenditure and Reform.

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

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

NOTES TO THE FINANCIAL STATEMENTS

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 Taxation

The taxation expense for the period comprises current and deferred tax recognised in the reporting period. Tax is recognised in the income statement. 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.

2.8 Research and development

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

2.9 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:

Computer equipment	3 years
Plant and vehicles	5 years
Laboratory and office equipment	10 years
Farm buildings	20 years
Industrial and manufacturing buildings	30 years
Other buildings	50 years

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

FINANCIAL YEAR ENDED 31 DECEMBER 2017

NOTES TO THE FINANCIAL STATEMENTS

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. If there is an indication of impairment the impairment loss, or the reversal of an impairment loss, is recognised immediately in profit or loss.

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 13.

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 or fair value less cost to sell.

Impairment of non-financial assets

At each Statement of Financial Position 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).

2.10 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.

2.11 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.

NOTES TO THE FINANCIAL STATEMENTS

2.12 Receivables

Receivables are recognised at fair value, less a provision for impairments. The provision for impairments 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 impairments are recognised in the Statement of Income and Expenditure.

2.13 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.

2.14 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 judgments

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 Statement of Financial Position 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 12 for the carrying amount of tangible fixed assets.

NOTES TO THE FINANCIAL STATEMENTS

3. Critical accounting estimates and judgments (continued)

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 14 for the carrying amount of investments.

Impairment of receivables

Teagasc assesses 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 17 for the carrying amount of trade and other receivables.

Retirement benefit obligation

Teagasc has an obligation to pay retirement benefit 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 retirement benefit obligation in the Statement of Financial Position. 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.

TEAGASC CONSOLIDATED FINANCIAL STATEMENTS

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4. Oireachtas Grants

		2017	2016
	Subhead	€'000	€'000
Vote 30: Agriculture, Food and the Marine Grant-in-aid for general expenses*	A.5	118,140	116,534
Grant for human resource purposes	A.3.4	10,500	10,500
Food research and agriculture research	A.3.1	4,323	4,310
Stimulus collaborative research programme	A.3.2	3,927	5,319
GLAS scheme	B.3.3	783	-
Beef genomics scheme	B.6	150	2,315
Knowledge transfer programme	B.7	4,055	1,822
Carbon navigator	C.10.10	36	1,745
Grant for forestry publicity and awareness and training	C.6.4	600	600
Grant for forestry education	C.6.4	77	63
		<u>142,591</u>	<u>143,208</u>

*Single Pension Scheme members' contributions of €486,973 and €323,442 in the prior year were netted against Grant-in-aid for general expenses. These contributions were remitted to the Department of Public Expenditure and Reform.

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

	Note	2017	2016
		€'000	€'000
Food research and agriculture research	20	1,833	2,719
Stimulus collaborative research programme	20	<u>2,538</u>	<u>3,181</u>
		<u>4,371</u>	<u>5,900</u>

5. EU Funding

	2017	2016
	€'000	€'000
Farm Survey Income	144	144
INTERREG	92	5
Framework Programme VI	-	4
Framework Programme VII	559	738
Horizon 2020	1,054	761
Other EU Income	<u>167</u>	<u>246</u>
	<u>2,016</u>	<u>1,898</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 2015 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 Statement of Financial Position. At year end, Teagasc had unfilled conditions included in the Statement of Financial Position as liabilities with respect to the following:

	Note	2017 €'000	2016 €'000
Framework Programme VII		319	1,429
Horizon 2020		4,215	1,690
Other EU Income		186	372
	20	<u>4,720</u>	<u>3,491</u>

6. Operational income

	Operations €'000	Knowledge transfer €'000	Research €'000	2017 €'000	2016 €'000
Advisory service fees	-	11,649	179	11,828	13,104
Course fee income	43	5,357	367	5,767	5,239
Other fees*	15	878	11,533	12,426	11,649
Other farming operations	-	912	2,260	3,172	2,358
Publications and miscellaneous	23	93	294	410	424
	<u>81</u>	<u>18,889</u>	<u>14,633</u>	<u>33,603</u>	<u>32,774</u>

*Included in Other fees are state grants receivable from Science Foundation Ireland of €3.738m and Enterprise Ireland of €1.208m.

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

	Note	2017 €'000	2016 €'000
Science Foundation Ireland	20	3,270	3,170
Enterprise Ireland	20	<u>1,738</u>	<u>1,801</u>
		<u>5,008</u>	<u>4,971</u>

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7. Expenditure

	Operations	Knowledge transfer	Research	2017	2016
	€'000	€'000	€'000	€'000	€'000
Pay (Note 9)	5,613	31,190	36,014	72,817	70,789
Travelling and subsistence	403	2,451	2,540	5,394	4,999
Staff training	530	10	146	686	639
General operating expenses (Note 8)	8,361	13,596	19,879	41,835	42,384
Financial charges	124	295	20	439	95
Depreciation (Note 12)	156	1,370	5,745	7,272	7,380
Grants to private colleges (Note 28)	-	2,959	-	2,959	3,037
Student grants	-	591	15	606	752
Cost of livestock purchases	-	28	622	650	816
Reversal of impairment loss (Note 12)	-	(102)	-	(102)	-
Cost of research and development services	-	-	130	130	136
Walsh fellowship grants	-	702	5,400	6,102	5,956
Other grants	(6)	14	510	518	563
	15,181	53,104	71,021	139,306	137,546
Retirement benefits (Note 10)				38,889	44,160
				178,195	181,706

In 2017 159 (2016: 160) staff received overtime payments. The highest aggregate amount paid to an individual was €23,002 (2016: €22,967).

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NOTES TO THE FINANCIAL STATEMENTS

8. Analysis of general operating expenses

	Operations	Knowledge transfer	Research	2017	2016
	€'000	€'000	€'000	€'000	€'000
Farming supplies/ services	-	988	2,768	3,756	3,461
Maintenance/ repairs	424	2,367	5,490	8,281	8,965
Rents/ rates/ insurances	1,055	343	1,128	2,526	2,388
Postage/ telephones	722	1,009	318	2,049	1,998
Power/ fuel/ petrol	146	685	1,418	2,249	2,195
Laboratory supplies	1	6	3,940	3,947	3,323
Printing/ stationery/ publicity	1,026	1,132	909	3,067	3,011
Seminar/ classroom/ library supplies	107	1,430	1,057	2,594	2,436
Services of external agencies	-	586	816	1,402	2,540
Student and staff canteen supplies	92	248	396	736	750
Audit fee	54	-	10	64	52
ICT supplies/ services	2,886	109	260	3,255	2,959
Legal/ professional fees*	1,814	4,510	894	7,218	7,500
Miscellaneous programme costs	-	173	449	622	780
Special events and miscellaneous	34	8	27	69	26
	<u>8,361</u>	<u>13,594</u>	<u>19,880</u>	<u>41,835</u>	<u>42,384</u>

*Included in Legal/ professional fees is GLAS scheme expenditure of €2.239m and Knowledge Transfer Groups expenditure of €0.251m. These are part of the Rural Development Programme 2015-2020 and commenced in 2015.

It was deemed more appropriate to reclassify professional fees in relation to a number of projects from 'ICT supplies/ services' to 'Maintenance/ repairs'. The 2016 comparatives have been adjusted accordingly.

9. Staff

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

	2017	2016
Professional	728	707
Technical	152	150
Administrative/ clerical	210	203
Farm/ domestic	<u>127</u>	<u>138</u>
	<u>1,217</u>	<u>1,198</u>

Pension related deductions of €3,100,963 (2016: €3,264,994) were deducted from salaries and paid to the Department of Agriculture, Food and the Marine.

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NOTES TO THE FINANCIAL STATEMENTS

9. Staff (continued)

Employee short-term benefits breakdown

Employees' short-term benefits in excess of €60,000 are categorised into the following bands:

Employee benefits	Group Number of employees
€60,000 to €69,999	252
€70,000 to €79,999	82
€80,000 to €89,999	32
€90,000 to €99,999	38
€100,000 to €109,999	18
€110,000 to €119,999	4
€120,000 to €129,999	-
€130,000 to €139,999	-
€140,000 to €149,999	3
€150,000 to €159,999	1

Note: For the purposes of this disclosure, short-term employee benefits in relation to services rendered during the reporting period include salary, overtime allowances and other payments made on behalf of the employee, but exclude employer's PRSI.

Aggregate Employee Benefits

	2017 €'000	2016 €'000
Staff short-term benefits	67,352	65,640
Termination benefits	62	-
Retirement benefit costs	38,889	44,160
Employer's contribution to social welfare	5,465	5,149
	<u>111,768</u>	<u>114,949</u>

The total number of staff employed (WTE) at year end was 1,266 (2016: 1,236).

Staff Short-Term Benefits

	2017 €'000	2016 €'000
Basic pay	64,634	62,632
Overtime	1,043	1,070
Allowances	1,675	1,938
	<u>67,352</u>	<u>65,640</u>

Termination Benefits

	2017 €'000	2016 €'000
Termination benefits charged to income and expenditure	62	-
	<u>62</u>	<u>-</u>

The termination benefits above relate to settlements with one staff member during the reporting period.

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NOTES TO THE FINANCIAL STATEMENTS

9. Staff (continued)

Key management personnel

Key management personnel in Teagasc consist of the members of the Authority, the Director and three divisional directors reporting to the Director. The total value of employee benefits for key management personnel is set out below:

	2017 €'000	2016 €'000
Salaries and other short term benefits:		
Key management remuneration	673	665
	<u>673</u>	<u>665</u>

This does not include the value of retirement benefits earned in the period. The key management personnel, except for those on the Authority, are members of Teagasc pension scheme and their entitlements in that regard do not extend beyond the terms of the model public defined benefit superannuation scheme.

Director's salary and benefits

The Director's remuneration for the financial period was as follows:

	2017 €'000	2016 €'000
Basic pay	144	139
Benefit in kind (Car)	10	13
	<u>154</u>	<u>152</u>

The Director is a member of the Teagasc pension scheme and his entitlements in that regard do not extend beyond the model public sector defined benefit superannuation scheme. The value of retirement benefits earned in the period is not included above.

10. Retirement benefit plans

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

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

Teagasc also administers two pension schemes (the Agricultural Colleges Staff Pension 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 pension schemes. No separate fund is maintained, and no assets are held, to finance the payment of retirement benefits and gratuities. The actuarial estimate of future liabilities accruing in regard to future benefits is shown on the Statement of Financial Position.

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NOTES TO THE FINANCIAL STATEMENTS

The average number of monthly retirement benefits paid during the year was 1,732 (2016: 1,713).

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

	2017	2016
	€'000	€'000
Current service cost	20,392	21,303
Interest on scheme liabilities	21,996	26,275
Past service cost	-	-
Staff contributions	(3,499)	(3,418)
	<u>38,889</u>	<u>44,160</u>

ii. Movement in net retirement benefit liability during the financial year

	2017	2016
	€'000	€'000
Net retirement benefit liability at 1 January	1,232,605	1,163,198
Current service cost	20,392	21,303
Past service cost	-	-
Benefits paid	(45,895)	(45,016)
Interest on scheme liabilities	21,996	26,275
Actuarial loss	59,741	66,845
Net retirement benefit liability at 31 December	<u>1,288,839</u>	<u>1,232,605</u>

iii. Deferred funding asset for retirement benefits

Teagasc recognises as an asset an amount corresponding to the unfunded deferred liability for retirement benefits 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 pension 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.

Net deferred funding for retirement benefits in the year

	2017	2016
	€'000	€'000
Funding recoverable in respect of current years retirement benefits	42,388	47,578
Resources applied to pay retirement benefits	(45,895)	(45,016)
	<u>(3,507)</u>	<u>2,562</u>

The deferred funding asset for retirement benefits as at 31 December 2017 was €1,289m (2016: €1,233m).

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NOTES TO THE FINANCIAL STATEMENTS

10. Retirement benefit plans (continued)

iv. History of defined benefit obligations

	2017 €'000	2016 €'000	2015 €'000	2014 €'000
Experience gain/ (loss)	(80,343)	(13,272)	55,428	129,274
Percentage of present value of scheme liabilities	6.2%	1.1%	4.7%	9.7%
Changes in assumptions	20,602	(53,573)	118,660	(152,973)
Percentage of present value of scheme liabilities	1.6%	4.4%	10.2%	11.5%
Actuarial (loss)/ gain recognised in other comprehensive income	(59,741)	(66,845)	174,088	(23,699)

The cumulative actuarial loss recognised in the Statement of Comprehensive Income amounts to €160.585m (2016: €100.844m).

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 retirement benefit (one eightieth per year of service), a gratuity lump sum (three eightieths per year of service) and spouse's and children's retirement benefits. Normal retirement age is a members 65th birthday, and pre 2004 members have an entitlement to retire without actuarial reduction from age 60. Retirement benefits 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 17 January 2018 in order to assess the scheme liabilities at 31 December 2017.

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

	2017 % per annum	2016 % per annum
Inflation rate increase	1.75	1.75
Salary rate increase	3.25	3.25
State pension increase	3.25	3.25
Pension rate increase – Main Scheme	2.50	2.50
Pension rate increase – Single Scheme	1.75	1.75
Scheme liabilities discount rate	1.80	1.80

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NOTES TO THE FINANCIAL STATEMENTS

10. Retirement benefit plans (continued)

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 table below shows the life expectancy for members attaining age 65 in 2017 and 2037.

Year of attaining 65	2017	2037
Life expectancy - males	86.2	88.7
Life expectancy - females	88.7	90.8

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

	2017 €'000	2016 €'000
Total accrued retirement benefit liability	<u>1,288,839</u>	<u>1,232,605</u>

11. Tax on profit on ordinary activities

	2017 €'000	2016 €'000
Based on results for the year:		
Current tax charge	38	41
Deferred tax (Note 22)	<u>9</u>	<u>1</u>
	47	42
Provision in respect of prior years:	<u>(1)</u>	<u>-</u>
Corporation tax	<u>46</u>	<u>42</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:

	2017 €'000	2016 €'000
Profit on ordinary activities before taxation	2,444	6,194
Profit on ordinary activities multiplied by Standard rate of corporation tax in Ireland -12.5%	306	774
Effects of:		
Excess of capital allowances over depreciation	(7)	(2)
Higher tax rate on profits	5	5
Parent profit on ordinary activities multiplied by 12.5%	<u>(266)</u>	<u>(736)</u>
Current tax charge for the year	<u>38</u>	<u>41</u>

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12. 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 2016	6,381	126,783	2,665	82,865	218,694
Additions	-	4,103	975	4,220	9,298
Buildings completed	-	2,608	(2,608)	-	-
Disposals	-	-	-	(972)	(972)
At 31 December 2016	6,381	133,494	1,032	86,113	227,020
Additions	-	3,862	1,400	5,054	10,316
Buildings completed	-	-	-	-	-
Disposals	-	(49)	-	(2,190)	(2,239)
At 31 December 2017	6,381	137,307	2,432	88,977	235,097
Accumulated depreciation and impairment losses					
At 1 January 2016	446	52,844	-	68,746	122,036
Charge for year	-	3,369	-	4,012	7,381
Impairment losses	-	-	-	-	-
Disposals	-	-	-	(917)	(917)
At 31 December 2016	446	56,213	-	71,841	128,500
Charge for year	-	3,459	-	3,813	7,272
Reversal of impairment loss	(102)	-	-	-	(102)
Disposals	-	(41)	-	(1,901)	(1,942)
At 31 December 2017	344	59,631	-	73,753	133,728
Carrying value					
At 31 December 2017	6,037	77,676	2,432	15,224	101,369
At 31 December 2016	5,935	77,280	1,032	14,271	98,518

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NOTES TO THE FINANCIAL STATEMENTS

12. 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 2016	6,381	122,150	2,664	77,812	209,007
Additions	-	4,073	975	3,823	8,871
Buildings completed	-	2,608	(2,608)	-	-
Disposals	-	-	-	(963)	(963)
At 31 December 2016	6,381	128,831	1,031	80,672	216,915
Additions	-	3,802	1,208	4,722	9,732
Buildings completed	-	-	-	-	-
Disposals	-	(49)	-	(2,181)	(2,230)
At 31 December 2017	6,381	132,584	2,239	83,213	224,417
Accumulated depreciation and impairment losses					
At 1 January 2016	446	50,256	-	64,483	115,185
Charge for year	-	3,215	-	3,841	7,056
Impairment losses	-	-	-	-	-
Disposals	-	-	-	(908)	(908)
At 31 December 2016	446	53,471	-	67,416	121,333
Charge for year	-	3,303	-	3,638	6,941
Reversal of impairment loss	(102)	-	-	-	(102)
Disposals	-	(41)	-	(1,893)	(1,934)
At 31 December 2017	344	56,733	-	69,161	126,238
Carrying value					
At 31 December 2017	6,037	75,851	2,239	14,052	98,179
At 31 December 2016	5,935	75,360	1,031	13,256	95,582

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

Teagasc has a total of 55 offices/ centres of which 50 are owned by Teagasc and the remaining 5 are under rental agreements. Two of the rental agreements expire within three years, two between five and ten years and the remaining agreement is a long term lease with the end date yet to be determined.

In accordance with FRS 102 – 'Impairment of Assets (Section 27)' Teagasc reversed a previous impairment loss of €446,000 by €102,000 for a site held for resale at Raheen, Co. Limerick. An impairment review indicated that the recoverable amount at 31 December 2017 was €227,000.

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NOTES TO THE FINANCIAL STATEMENTS

12. Property, plant and equipment (continued)

Disposal of property, plant and equipment

	Proceeds/ costs 2017 €'000	Proceeds/ costs 2016 €'000
Proceeds from sale of property:		
Property sales during year	-	1,093
Cost of sales	-	(20)
	-	1,073
Proceeds from sale of other assets	104	44
	104	1,117
Net book value of fixed assets disposed		
Property assets	(8)	-
Other assets	(288)	(55)
	(296)	(55)
(Loss)/ gain on disposal of fixed assets	(192)	1,062

There was no transfer to the Exchequer of asset sales proceeds in 2017.

13. Heritage assets

Group and Teagasc

Period houses in Kildalton College, Ballyhaise College and Oak Park Research Centre are part of the working infrastructure of Teagasc, and are as such capitalised on the Statement of Financial Position at original cost. 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.

Teagasc carries out any renovations on protected structures in accordance with building regulations and proper conservation planning. Preservation and conservation costs for Johnstown Castle are charged to the Statement of Income and Expenditure as incurred and no heritage assets were capitalised during the year.

The castle and gardens, 120 acres of amenity area surrounding the castle, are to be developed as a tourist and heritage attraction. The project should see the completion of a programme of works which will allow for the opening of the visitor centre in 2018. The centre will be staffed by Irish Heritage Trust personnel.

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14. Investments

	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Investment in quoted shares	265	264	265	264
Investment in unquoted shares	173	157	174	158
	<u>438</u>	<u>421</u>	<u>439</u>	<u>422</u>

Investments in quoted shares	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Fair value at 1 January	264	285	264	285
Gain/ (loss) on fair value movement in the year	1	(21)	1	(21)
Fair value at 31 December	<u>265</u>	<u>264</u>	<u>265</u>	<u>264</u>

Investments in unquoted shares	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Value at acquisition date				
At 1 January	157	130	158	131
Additions	16	27	16	27
At 31 December	<u>173</u>	<u>157</u>	<u>174</u>	<u>158</u>

Net book value	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
At 1 January	157	130	158	131
Movement in unquoted shares	16	27	16	27
At 31 December	<u>173</u>	<u>157</u>	<u>174</u>	<u>158</u>

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14. Investments (continued)

Analysed as:

	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Glanbia plc	216	229	216	229
Kerry Group plc	49	35	49	35
Moorepark Technology Limited	-	-	1	1
Wexford Milk Producers Limited	25	25	25	25
Lakeland Dairies	5	5	5	5
Aurivo	2	2	2	2
Glanbia Co-Op Ltd	14	14	14	14
Kerry Co-Op Creameries Ltd	-	1	-	1
Carbery Creameries Ltd	43	43	43	43
Barryroe Creameries Ltd	1	1	1	1
Dairygold Co-Op Society Ltd	36	36	36	36
Dairygold Co-Op Society (Revolving fund)	47	30	47	30
	<u>438</u>	<u>421</u>	<u>439</u>	<u>422</u>

Details of investments:

Company name	Country of incorporation	Registered number	Number of shares	Nominal value per share at 31.12.2017	Dividend received	Nature of business of company
Glanbia plc	Ireland	129933	14,510	€14.90	2017 - €572 2016 - €1,225	Global nutrition company
Kerry Group plc	Ireland	111471	522	€93.50	2017 - €242 2016 - €216	Provider of taste and nutrition technologies
Moorepark Technology Ltd	Ireland	168270	5,102	€0.127	2017 - €nil 2016 - €nil	Provision of services for R&D
Wexford Milk Producers Ltd	Ireland	2640R	24,537	€1.00	2017 - €nil 2016 - €nil	Milk production and supply
Lakeland Dairies Co-Operative Society Ltd	Ireland	4622R	104,371	€0.05	2017 - €52 2016 - €52	Milk production and supply
Aurivo Co-Operative Society Ltd	Ireland	5113R	1,715	€1.00	2017 - €34 2016 - €34	Milk production and supply
Glanbia Co-Operative Ltd	Ireland	4928R	13,742	€1.00	2017 - €1,569 2016 - €3,874	Milk production and supply
Kerry Co-Operative Ltd	Ireland	3618R	87	€1.25	2017 - €239 2016 - €218	Milk production and supply
Carbery Creameries Ltd	Ireland	2899R	19,515	€2.21	2017 - €nil 2016 - €nil	Milk production and supply
Barryroe Co-Operative Ltd	Ireland	1736R	1,768	€1.00	2017 - €nil 2016 - €nil	Milk production and supply
Dairygold Co-Operative Society Ltd	Ireland	4621R	35,733	€1.01	2017 - €nil 2016 - €nil	Milk production and supply

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FINANCIAL YEAR ENDED 31 DECEMBER 2017

NOTES TO THE FINANCIAL STATEMENTS

14. 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.

15. Inventories

	2017	2016
	€'000	€'000
Livestock	5,138	4,097
Farm produce, fertilisers and feeding stocks	533	544
General supplies	191	178
	<u>5,862</u>	<u>4,819</u>

Stocks are stated after provision for impairment of €nil (2016: €nil).

Reconciliation of movements in livestock:

	2017	2016
	€'000	€'000
Balance at start of year	4,097	3,985
Purchases	650	928
Sales	(2,358)	(2,489)
Births	1,167	832
Deaths	(222)	(128)
Fair value adjustments	1,804	969
Balance at end of year	<u>5,138</u>	<u>4,097</u>

16. Assets held for sale

At 31 December, included in the carrying value of assets are the following assets held for sale:

	Carrying value at 31 December 2017	Carrying value at 31 December 2016
	€'000	€'000
Site at Raheen, Co. Limerick	227	125
Site at Athenry, Co. Galway	26	26
Site at Ballyhaise, Co. Cavan	1	1
Kinsealy East, Co. Dublin	583	-
Site at Emsworth, Co. Dublin	77	-
12	<u>914</u>	<u>152</u>

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NOTES TO THE FINANCIAL STATEMENTS

17. Receivables

	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Trade receivables	9,622	9,680	9,277	9,393
Other receivables	215	161	194	141
Accrued operational income	4,024	4,950	4,024	4,950
Accrued Oireachtas grant income	10,426	7,375	10,426	7,375
Prepayments	2,623	1,446	2,607	1,431
VAT and other taxes	3	30	-	-
	<u>26,913</u>	<u>23,642</u>	<u>26,528</u>	<u>23,290</u>

All amounts included above fall due within one year.

Trade receivables are stated after provision for impairment of €330,724 (2016: €91,650).

18. Cash and cash equivalents

	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Cash at bank and in hand	20,995	20,757	19,410	19,623
Short-term deposits	-	-	-	-
	<u>20,995</u>	<u>20,757</u>	<u>19,410</u>	<u>19,623</u>

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NOTES TO THE FINANCIAL STATEMENTS

19. Payables – amounts falling due within one year

	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Trade payables	1,446	729	1,334	729
Other payables and accruals	14,585	11,938	14,500	11,772
Legal provisions	236	196	236	196
PAYE/ PRSI	2,250	2,225	2,234	2,211
Value added tax	128	823	111	823
Corporation tax	-	13	-	-
Withholding tax	242	228	233	228
Other payroll deductions	1,258	1,068	1,258	1,068
Refundable deposits	-	77	-	77
	<u>20,145</u>	<u>17,297</u>	<u>19,906</u>	<u>17,104</u>
Payables for taxation and social welfare included above	<u>2,633</u>	<u>3,310</u>	<u>2,590</u>	<u>3,281</u>

Included in the other payables and accruals of €14.50m are: professional fees including legal and analytical services €3.14m, wages and salaries and other employee costs €3.03m (including an annual leave accrual of €2.17m), repairs and maintenance €2.39m, equipment and capital items €1.67m, grants/ seminars €0.97m, ICT costs €0.80m, farm running costs €0.77m, general operating costs including utilities €0.73m, other accruals €0.54m, travel and subsistence €0.23m and public relations and advertising €0.19m.

The repayment of trade payables vary between on demand and thirty days. Prompt payment interest and compensation of €8,474 was payable on trade payables in 2017.

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 for late payment of taxes.

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

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FINANCIAL YEAR ENDED 31 DECEMBER 2017

NOTES TO THE FINANCIAL STATEMENTS

20. 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:

	Note	Group		Teagasc	
		2017 €'000	2016 €'000	2017 €'000	2016 €'000
Department of Agriculture, Food and the Marine - advance for FIRM projects	4	1,833	2,844	1,833	2,844
Department of Agriculture, Food and the Marine - advance for Stimulus projects	4	2,538	3,181	2,538	3,181
Enterprise Ireland	6	1,738	1,801	1,738	1,801
Environmental Protection Agency		580	214	580	214
Science Foundation Ireland	6	3,270	3,170	3,270	3,170
European Union	5	4,720	3,491	4,720	3,491
Other research deferrals		1,086	1,299	952	1,236
Course fee deferrals		2,008	2,446	2,008	2,446
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>18,887</u>	<u>19,560</u>	<u>18,753</u>	<u>19,497</u>

21. Deferred income due after more than one year

		Group		Teagasc	
		2017 €'000	2016 €'000	2017 €'000	2016 €'000
At beginning of year		612	485	272	98
Released to income and expenditure account		(47)	(146)	-	(98)
Recategorised to within one year		(272)	-	(272)	-
Course fee deferrals		<u>175</u>	<u>272</u>	<u>175</u>	<u>272</u>
At end of year		<u>468</u>	<u>611</u>	<u>175</u>	<u>272</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

22. Provision for liabilities

Deferred tax	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
At beginning of year	101	100	-	-
Charged to profit or loss account	9	1	-	-
At end of year	110	101	-	-

Components of deferred taxation	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Accelerated capital allowance	9	1	-	-
	9	1	-	-

23. Capital Account

The balance on this account represents the unamortised value of funds used to purchase property, plant and equipment.

24. Income and expenditure account

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

25. Non-controlling interest

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

26. Leases

Operating leases

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

	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Leases which expire:				
Within one year	584	477	584	477
Between two and five years	1,439	1,338	1,439	1,338
After five years	1,067	1,283	1,067	1,283
	3,090	3,098	3,090	3,098

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NOTES TO THE FINANCIAL STATEMENTS

27. Reconciliation of surplus to cash flow from operating activities

	2017	2016
	€'000	€'000
Surplus for the year	2,444	6,194
Depreciation expense	7,272	7,381
Reversal of impairment losses on property, plant and equipment	(102)	-
Fair value adjustments on biological assets	(1,804)	(969)
Fair value adjustments on investments	(1)	21
Loss/ (gain) on disposal of tangible fixed assets	192	(1,062)
Interest income	(18)	(4)
Transfer to capital account	2,597	1,760
Total operating cash flows before movements in working capital	10,580	13,321
Decrease in inventory	760	825
(Increase) in receivables	(3,272)	(3,388)
Increase in payables	2,032	59
Cash flow from operating activities	10,100	10,817

28. Private colleges

Teagasc provides support to three private colleges, Gurteen Agricultural College, Mountbellew Agricultural College and Pallaskenry Agricultural College, as follows:

	2017	2016
	€'000	€'000
Grants to private colleges	2,959	3,037
Salary costs of staff seconded to private colleges (included in the total pay expenditure in Note 7 above)	1,023	1,092
External service provider costs for teaching services provided to private colleges (included in the general operating expenditure in Note 8 above)	122	101
	4,104	4,230

In addition to grants outlined above Teagasc provided workbooks to private colleges to the value of €75,400 (2016: €84,950).

29. Commitments

Capital commitments

Teagasc had capital commitments outstanding at 31 December 2017 amounting to €1.103m which relate to construction of buildings and facilities at Johnstown Castle €0.202m, Ashtown €0.195m and Grange €0.706m (2016: €1.922m).

Grant commitments

Teagasc had grant commitments outstanding at 31 December 2017 amounting to €10.974m which relate to Walsh Fellows €6.354m, Private College Grants €3.382m and Other Grants €1.238m (2016: €10.076m).

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FINANCIAL YEAR ENDED 31 DECEMBER 2017

NOTES TO THE FINANCIAL STATEMENTS

30. Authority members – disclosure of transactions

The Authority has adopted procedures in accordance with the guidelines issued in 2009 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 the Authority members were involved.

31. Contingent liabilities

The Authority has made provision in the financial statements reflecting its best estimate of the liability arising. The Authority is of the view that there are no contingent liabilities.

32. Related party transactions

The following transactions were carried out with related parties:

Sales of goods and services:

	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Subsidiary	-	-	20	30
	-	-	20	30

Purchases of goods and services:

	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Subsidiary	-	-	727	711
	-	-	727	711

Payable to related parties:

	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Subsidiary	62	37	62	37
	62	37	62	37

The receivable 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 (2016: €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.

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NOTES TO THE FINANCIAL STATEMENTS

33. Financial instruments

The Group and Teagasc have the following financial instruments:

	Group		Teagasc	
	2017	2016	2017	2016
	€'000	€'000	€'000	€'000
Financial assets that are equity instruments measured at fair value through consolidated statement of income and expenditure				
Listed non-current asset investments	265	264	265	264
Unlisted non-current asset investments	173	157	174	158
Financial assets				
Trade receivables	9,622	9,680	9,277	9,393
Other receivables	215	161	194	141
Cash in hand (including short-term deposits)	20,995	20,757	19,410	19,623
Financial liabilities measured at amortised cost				
Trade payables	1,446	729	1,335	729
Other payables	14,646	11,938	14,500	11,772

34. Events after the reporting period

There have been no significant events, outside the ordinary course of business, affecting the Group since 31 December 2017.

35. Approval of the financial statements

The Authority approved the financial statements on 07 March 2018.

