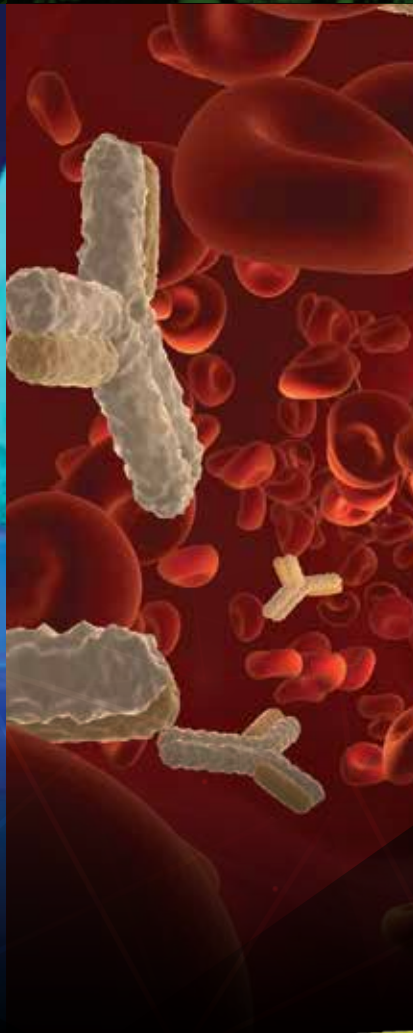
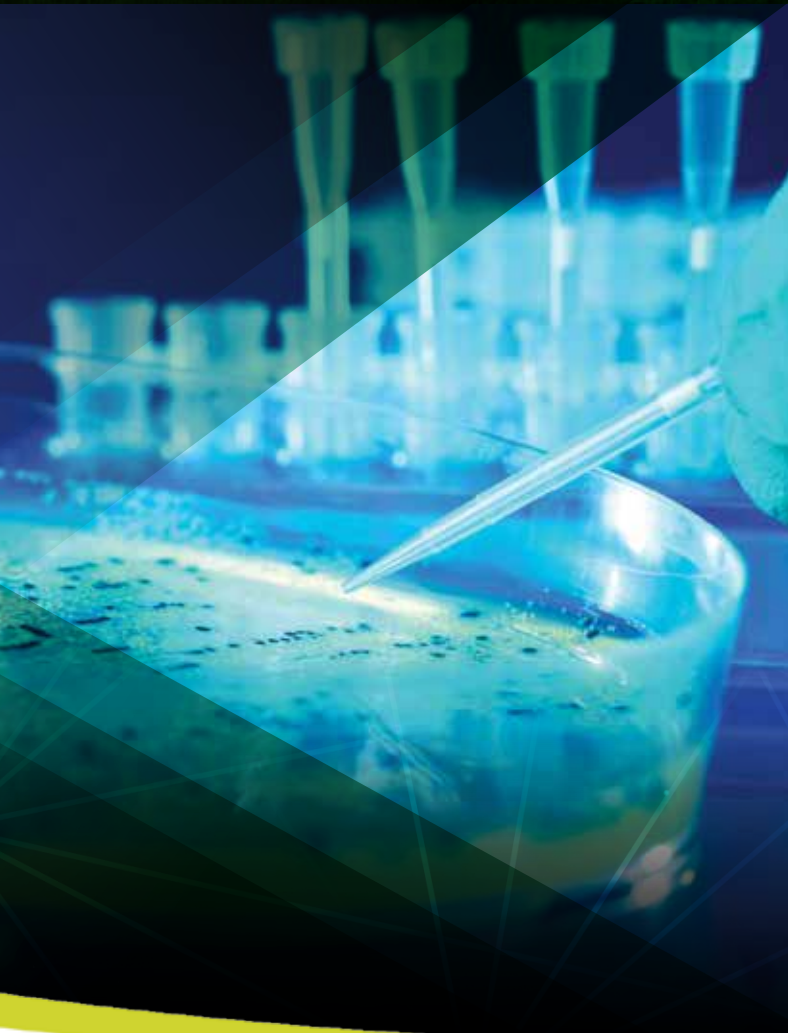




TEAGASC Research Impact Highlights

2015



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Compiled and edited by Frank O'Mara, Catriona Boyle and Ann Tiernan

Foreword



Frank O'Mara
Director of Research

This publication highlights the impacts achieved in 2015 from research conducted in Teagasc. It follows from similar publications in the last two years. Our strategy is to conduct excellent research that provides the basis for achieving science-based impact. The examples shown here, of actual impact at industry or policy level, demonstrate that this strategy works. Making an impact is critically important to Teagasc and is central to our mission. Highlighting the impact we have is necessary to demonstrate to the taxpayer and stakeholders, who fund our research, that it is a good investment. The examples outlined here are not an exhaustive account of the impact of Teagasc's work, which is achieved through a combination of our research, advisory and education activities. We strive to ensure our research will have impact, so it is pleasing to have such a set of significant impacts to highlight again for 2015. I would like to acknowledge the huge contribution of Teagasc specialists and advisors, both in terms of direct input into some of the research underpinning these impacts and in transferring this knowledge to farmers and food companies that allow the impact to be achieved. I would also like to acknowledge the many collaborators we have in universities, institutes of technology and other external bodies, as well as the farming community and agri-food companies, which were involved in many of the research projects leading to these impacts. We

greatly value those contributions, which are highlighted in the individual reports. Excellent science requires excellent scientists. We need to be able to attract, develop and retain top scientists if we are to continue to deliver impacts like those highlighted in this publication. Teagasc is fortunate to have an outstanding core of scientists, supported by top-class technical, farm and administration staff. This needs to be maintained into the future. The talent of our Walsh Fellows (MSc and PhD) and post-doctoral scientists bodes well for the future, but these experts must view research as an attractive career if we are to continue to support the agri-food industry with new scientific knowledge that is as good as, and better than, our competitors. Research requires investment, and Teagasc is fortunate that it has been successful in recent years in supplementing its grant-in-aid with funding from other sources to allow more research to be carried out. The Department of Agriculture, Food and the Marine is the major funder of Teagasc research through provision of grant-in-aid and through its competitive funding programmes: FIRM, the Research Stimulus Fund, and CoFoRD. Other funding comes from EU research and innovation programmes, Science Foundation Ireland, Enterprise Ireland, the Environmental Protection Agency, farmers and agri-food companies. This funding enabled the impacts reported here and it is gratefully acknowledged.



Other contributors and collaborators: University of Wisconsin-Madison

Funding: Teagasc grant-in-aid, Goldcrop Ltd, and DLF-Trifolium

Note: Buddy is on the Ireland, National Institute of Agricultural Botany and Scotland's Rural College Recommended Lists. Coolfin is on the Ireland, France and Germany Recommended Lists. Dublin is on the France Recommended List and is approved to be added to the Ireland Recommended List when commercial seed is available for sale in 2018.

Designing forage grass and clover with enhanced value for animal production, sustainability and profitability using phenotypic, genotypic and DNA selection

Patrick Conaghan

Industry impact: Teagasc has been breeding white clover for over 50 years at Oak Park, Carlow. Chieftain, Avoca, Susi, Tara and Aran are some of the successful and well-know Teagasc-bred varieties. In 2014, Iona, a medium leaf-size variety offering outstanding early season growth, was released. Three further white clover varieties, Buddy, Coolfin and Dublin, are currently undergoing seed increase and are scheduled for release in 2015, 2017 and 2018, respectively. Buddy, a medium leaf-size variety, offers exceptional persistency and ground cover under tight grazing comparable to a small leaf-size variety. Coolfin, a small leaf-size variety, is the highest yielding white clover variety in Ireland Recommended List trials. Dublin is a large leaf variety offering further improvements in yield and persistency, and greater choice for farmers looking for a variety suitable for grazing and cutting.

Contribution from non-research stakeholders: All new varieties emerging from Teagasc's breeding programme are commercialised and marketed under license by our commercial partners (Goldcrop Ltd, DLF-Trifolium and Germinal Seeds) in return for financial support.

The Next Generation Dairy Herd – Proofing the EBI

Frank Buckley, Sinead McParland, Morgan O'Sullivan

Industry Impact: In 2001, Teagasc Moorepark, in conjunction with the Irish Cattle Breeding Federation (ICBF), developed the Economic Breeding Index (EBI) for dairy cattle to help identify genetically superior animals for profit. Fertility and longevity of the Irish national herd is currently sub-optimal, based on performance statistics published by ICBF. Analysis of Teagasc Profit Monitor data indicates that herds selected for their EBI have higher profits. Since 2009, the incorporation of genomic selection into the national breeding programme has accelerated the theoretical rate of increase in EBI. The 'Next Generation Herd' was established as a strategic resource to validate that genetic selection, based on the EBI, will deliver as expected for Irish dairy farmers and continue to do so into the future. Performance differences demonstrate clear improvements in both production and fertility performance. Both are in line with expectations based on EBI. Thus, the EBI is working to deliver more profitable dairy genetics.



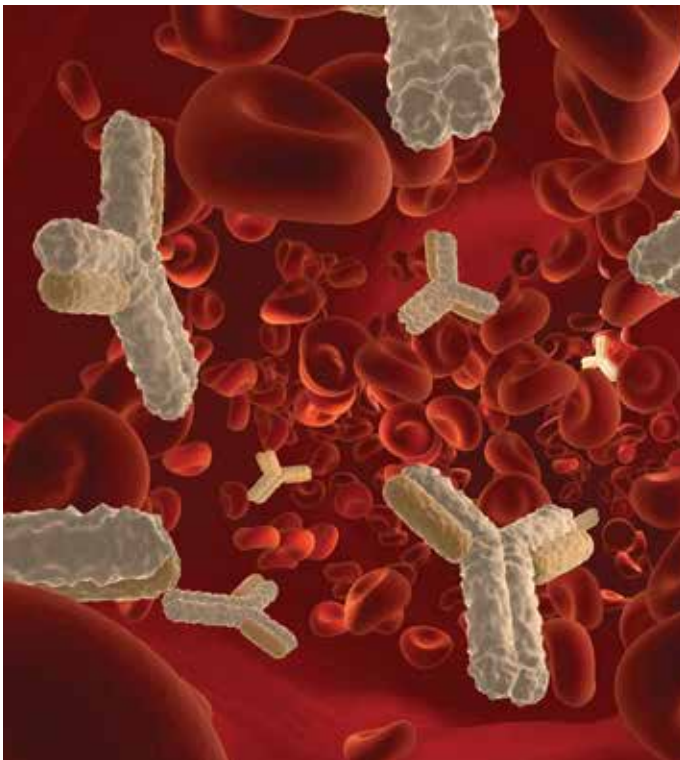
Other contributors and collaborators: Irish Cattle Breeding Federation
Funding: Teagasc grant-in-aid

Associations between passive immunity and health status for Irish dairy and suckler beef calves

Cynthia Todd, Mark McGee, Paul Crosson, Bernadette Earley

Industry impact: A total of 84 dairy and 111 suckler beef farms were visited during the autumn 2014 and spring 2015 calving seasons. Blood samples were collected from 1,040 dairy and 923 suckler calves between one and 21 days of age. The Zinc Sulphate Turbidity (ZST) test, a measure of passive transfer of immunity, was performed. ZST results were categorised as follows: Low (L) = <10, Medium (M) = 10-20 and High (H) = >20 units. Dairy calves were less likely to have ZST results in the lower categories than suckler calves (L: 13.9% vs. 21.1%, M: 50.3% vs. 51.0%, H: 35.9% vs. 27.8%, respectively). Calves were most commonly treated for diarrhoea (71.9% of dairy disease events, 29.7% of suckler disease events) or pneumonia (8.8% of dairy disease events, 25.5% of suckler disease events). This is the first large-scale observational study on passive immunity and calf health to be conducted under field conditions in Ireland. These results demonstrate that many Irish calves are at risk of failure of passive transfer of immunity (FPT).

Contribution from non-research stakeholders: Our research team are working in close association with dairy and beef Knowledge Transfer specialists, Teagasc advisors and farmers. All ZST reports have been communicated to farmers through their Teagasc advisors.



Other contributors and collaborators: Department of Agriculture, Food and the Marine, Agri-Food and Biosciences Institute (Northern Ireland), Animal Health Ireland and University College Dublin
Funding: Department of Agriculture, Food and the Marine Research Stimulus Fund 11/S/131

The effect of tetraploid and diploid swards with and without clover inclusion on spring milk production

Brian McCarthy, Trevor Gilliland, Michael Dineen, Clare Guy, Fergal Coughlan

Industry impact: Irish dairy farmers are expanding their businesses, growing cow numbers to increase milk production. This must be achieved by maximising the use of grazed pasture. Research undertaken in Clonakilty Agricultural College shows that, although perennial ryegrass ploidy (tetraploid or diploid) did not effect pasture dry matter (DM) production or milk production per cow within pasture-based production systems, white

clover inclusion in the sward had a significant affect. Annual pasture DM production was increased by 1.9t DM/ha during the experiment (grass-only swards produced 15.5t DM/ha compared with 17.4t DM/ha for grass-clover swards). Milk solids production per cow was greater for cows grazing grass-clover swards (480kg/cow) compared with cows grazing grass-only swards (422kg/cow). These results indicate that including white clover into grazing

swards has the potential to increase the productivity of Irish pasture-based production systems. However, a number of challenges were identified with grass-clover swards such as spring pasture availability, spring and autumn grazing conditions and bloat. This require further research.

Contribution from non-research stakeholders: In conjunction with Cork West Advisory, the research staff have facilitated over 60 discussion group visits to Clonakilty Agricultural College to see the experiment and have held numerous discussion group and open days to disseminate the results from the experiment. Results of the reseach have been presented at numerous non-Teagasc conferences (e.g., the Irish Grassland Association, the Positive Farmers Conference). Also, a number of articles and publications have been released in the national media (e.g. the *Irish Farmers Journal*, the *Farming Independent*) that have generated a lot of interest in the research being undertaken in Clonakilty.



Other contributors and collaborators: Queen's University Belfast
Funding: Teagasc grant-in-aid



Other contributors and collaborators: University College Dublin, Irish Cattle Breeding Federation
Funding: Teagasc grant-in-aid

Optimising calf rearing on Irish dairy farms post-quota

Emer Kennedy, Riona Sayers, Christine Cummins, John Paul Murphy

Industry impact: Colostrum management is one of the single most important factors of calf management. A recent survey showed that 85% of Irish dairy farmers are storing colostrum. Of these, almost one third are storing colostrum at room temperature, sometimes for up to one week. Storage can affect colostrum properties such as bacterial content and pH levels. A Teagasc Moorepark study showed that as storage temperature increased, bacteria content in colostrum increased compared to fresh or pasteurised colostrum. Although this did not alter the IgG (antibody) content of the colostrum, calves offered colostrum stored at >4°C (i.e., not refrigerated) for two days had lower IgG absorption indicating that the growth of bacteria inhibited IgG absorption. Storing colostrum in a fridge for two days resulted in a similar rate of immunoglobulin absorption when compared with calves offered fresh or pasteurised colostrum. This indicates that colostrum storage strategies should be employed to ensure maximum IgG absorption occurs in the calf, resulting in healthy, well-grown replacement heifers.

Contribution from non-research stakeholders: A survey was completed by over 260 Irish dairy farmers, which are representative of the Irish national dairy population. A total of 104 questions relating to calf health and husbandry were devised across three different management areas:

- Cow management: pre-calving nutritional management;
 - Calving management: calving facilities and peri-parturient period management; and
 - Colostrum management: colostrum collection, storage and feeding.
- Answers to this survey highlighted poor management practices currently being employed on farms and directed the research experiment outlined above.

Helping the mushroom industry deal with new disease challenges

Helen Grogan, Caoimhe Fleming-Archibald, Angela Ruggiero, Greg Deakin, Ed Dobbs, Kerry Burton, Mairead Kilpatrick

Industry impact: Between 2000-2010, Irish and European mushroom businesses lost in the region of €18 million per annum (2% farm gate value) due to lost production and quality caused by *Trichoderma* green mould and virus diseases. Teagasc-led research has provided knowledge and tools for mushroom businesses to finally get to grips with these devastating diseases. Epidemiological research led to the breakthrough that bulk-produced mushroom substrate is particularly susceptible to infection by these two organisms when it is being bulk-handled and transported via winches, conveyors, trucks and filling equipment. Molecular tests are now available to quickly identify when a problem is emerging. As a result, in recent years the incidence of these problems has reduced dramatically, ensuring that Irish and European mushrooms continue to be of the highest quality.

Contribution from non-research stakeholders: Irish and European mushroom growers and substrate producers participated in surveys and studies that underpinned the research results. A series of technical factsheets was produced with new information on infection routes, as well as guidance on control measures. Teagasc Mushroom advisors (T. Kellegher, G. Walsh, D. Callaghan), in collaboration with mushroom producer organisations (Commercial Mushroom Producers, Ireland and Northway, Northern Ireland), organised seminars for all mushroom industry stakeholders on the island of Ireland to disseminate the new information. Knowledge transfer partners in Europe disseminated the information to European stakeholders.



Other contributors and collaborators: Agri-Food and Biosciences Institute, Northern Ireland; East Malling Research, UK; University of Reading, UK; Inagro, Belgium; Plant Research International, Netherlands; Dublin Institute of Technology
Funding: EU FP7 Grant Agreement No. 286836, Teagasc grant-in-aid, Department of Agriculture, Food and the Marine Research Stimulus Fund 07 547



Other contributors and collaborators: National University of Ireland Galway
Funding: Teagasc core funding

The reality of catchment time lags and water quality

Owen Fenton, Karl Richards, Rachel Creamer, Tiernan Henry, Mark Healy

Industry Impact: EU water legislation targets achievement of 'good' status in all water bodies. Failures occur and agri-measures are sometimes incorrectly deemed ineffective. Evidence-based Teagasc research shows that there is a natural delay or 'time lag' between measure implementation and changes to water quality. Figures show that it takes rainfall and nutrients (from current and past regimes) years to travel underground before they can affect water quality. In the future conservation programmes, design and outcomes must account for and adapt to past management and time-lag impacts. A toolkit has been developed to help track the trajectory of water quality during this time-lag phase.

Contribution from non-research stakeholders: This work was only possible on the back of data provided by the Irish Soil Information System and the Agricultural Catchments Programme.

Monitoring for new and emerging insect pests in Irish horticultural crops

Michael Gaffney

Industry impact: The unexpected arrival of a new pest species can cause economic loss and disrupt existing crop protection strategies. Spotted wing drosophila, (*Drosophila suzukii*), a fruit fly that attacks soft fruit was identified in Ireland during 2015 as part of a dedicated industry monitoring programme. A broad-nosed weevil (*Barynotus obscurus*), was identified in 2014 damaging root crops, but has likely been causing sporadic damage for a number of year previous to its identification. Both of these new pests have the potential to cause serious economic losses. Teagasc research is developing strategies to manage these new pests, through on-farm monitoring and grower training. In both instances, these pests have been identified at low population numbers, giving growers the opportunity to implement integrated pest management strategies.

Contribution from non-research stakeholders: This work was only possible with the cooperation of the Irish Horticultural sector and the Teagasc horticultural specialists.



Other contributors and collaborators: Irish vegetable and soft fruit growers, Teagasc horticultural specialists, University College Dublin, Department of Agriculture, Food and the Marine, Natural History Museum, London
Funding: Teagasc grant-in-aid; Department of Agriculture, Food and the Marine Core Funding

Yield formation in spring barley

John Spink, Shane Kennedy, Ciaran Hickey, Tim O'Donovan, Joseph Lynch



Other contributors and collaborators: Scotland's Rural College
Funding: Teagasc grant-in-aid

Industry impact: Recent research findings involving spring barley crops highlighted the importance that shoot production and maintenance has on yield, and the value that plant/shoot counts have for more targeted crop-management decisions. Subsequently, more crops were sown at higher seed rates in good soil conditions, to facilitate high shoot numbers. Furthermore, the practice of assessing plant/shoot numbers throughout the season increased among farmers. This allowed for more informed crop-management decisions, such as crops with poor plant numbers receiving earlier nitrogen application to stimulate tiller production. These actions enabled an increase in the average yield potential, an increase in the efficiency of barley production, and a reduction in the seasonal variability associated with the crop.

Contribution from non-research stakeholders: Knowledge Transfer specialists and advisors made a major contribution to identifying the key opportunities for improvements in spring barley production systems in relation to the research findings. The knowledge gained from the monitor crops was combined with results of other Teagasc research projects and combined into the spring barley guide by a group of researchers specialists and advisors. Subsequently, they disseminated the findings and highlighted the benefits of higher seed rates and monitoring plant/shoot numbers to clients and other farmers at a range of crop walks, conferences and open days.

As a consequence, other stakeholders of the barley industry, including malting and plant protection companies and plant breeders produced and distributed tools (plastic quadrats and hoops) to help growers monitor shoot numbers.

Sediment loss and soil conservation: measurement of sediment flux in rivers and benefits of enhancement measures

Daire Ó hUallacháin, Sophie Sherriff, Owen Fenton, Phil Jordan, Alice Melland, John Rowan

Industry impact: Excessive sediment can degrade water quality and aquatic habitats, in particular freshwater pearl mussel habitats. The Sediment Flux study assessed sediment dynamics in intensive Irish agricultural catchments, finding that sediment yields were low compared to European catchments. This was due to land-use patterns and land-management practices, e.g., irregular, small field sizes partitioned by abundant hedgerows and drainage ditches, underlining the importance of maintaining existing multi-functional landscape features.

Sediment fingerprinting analysis demonstrated that sediment loss in grassland catchments was primarily from channel banks, highlighting the importance of targeting cost-effective mitigation measures, as part of agri-environment schemes or conservation projects (e.g., KerryLIFE).

Contribution from non-research stakeholders: There was a significant contribution from farmers, advisors, technicians and the wider Agricultural Catchments Programme team.



Other contributors and collaborators: University of Dundee
Funding: Teagasc Core Funding + EU LIFE funding

Supporting production of safer ready-to-eat foods

Dara Leong, Triona Hunt, Kieran Jordan



Funding: Department of Agriculture, Food and the Marine Food Institutional Research Measure

Industry impact: *Listeria monocytogenes* is a foodborne bacterium, the causative agent of listeriosis, a relatively rare foodborne disease with a high mortality rate in susceptible populations. Production of safe ready-to-eat food is a challenge to industry with respect to *L. monocytogenes* as it poses a higher risk to consumers. Over a three-year period, eight samples of ready-to-eat food and samples from the food processing environment of 35 food businesses were sent to Teagasc, Moorepark for *L. monocytogenes* analysis every two months. Approximately 1300 samples were analysed each year. Over the three-year period, the total number of positive samples was reduced by 21% from 5.2-4.1%, while the number of positive food samples was reduced by 61% from 5.4-2.7%. This study supported the 35 food businesses in creating awareness of *L. monocytogenes* and in reducing its occurrence in food processing, therefore facilitating production of safer food.

Sensory Food Network Ireland launched

Eimear Gallagher, Sinéad McCarthy, Emily Crofton

Industry impact: Sensory Food Network Ireland, a national network of excellence in sensory food science, was officially launched by Tom Hayes, Minister of State at the Department of Agriculture, Food and the Marine. It was established to promote the integration of sensory science activities in Ireland and includes 10 leading institutions with expertise in sensory science. Through mutual collaborative efforts, and by highlighting the facilities and capabilities available for the food industry, Sensory Food Network Ireland will become an integral part of the food and beverage industry, supporting new product development by providing services such as product matching, consumer acceptance and flavour chemistry and by enhancing the understanding of consumer behaviour within specific market segments. The network will work as a sustainable unit to address documented needs and gaps by the food industry in relation to sensory science. It will also ensure good practice and the highest level of service to industry. Recognising the importance of sensory science in the food industry has evolved from the increasing need for a scientifically sound and systematic approach to the sensory evaluation of foods. In the past number of years, the field has made substantial progress in developing new methods and approaches, and in advancing our understanding of consumer responses to foods. In food companies, sensory food science has considerable value for both tactical and strategic research goals.

Other contributors and collaborators: Agri-Food and Biosciences Institute, Belfast; University College Cork; University College Dublin; Dublin Institute of Technology; College of Agriculture, Food and Rural Enterprise, Co Tyrone; St Angela's College, Sligo; Galway-Mayo Institute of Technology; University of Ulster; Northern Ireland Centre for Food and Health; Limerick Institute of Technology.



Funding: Department of Agriculture, Food and the Marine

Stack Loss Emissions Testing - ISO Accreditation award

Donal Rawle, Anne Marie McAuliffe, Sarah Cooney, Donal O'Callaghan



Teagasc was awarded accreditation to ISO 17025 by the Irish National Accreditation Board (INAB) in respect of sampling and analysis of particulate emissions from dairy plants at its Technical Services Laboratory in the Food Research Centre, Moorepark. This allows the laboratory to be officially described as an INAB-accredited testing laboratory (Reg. No. 323T).

The main staff involved in this accredited activity are: Anne Marie McAuliffe, Quality Manager; Sarah Cooney, Deputy Quality Manager; Donal O'Callaghan, Technical Manager; Eoin Murphy, Deputy Technical Manager; Donal Rawle, Experimental Operator; John Tobin, Head of Food Chemistry and Technology Department; and Mark Fenelon, Head of Food Programme. In excess of 40 plants manufacturing milk powders, dairy ingredients and infant formula are surveyed several times a year in compliance with EPA licensing requirements.

The scope of accreditation covers three technical standards, i.e., determination of total particulates in air (EN 13284-1:2002), determination of velocity and flow rate in stacks (ISO 16911-1:2013) and determination of water vapour in stacks (EN 14790:2005). In communicating the news of the award, Patrick O'Brien, the INAB Accreditation Officer remarked that the accreditation was achieved quickly from application to approval and he stated: "I take this opportunity to congratulate all staff. It is a fantastic achievement and the culmination of a lot of hard work."

Teagasc Dairy knowledge transfer focus on heifer rearing

Tom O'Dwyer, George Ramsbottom

Industry impact: Industry statistics (Irish Cattle Breeders Federation [ICBF]) indicate that a high percentage of replacement heifers fail to calf at the recommended 24 months. Previous Teagasc research indicated that failure to achieve target weights at breeding negatively impacts cow milk solids and reproductive performance. Teagasc has collaborated with a number of industry stakeholders, including Animal Health Ireland, Volac, milk processors and the *Irish Farmers Journal* to highlight this issue through (1) the National Heifer Rearing competition (bi-annually, since 2009) and (2) the CalfCare events (annually, since 2013). The former promotes best practice in heifer rearing while the latter highlights best practice in calf rearing. The impact of both initiatives is evidenced by the improvement in the percentage of heifers calved in the 22-26 months age category from 54% (2011) to 56% (2015) (ICBF).



Other contributors and collaborators: Animal Health Ireland (AHI), Volac, milk processors, *Irish Farmers Journal*
Funding: Teagasc grant-in-aid

Teagasc/*Irish Farmers Journal*/BETTER Farm Beef programme

Alan Dillon, Catherine Egan, Peter Lawrence, Paul Crosson



External funding source for the initiative if any: Joint industry programme funded by Teagasc, *Irish Farmers Journal*, Kepak Group, Dawn Meats, ABP Food Group, FBD

Industry impact: The Teagasc/*Irish Farmers Journal* BETTER Farm Beef programme was established in 2009 to demonstrate improved profitability and sustainability of beef farms. The programme aimed to apply best practice in grassland management, animal breeding and genetics, herd health and financial management with an overall objective being to achieve a gross margin of €1,000/ha for a variety of beef production systems. Progress and updates on the participating farms were disseminated to farmers nationally through weekly technical articles published in the *Irish Farmers Journal*, periodic reviews in *Today's Farm* along with the attendance of 13,000 farmers to regional and national Open Days. The programme recently concluded its second phase, which included 31 farms with a wide geographic distribution and spanning a range of production systems. Participants achieved an average gross margin of €1,030/ha in 2015. There was large variation found between the different production systems, ranging from €1,464/ha for suckler calf to beef systems finishing male progeny at under 16 months of age to €715/ha for suckler calf to weanling systems.

Contribution from non-research stakeholders:

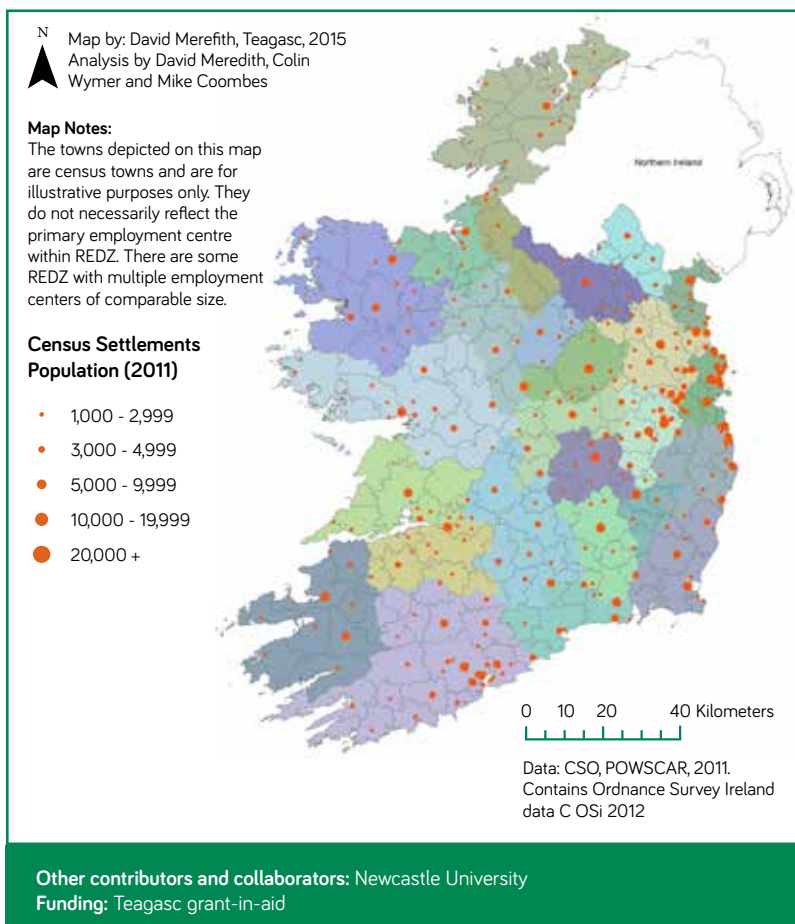
Participating farmers in the Teagasc/*Irish Farmers Journal* BETTER Farm Beef programme and their Teagasc advisors. Teagasc B&T Beef Advisors, Specialists and Teagasc Researchers Grange and *Irish Farmers Journal*.

Identification and evaluation of rural economic development zones (REDZs)

David Meredith, Mike Coombes (Newcastle University), Colin Wymer (Newcastle University)

Industry impact: Following a recommendation within the report of the Commission for the Economic Development of Rural Areas (CEDRA,) research was undertaken analysing and evaluating travel-to-work patterns leading to the identification of functional economic areas. These geographic zones are reflective of the economic area within which most people live their daily lives and, as such, they are the appropriate territorial unit to design and implement integrated local economic development strategies. On the basis of this research, the State allocated €3.8 million to fund a pilot REDZs initiative which is currently supporting 52 communities implement integrated economic development strategies.

Contribution from non-research stakeholders: There was close collaboration with rural policy stakeholders, including the Minister with responsibility for the implementation of the CEDRA recommendations and key officials within both the Department of Agriculture, Food and Marine and Department of the Environment, Community and Local Government (Rural Development Division).



EU agri-environmental policy negotiations

Trevor Donnellan, Kevin Hanrahan, Gary Lanigan



Industry impact: European Union Member States have agreed to a range of environmental targets, among them measures designed to cut emissions of a range of gases. Overall, EU reduction targets are achieved through a sharing of the burden across the individual Member States, with some Member States making bigger percentage contributions than others. Member State contributions to the overall reduction targets are arrived at through negotiation in Brussels. Detailed analysis of likely future emissions, abatement capacity and associated abatement costs are central to such negotiations. Using its modelling capacity in economics and environmental science, Teagasc has played a vital supporting role to the Government departments charged with these negotiations.

Funding: Teagasc grant-in-aid/Department of Agriculture, Food and the Marine Research Stimulus Fund

Research and specialist support for Sport Horse Industry Strategy

Cathal O'Donoghue, Lance O'Brien, Teagasc Food Wise 2025 Working Group

Industry impact: Teagasc co-organised the Sport Horse Industry Strategy Report 'Reaching New Heights'. Teagasc undertook a research programme and national public consultation campaign to develop recommendations. The report was a unique opportunity to impact the sector in relation to breeding, education, marketing and production. The industry is rapidly implementing the report, with: the creation of an international marketing agency; the launch of discussion groups for horse breeders, managed through the Knowledge Transfer Programme; and the launch of new competitions for performance mares and foals. Teagasc has also taken a leading role in establishing a National Equine Education Pathway (NEEP).



Other contributors and collaborators: RDS and Horse Sport Ireland
Funding: Teagasc grant-in-aid

Research Support for Food Wise 2025

Cathal O'Donoghue, Lance O'Brien, Teagasc Food Wise 2025 Working Group



Funding: Teagasc grant-in-aid

Industry impact: Teagasc played an important part in the development of the Food Wise 2025 strategy. A working group was established to provide input into the strategy. The group prepared a research report detailing challenges to land use. Teagasc economists undertook research and provided briefings on topics including competitiveness, the medium-term outlook and sustainability. Teagasc made a policy submission which was influential in relation to the recommendations made by the committee, resulting in Teagasc's involvement in the delivery of 108 (about one third) of the specific recommendations of the committee. Teagasc's recently developed Bio-Economy Input Output model was used to inform the employment creation targets set.

Enhancing family farm sustainability: relational capital of women, men and youth

Áine Macken-Walsh

Industry impact: A diverse farming population is critical for the innovative and economic performance of the agri-food sector and for the social sustainability of rural areas. There is a need for new approaches to complement land mobility measures, the uptake of which has been limited by socio-cultural traditions. A sociology research project undertaken by Teagasc's Rural Economy and Development department has identified practical ways for extension and for policy to meet increased learning and support needs of sole farm owners/operators. It has also identified opportunities to increase and enhance the participation of women and youth in collaborative farming ventures. Outputs from the project, for use by Teagasc, private consultants, and Glanbia, have been targeted extension techniques to optimise learning and support impacts of peer-to-peer discussion groups. Furthermore, outputs from the research were used in Aurivo's development of a discussion group for dairy farm women and recommendations from the research were sought by the Department of Agriculture, Food and the Marine regarding the inclusiveness of new Knowledge Transfer discussion groups and a scheme to support rural nascent women entrepreneurs.

Contribution from non-research stakeholders: Tom O'Dwyer (Teagasc) and John Maher (Teagasc) instigated and facilitated the research on peer-to-peer learning among farm owner/operators.



Other contributors and collaborators: Anne Byrne, National University of Ireland (NUI), Galway

Funding: Department of Agriculture, Food and the Marine Research Stimulus Fund

Research Programmes

The Teagasc mission is to support science-based innovation in the agri-food sector and wider bio-economy that will underpin profitability, competitiveness and sustainability.

This is achieved through the close coupling of research and knowledge transfer in four programme areas:

- **Animal & Grassland Research and Innovation**
- **Crops, Environment and Land Use**
- **Food**
- **Rural Economy and Development**

Each of these programmes is composed of research, development and knowledge-transfer/industry-development departments, as outlined below. Research is conducted at six dedicated locations, while knowledge transfer professionals are located throughout the country (see map opposite).

Our annual research portfolio comprises some 300 research projects, carried out by 500 scientific and technical staff in our research centres throughout Ireland.

In order to maximise the impact of our research, Teagasc actively collaborates with research organisations across the world. This collaboration stretches from individual projects and publications right up to formal alliances and partnerships.

ANIMAL & GRASSLAND RESEARCH AND INNOVATION PROGRAMME

Departments

- Animal & Bioscience Research
- Grassland Science Research
- Livestock Systems Research
- Pig Development
- Dairy Knowledge Transfer
- Drystock Knowledge Transfer

Locations

- Athenry, Co Galway
- Grange, Dunsany, Co Meath
- Moorepark, Fermoy, Co Cork

CROPS, ENVIRONMENT AND LAND-USE PROGRAMME

Departments

- Crops Research
- Environment, Soils and Land Use Research
- Forestry Development
- Horticulture Development
- Agricultural Catchments
- Crops Knowledge Transfer
- Environment Knowledge Transfer

Locations

- Johnstown Castle, Co Wexford
- Oak Park, Co Carlow
- Ashtown, Dublin

RURAL ECONOMY AND DEVELOPMENT PROGRAMME

Departments

- Agricultural Economics and Farm Surveys Research
- Spatial Analysis, Food Marketing and Agri-Innovation Research
- Farm Management and Rural Development Knowledge Transfer

Locations

- Ashtown, Dublin 15
- Athenry, Co Galway

FOOD PROGRAMME

Departments

- Food Biosciences Research
- Food Safety Research
- Food Chemistry & Technology Research
- Food Industry Development
- Food Quality & Sensory Science Research

Locations

- Ashtown, Dublin 15
- Moorepark, Fermoy, Co Cork



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