2017
Competitive Call for Research Proposals

CALL SPECIFICATION

Version 1.1: 14 July 2017

ALL FUNDING INSTRUMENTS

DEADLINE FOR COMPLETED APPLICATION SUBMISSION

Thursday 14th September 2017@ 1pm

IN PDF AND BUDGET IN SPREAD SHEETS VIA EMAIL TO research@agriculture.gov.ie

All responses to this Call for Submission of Proposals will be treated in confidence and no information contained therein will be communicated to any third party without the written permission of the applicant except insofar as is specifically required for the consideration and evaluation of the proposal or where co-funded, for the monitoring and evaluation of project and programme outcomes, or as may be required under law, including the Freedom of Information Act 2014, and in accordance with the conditions of that Act.

This Call Specification must be read in conjunction with the Guidelines for Applicants in order to correctly complete applications under this Call.
MAIN AMENDMENTS FROM VERSION 1.0 (DATED 29 JUNE 2017) ................................................................. 3
1. INTRODUCTION AND RELEVANT STRATEGIES .............................................................................. 4
2. OBJECTIVES ........................................................................................................................................ 6
3. EXPECTATIONS ..................................................................................................................................... 7
4. DAFM RESEARCH FUNDING FRAMEWORK ..................................................................................... 8
5. CO-FUNDING IN CALL 2017 .............................................................................................................. 11
6. DAFM RESEARCH PROGRAMMES AND CALL 2017 THEMATIC AREAS ....................................... 12
   6.1 AGRICULTURE RESEARCH THEMATIC AREAS ........................................................................... 12
   6.2 FOOD RESEARCH THEMATIC AREAS .......................................................................................... 12
   6.3 FOREST RESEARCH THEMATIC AREAS ....................................................................................... 12
   6.4 CROSS CUTTING RESEARCH THEMATIC AREAS ........................................................................ 12
7. SUBMISSION REQUIREMENTS ........................................................................................................... 13
   7.1 STANDARD FUNDING INSTRUMENTS .......................................................................................... 14
   7.2 THEMATIC COORDINATION NETWORK ..................................................................................... 15
   7.3 RESEARCH PLUS ........................................................................................................................... 16
   7.4 IMPORTANT NOTES ON ALL FUNDING INSTRUMENTS ................................................................ 17
8. EVALUATION PROCESS .................................................................................................................... 19
9. RESEARCH AREAS SPECIFIED - CALL 2017 ................................................................................ 20
   9.1 AGRICULTURAL RESEARCH (NI institutions eligible under Topics denoted by *) .................. 20
   9.2 FOOD RESEARCH (NI institutions eligible under Topics denoted by *) ................................. 26
   9.3 FOREST RESEARCH (No NI institutions eligible to participate) ............................................... 31
   9.4 CROSS CUTTING RESEARCH (NI institutions eligible under Topics denoted by *) ............... 35
APPENDIX A: Eligible Irish Research Performing Organisations ......................................................... 40
APPENDIX B: Relevant Strategies to the Call ....................................................................................... 41
MAIN AMENDMENTS FROM VERSION 1.0 (DATED 29 JUNE 2017)

1. Notes 14 and 15 in Section 7.4 on the Thematic Coordination Network (Instrument VI) updated to clarify that they are applicable only to the designated Coordinator.
1. INTRODUCTION AND RELEVANT STRATEGIES

Introduction

This Call has been framed with a view to realising the opportunities and addressing the challenges outlined in key policy documents of major relevance and in particular Food Wise 2025, which sets out ambitious targets for the sustainable development of the agri-food sector and the bioeconomy.

Moreover, addressing climate change, environmental quality and societal cohesion will pose significant challenges over the coming years, as will maintaining competitiveness in an increasingly unpredictable and challenging global market. These challenges have been compounded as a result of increased commodity price volatility and the uncertainty following the Brexit referendum and its impact on trade given the importance of the UK as one of our main export markets.

There is now a real need for new research and innovation to ensure food production under future, increasingly uncertain economic and environmental conditions move towards increasingly resource-smart, climate-smart and "eco-healthy" production and consumption. Innovative farming, forestry, fisheries, food (including sea-food) and biobased sectors that manage to turn high quality products and high environmental standards into a competitive advantage should help to tackle these major challenges and provide tangible solutions; the topics included in this Call have been identified to help meet this pressing need.

This Call will ensure that the Department of Agriculture, Food and the Marine’s (DAFM’s) research and innovation programmes continues to efficiently and effectively contribute towards meeting the objectives set out above, and will also strengthen the existing national knowledge base with the aim of leveraging additional support from EU research and innovation programmes and other international sources.

Strategic Research Agendas and other Relevant Strategies

Much of the content in the topics of this Call has been informed by the relevant Strategic Research Agendas - Sustainable Healthy Agri-food Research Plan (SHARP) and Forest Research Ireland (FORI) – which have been developed through extensive stakeholder consultation in the recent past.

It is expected that the new research and innovations that will emerge from the projects that will be funded on foot of this Call will be important enabling tools to help the sector meet its strategic growth targets particularly as regards human capital and innovation as set out in Food Wise 2025 and the Government’s Action Plan for Jobs and Action Plan for Rural Development.

A number of other policy areas, strategies, plans, packages and agendas also give strategic
direction to the on-going development of the agri-food, marine and forestry based sectors and have also helped inform this Call. Therefore due cognisance, and where appropriate reference, should be made to some of these (depending on topic area) in framing applications to the Call. These include, but are not limited to, a selection of these which are listed in Appendix B.
2. OBJECTIVES

The principal objectives of DAFM’s Competitive Call for Research Proposals 2017 are to:

- Maximise the economic and societal impact of Irish state-funded research and innovation and resources, by developing and deepening effective research collaborations to help deliver the respective aims each of the DAFM’s three competitive programmes:
  - **Food Institutional Research Measure** – To develop platform/‘public good’ technologies that will underpin a competitive, innovative and sustainable food manufacturing and marketing sector some of which can be exploited through more industry facing public support programmes
  - **Research Stimulus Fund** – To support sustainable and competitive agricultural production practices and policies, and contribute to building and maintaining a knowledge economy and research capability in the primary agriculture sector.
  - **Programme of Competitive Forest Research for Development** – To develop a scientific foundation and support for a sustainable, competitive, market orientated and innovative forest industry

- Provide research and innovation opportunities for early stage researchers in relation to agri-food, seafood, forestry, rural economy and the bioeconomy.
- Inspire the future generation of students and train and educate a cohort of professionals and scientists at MSc, PhD and post-doctoral level that will take up high-value employment in government, State agencies, academia, Multi-National Companies (MNCs) and Small and Medium Sized Enterprises (SMEs) based in Ireland including consultancy and advisory services, and contract research enterprises.
- Form effective partnerships with farmers, foresters, industry and others to work on challenging problems and facilitate transfer of technology, expertise, know-how and knowledge exchange among the participants.
- Deliver research excellence with impact which will be aligned with areas of strategic opportunity for Ireland and the EU.
- Deliver coordination and support services e.g. development of databases to support regulatory and industry needs, networks (e.g. Sensory Food Network Ireland) and programmes (e.g. Agri-Food Graduate Development Programme) with impact which will be aligned with areas of strategic opportunity for Ireland and the EU
- Foster impactful innovation by supporting industry-informed research and the exchange of knowledge and expertise between academia and the agri-food and bioeconomy industry. This includes new ground breaking outcomes, novel concepts and approaches, market opportunities, new products, services or business or organisational models, invention disclosure, development of patents and licenses and development of spin out companies.
- Engage the general public and equip them with the tools to confidently understand and debate agri-food, forestry, seafood, rural economy and the bioeconomy research and innovation in Ireland.
3. EXPECTATIONS

The expectations regarding research proposals in this Call are that:

- The concept of responsible research and innovation will underpin proposals, and that proposals will aim to align research and innovation to the values, needs and expectations of society. For this call this refers to the conduct of research, the access to research results and the application of new knowledge in society. The research should be conducted in full respect of gender equality, the gender dimension in research and ethics considerations.

- The research and innovation activities undertaken should where possible explore, analyse and address sex and gender differences and take into account biological characteristics as well as the evolving social and cultural features of women and men and other relevant factors of diversity in a given context.

- The research should be informed as required by market intelligence, contact with relevant stakeholders, consumer needs and behaviour, national dietary databases, other relevant health databases and taking account of the global regulatory framework that governs food production and nutritional policy.

- Multi-, inter- and trans-disciplinary approaches and inter-institutional collaboration are undertaken.

- Applicants should take note that some aspects of the Call are cross-sectoral or are applicable across the food chain whilst other elements are focussed on a single sector or research and innovation activity. The likelihood is, therefore, that, depending on the topic being addressed, a consortium comprising a mix of bioscience and other Science, Technology, Engineering and Mathematics (STEM) and/or Humanities and Social Science (HSS) researchers may be required to fully address the issue. Applicants are strongly advised to take account of this aspect when forming their research project teams as this will certainly be considered as part of the evaluation process.

- Opportunities will be identified for synergistic collaboration and implementing of linkages across areas where there is greatest potential for economic and societal benefit.

- Strong consideration is given to coordination, dissemination and exploitation with other projects financed under the same or related topics. This type of coordination allows organising of clusters of projects which work on similar issues, to avoid duplication of effort and to enable cross fertilisation and synergies.

- In particular, applicants should familiarise themselves with ongoing projects, programmes or other initiatives funded either by DAFM or other funding agencies / bodies (e.g. Horizon 2020, EI Technology Centres, SFI Centres, RDP and Seafood Programme, HRB, IRC, EPA, Teagasc, Marine Institute) both nationally and internationally and, where possible and/or appropriate, build on and link to such activities in their submission to this Call.

- Due consideration will be given to the multi-actor approach concept involving government, state agency, indigenous or FDI industry, non-governmental organisations or consumer/citizen engagement as required. The approach chosen should be reflected in the methodological description of project proposals and should seek to develop wider participation in research and innovation.
• Where applicable industry involvement is encouraged on a self-financing basis subject to the need to respect the ‘public good’ nature of DAFM Research Funding Programmes and compliance with the National Intellectual Property Protocol. Evidence of industry engagement in a real and meaningful manner can help demonstrate the relevance and likely impact of the research work which is examined as part of the evaluation process.
• Participation with other innovation programmes provided through EU Funds will be enhanced. (e.g. EIP AGRI). Focus and Operational Group options are encouraged to enhance dissemination, exploitation, complementarities and synergies.
• Where relevant, large item equipment costs are minimised through use of shared resources that have already been funded, e.g. the HEA’s Large Items of Research Equipment database is an online resource of all large equipments in Higher Education Institutions that should be availed of where appropriate.
• It should be used as a platform to participate in and ultimately lead initiatives of scale especially those funded by the EU Horizon 2020 framework programme for research and innovation.
• Applications must comply with the latest applicable National/EU/Regional/Global legislation/codes/guidelines/framework/standards that may apply to undertaking research in any given specific thematic area. Applicants are expected to demonstrate knowledge of, and adoptions to their planned research in meeting any such relevant provisions that might be applicable in these contexts.
• Where appropriate, applicants are strongly advised to make contact with officials in relevant organisations (including DAFM) to discuss pertinent issues when formulating applications for topics relating to agri-food and forestry policy or regulatory matters.
• It will be impactful on end users (farmers, agri-food and forestry businesses, regulators, State Agencies and policy makers), and help provide evidence-informed policy formation and/or the legislative/regulatory framework.

Applications to this Call should clearly demonstrate in the submitted proposal, how the expectations set out above will be met in the context of the research and innovation proposed.

4. DAFM RESEARCH FUNDING FRAMEWORK

Recognising the value of research and innovation to the further development of a vibrant Irish agri-food sector and bioeconomy, and bearing in mind the need to continually address competitiveness, sustainability and consumer/citizen issues, DAFM has a Conceptual Framework (Figure 1) for guiding the funding of related research.

• The Framework implies that whilst primary production research is linked to processing research in dairy, meat, crop, fisheries, forestry and other biobased products it must be informed by consumer or market needs for a particular product. Consumers are becoming increasingly aware of the opportunities to improve the quality of their lives through healthy eating and of the contribution that sustainable production - both in terms of food and non-food products - can make to the improvement of their environment and to
sustainability. The preferences of consumers for quality, convenience, diversity and health, and their justifiable expectations of safety, ethical and sustainable production serve to highlight the opportunities for innovation. The same principles, with respect to consumers, apply in respect of the public good derived from primary production activities including access to rural amenities (e.g. forests). In the case of other end-users, these principles also apply in respect of the other bio-based products derived from primary production activities.

- The content of the Call has been strongly influenced by the aforementioned DAFM Research Funding Framework and also the background policy areas, strategies, plans, packages and agendas (Appendix B) and also the Call objectives (Section 2) and Call expectations (Section 3). Applicants are, therefore, strongly advised to consult these in order to get a full understanding of the overall philosophy pursued, the high level objectives to be addressed and the benefits expected from each of the topics included in the Call.

**Figure 1: DAFM RESEARCH & INNOVATION FUNDING FRAMEWORK**

- DAFM has entered into co-funding arrangements with DAERA and the EPA for certain topics in this Call (see section 5). In addition to this DAFM may enter into other co-funding arrangements for selected topics in this Call if it deemed appropriate.
- Co-funding of submitted applications, especially the larger grant requests, by RPO partners using either mainstream institutional funding sources and/or pan-industry levies made available to them is also possible and demonstrates a genuine integrated partnership approach.
As set out in the Expectations section industry partner co-funding is encouraged on a self-financing basis subject to the need to respect the ‘public good’ nature of DAFM Research Funding Programmes and compliance with the National Intellectual Property Protocol.
5. CO-FUNDING IN CALL 2017

Co-Funding with DAERA on selected topics

DAFM and the Department of Agriculture, Environment and Rural Affairs (DAERA), Northern Ireland have agreed a co-funding arrangement subject to budget availability, to the involvement of Agri-Food Biosciences Institute, Queen’s University Belfast and the University of Ulster in applications to those topics denoted by an asterisk (*) in Section 9. This co-funding arrangement is limited only to applications under Funding Instruments I to V (see section 7.1). Intending applicants in these institutions requiring further information on this funding should contact Gabrielle Sharkey, Research Policy Branch, email Gabrielle.Sharkey@daera-ni.gov.uk telephone 028 71319766.

Co-Funding with EPA on selected topics

DAFM and the Environmental Protection Agency (EPA) have agreed a co-funding arrangement for successful project/s that emerge in two topic areas included in this Call (A.5.2 and A.6.1 in Section 9.1) as these are of mutually shared strategic importance to both organisations. Any successful funded project under this arrangement will be required to follow DAFM’s funding rules and requirements for Project-based awards. A maximum of one project will be approved for co-funding with the EPA under each of the topic areas A.5.2 and A.6.1.
DAFM’s Research Programmes

DAFM) intends, under its Competitive Call for Research Proposals 2017, to fund a number of research projects under its competitive research funding programmes:

- Food Institutional Research Measure (FIRM) – Food Research
- Research Stimulus Programme (RSF) – Agriculture Research
- Programme of Competitive Forest Research for Development (CoFoRD) – Forestry Research

These competitive research funding programmes hereafter will be referred to as the DAFM Research Funding Programmes.

Research topics in Call 2017 are set out under the following four broad inter-related investment research headings which each have respective thematic areas:

6.1 AGRICULTURE RESEARCH THEMATIC AREAS

- Animal Breeding and Reproduction
- Animal Well-Being, Animal Nutrition and Product Quality
- Plant Production
- Plant Health and Breeding
- Management of Natural Resources, Biodiversity and Ecosystem Services
- Soils, Land Use, Climate Change and Transboundary Gases

6.2 FOOD RESEARCH THEMATIC AREAS

- Food Processing technology & engineering
- Food Product Development, Formulation & Sensory Science
- Functional Food and Health
- Nutrition, health & diet related diseases

6.3 FOREST RESEARCH THEMATIC AREAS

- Expansion of the Forest Resource
- Resource Utilisation
- Forest Resource Protection
- Ecosystem Services

6.4 CROSS CUTTING RESEARCH THEMATIC AREAS

- Food Chain Integrity and Safety
- Socio-economics
7. SUBMISSION REQUIREMENTS

The submission requirements set out across all of this section should be met. Applications that do not adhere to these requirements will be eliminated at the first stage preliminary assessment of the evaluation process and in such cases the application will not proceed for expert review. Please refer to Section 3 ‘Criteria for Assessment of Proposals’ of the Guidelines of Applicants for details of all three assessment stages.

As part of the first stage preliminary assessment applications under all funding instruments that are submitted on time will be checked against the following mandatory Call eligibility criteria:

- Applications must be submitted using DAFM’s 2017 Research Call Application Forms and Budget Sheets.
- All completed application forms must be signed by the
  o Project Co-ordinator;
  o Principal Investigator (PI);
  o Vice President of Research/Head of Research and;
  o The Transfer Technology Office (TTO) or equivalent within the lead RPO
- Grant applications will only be accepted from DAFM approved Research Performing Organisations (RPOs). Please refer to Appendix A.
- The currency to be used must be euro (€)
- The minimum criteria set out for the Funding Instrument you are applying under must be met. These minimum criteria are set out in the relevant part of Tables 1, 2 and 3 in Section 7 of the Call Specification.
- The scope of the research in the application conforms with the ‘research objectives’ for the selected ‘research area’ in Section 9 of this Call Specification.

Incomplete applications or applications not submitted by the stated Call deadline will be deemed ineligible and returned without review to the applicant after the deadline submission date.

The Guidelines for Applicants and the associated application forms for all funding instruments are available to download from the DAFM Research website

Applications to Call 2017 must be made using one of the funding instruments outlined in Table 1, 2 or 3 in section 7. These Tables must be interpreted in conjunction with the Important Notes on all Funding Instruments in section 7.4, which together include key information on completing the Application Form and the minimum eligibility requirements.
## 7.1 STANDARD FUNDING INSTRUMENTS

**Standard Funding Instruments** are the means through which conventional grant applications under DAFM’s Funding Programmes can be made. The submission requirements of the standard funding instrument vary depending on the maximum grant request. Further details on these are outlined in Table 1 and in the relevant Notes in Section 7.4.

### Table 1: Summary Details of Submission Requirements for Standard Funding Instruments (I-V)

<table>
<thead>
<tr>
<th>Funding Instruments</th>
<th>Type of Project</th>
<th>Duration</th>
<th>Max. Grant Request&lt;br&gt;1 or 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Desk Study</strong> 2</td>
<td>Single RPO or Collaborative project involving at least two RPOs. <em>Please also refer to Note 5 in Section 7.4</em></td>
<td>≤1 years or ≤2 years</td>
<td>≤€100,000 or ≤€200,000</td>
</tr>
<tr>
<td><strong>II. Small Project</strong></td>
<td>Flexibility for involvement of one or more RPO’s. <em>Please also refer to Note 5 in Section 7.4</em></td>
<td>≤2 years</td>
<td>≤€200,000</td>
</tr>
<tr>
<td><strong>III. Standard Project</strong></td>
<td>Collaborative project with at least two RPOs. <em>Please also refer to Note 6 in Section 7.4</em></td>
<td>≤4 years</td>
<td>≤€600,000</td>
</tr>
<tr>
<td><strong>IV. Large Project</strong></td>
<td>Collaborative project with at least three RPOs each accounting for at least 10% of the overall grant requested from DAFM. <em>Please also refer to Note 7 in Section 7.4</em></td>
<td>≤4 years</td>
<td>≤€1,250,000</td>
</tr>
<tr>
<td><strong>V. Programme</strong></td>
<td>Large strategic initiative involving a collaboration of at least four RPOs each accounting for at least 10% of the overall grant requested from DAFM. <em>Please also refer to Note 8 in Section 7.4</em></td>
<td>≤5 years</td>
<td>≤€3 million</td>
</tr>
</tbody>
</table>

---

1 Where proposals include NI partners the maximum grant request set out in this Table applies to the combined grant request from both DAFM and DAERA
2 Open to NI only if it involves collaboration
7.2 THEMATIC COORDINATION NETWORK

The Thematic Coordination Network instrument seeks with respect to the agri-food, forestry and bioeconomy sector: (a) to add value to the outputs of recently completed or nearly completed research projects and further close the research and innovation divide; and (b) to provide additional funding to assist in the clustering of research findings in a common theme area into a Coordinated Network and provide for more cooperation between researchers, advisors, farmers/foresters and other actors in the supply chain. Such a network would facilitate the sharing, mining and exploitation of data, methodologies, information and best practice dedicated to impactful activities. It is open across all agri-food research activities (i.e. not just confined to topic areas specified in this particular call) and would optimise resource use and smooth the transition to a knowledge-driven agriculture, fostering knowledge exchange and enable links being established with e.g. the EIP-AGRI Focus and Operational Groups and Horizon 2020 Thematic Networks.

A Thematic Coordination Network could for example:

- Identify and distinguish between existing best ‘innovation driven’ practices and best scientific research not yet sufficiently known that is ‘near ready’ for exploitation.
- Address the most urgent needs which would identify the most relevant ‘innovation driven’ practices and scientific research to underpin improvements in the links between e.g. the production and the supply chain.
- Promote the shared understanding and uptake and development of best ‘innovation driven practice’ and ‘scientific research’ which address the most urgent needs of the common theme area with the aim of contributing to the competitiveness, sustainability and security of e.g. the supply chain.

Table 2: Summary Details of Submission Requirements of Thematic Coordination Network (Funding Instrument VI)

<table>
<thead>
<tr>
<th>Funding Instrument</th>
<th>Type of Project</th>
<th>Duration</th>
<th>Max. Grant Request</th>
</tr>
</thead>
</table>
| VI. Thematic Coordination Network| Must involve at least 3 on-going or recently completed research projects undertaken across 4 RPOs. The involvement of a no. of agri-food companies, in particular SMEs and/or umbrella representative organisations, is also encouraged where appropriate and adds value. Example topics could include: 
  - Agriculture & anti-microbial resistance
  - Food Safety & Climate Change
  - Sustainable Intensification of Agriculture
  Please also refer to Notes 10-15 in Section 7.4 | ≤ 3 years | ≤ €75,000/year |
7.3 **RESEARCH PLUS**

Research Plus instrument seeks to add value, through further research, to the outputs of recently completed or nearly completed DAFM Funded Research projects; to provide additional funding to assist research to a point where applicants are in a position to apply to Enterprise Ireland for future funding; and to encourage researchers to apply their research findings for commercial gain to the Irish economy.

**Table 3: Summary Details of Submission Requirements of Research Plus (Funding Instrument VII)**

<table>
<thead>
<tr>
<th>Funding Instrument</th>
<th>Type of Project</th>
<th>Duration</th>
<th>Max. Grant Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>VII. Research Plus</td>
<td>Small institutional project to bring completed or near completed DAFM funded project to point where it is eligible for EI commercialisation supports. Please also refer to Notes 16-19 in Section 7.4</td>
<td>≤1 years</td>
<td>≤€100,000</td>
</tr>
</tbody>
</table>
7.4 IMPORTANT NOTES ON ALL FUNDING INSTRUMENTS

Important Notes on general matters, related documents, call and instrument scope, funding, partnering, and minimum eligibility requirements

General Matters:

1. Unless specifically stated, all Instrument types are open to, but also confined to, the topics areas outlined in Section 9 - RESEARCH AREAS SPECIFIED - CALL 2017 - with the exception of Thematic Coordination Network and Research Plus which are open across all agri-food research activities covered by the Conceptual Framework shown in Fig. 1.

2. The grant request figures are indicative only and the upper limits should not be regarded as targets. As one of the evaluation criteria looks at value for money, it is in the applicants’ interests to ensure that the grant requested is reasonable, commensurate with the research and innovation activities proposed and in line with the most recent Government guidelines e.g. staff pay scales.

3. All text in attachments should be written in single-spacing using at least 11 point font, with at least 2.54 cm (1 in) right and left margins. The number of words/pages in any given section should not exceed those stated in these guidelines.

4. Appendices, or other unsolicited documentation, (e.g. team member CV’s, letters of support, equipment quotations) are not permitted.

Standard Funding Instruments (I – V):

5. Desk study (Instrument I) or small project undertaken preferably by Masters students (Instrument II) are specified as the only permitted instrument for certain topic areas; however, they may also be the most appropriate means of addressing a research and innovation objective in the case of several other topics.

6. In the case of Standard Project (Instrument III) proposals, a minimum of two RPO type project partners must each account for at least 10% of the overall budget. Any project that does not comply with this clause will be deemed ineligible at preliminary assessment stage of the evaluation.

7. In the case of Large Project (Instrument IV) proposals, a minimum of three RPO type project partners must each account for at least 10% of the overall budget. This clause will not apply to fourth and subsequent partners on any project. Any project that does not comply with this clause will be deemed ineligible at preliminary assessment stage of the evaluation.

8. In the case of Programme (Instrument V) proposals, a minimum of four public RPO type project partners must each account for at least 10% of the overall budget. This clause will not apply to fifth and subsequent partners on any project. Any project that does not comply with this clause will be deemed ineligible at preliminary assessment stage of the evaluation. If required, the cost of a project manager can be included in an application under funding mechanism V.

9. DAFM reserve the right to group successful projects into new or existing programmes as
appropriate at the award / implementation stage.

**Thematic Coordination Network (Instrument VI):**

10. Principal Investigators involved in recently completed or current projects are eligible to apply.
11. Any proposed Network must include at least three and up to five on-going or recently completed projects, and involve at least four RPOs.
12. Any proposed Network may also involve the participation of agri-food SMEs and/or umbrella representative organisations.
13. If Intellectual Property (IP) was generated as a result of a previous collaboration, then DAFM will require a statement from the collaborator, should that collaborator not be involved in the proposal, stating that they are supportive of the application. Should the application be successful, DAFM may require confirmation from the TTO or equivalent, that this is in fact the case and there is no issue with regard to the use of that IP in future projects.
14. The coordinator must be a permanent member of staff of the lead organisation.
15. The coordinator has to be in a position to continue to be responsible for the scientific and technical direction of the Network.

**Research Plus (Instrument VII):**

16. Principal Investigators who recently completed (within the last 24 months) or who are nearly finished (within the next 12 months) a FIRM/RSF/CoFoRD project are eligible to apply.
17. The applicant must be a Principal Investigator / permanent member of staff of the lead organisation and therefore in a position to continue to be responsible for the scientific and technical direction of the project.
18. Applicants should be able to demonstrate that the Intellectual Property (IP) of those projects have been managed appropriately so as not to have compromised their use for future commercial potential. In this regard, applicants will have to provide documented evidence that they have discussed their research with the Technology Transfer Officer (TTO) or equivalent within their research organisation and that the TTO or equivalent has deemed the research outputs to have some future commercial potential. Funding will be contingent on this criteria being adhered to.
19. Collaboration between the coordinator with other research and/or industry partners is allowed and indeed encouraged, but collaboration is not a pre-requisite of the initiative. However, if the IP was generated as a result of a previous collaboration, then FIRM/RSF/CoFoRD will require a statement from the collaborator, should that collaborator not be involved in the proposal, stating that they are supportive of the application. Should the application be successful, FIRM/RSF/CoFoRD may require confirmation from the TTO or equivalent, that this is in fact the case and there is no issue with regard to the use of that IP in future projects.
8. EVALUATION PROCESS

All proposals will be evaluated using a 3-stage process:

1. Initial assessment which will concentrate, in particular, on strict adherence to eligibility criteria as set out in Section 7. Applications that do not adhere to these requirements will be eliminated at the first stage preliminary assessment of the evaluation process and in such cases the application will not proceed for expert review.

2. Review by a panel of experts in accordance with defined evaluation criteria; and

3. Assessment of high level strategic considerations by DAFM’s Competitive Research Committee.

Further details are outlined in the accompanying Guidelines for Applicants.
## 9. RESEARCH AREAS SPECIFIED - CALL 2017

### 9.1 AGRICULTURAL RESEARCH (NI institutions eligible under Topics denoted by *)

<table>
<thead>
<tr>
<th>SHARP Key Investment Area</th>
<th>Research Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research Area</strong></td>
<td><strong>Research Objectives</strong></td>
</tr>
<tr>
<td><strong>A.1 Animal Breeding &amp; Reproduction</strong></td>
<td></td>
</tr>
<tr>
<td><strong>A.1.1 Sports horse breeding</strong></td>
<td>Examine the Irish sport horse industry with the aim of developing a coherent breeding goal and selection index methodology for genetic improvement in the sector. The proposal should include the following aspects:</td>
</tr>
<tr>
<td></td>
<td>- Establish the current state of play in the Irish Sports Horse industry</td>
</tr>
<tr>
<td></td>
<td>- Determine appropriate goal and index traits for a breeding goal</td>
</tr>
<tr>
<td></td>
<td>- Elucidate the genetic co-variation within and among index and goal traits</td>
</tr>
<tr>
<td></td>
<td>- Develop a system in which data on the important traits can be routinely captured accurately</td>
</tr>
<tr>
<td></td>
<td>- Develop a road map for the sustainable progress of breeding in the sport horse industry</td>
</tr>
<tr>
<td><strong>A.1.2 Genetic improvement for environmental efficiency</strong></td>
<td>Assess the implications, benefits and additional future opportunities of incorporating direct selection of environmental traits into current ruminant breeding programmes with a view to improving environmental footprint of Irish production systems, whilst also ensuring animal health and welfare. The proposal should include the following aspects:</td>
</tr>
<tr>
<td></td>
<td>- Quantify the impact of current breeding schemes on environmental footprint</td>
</tr>
<tr>
<td></td>
<td>- Be strongly integrated with the various national ruminant breeding programmes but with the main focus on the beef programme and how it might improve the national greenhouse gas and ammonia inventory</td>
</tr>
<tr>
<td></td>
<td>- Generate genomic evaluations compatible with current systems.</td>
</tr>
<tr>
<td></td>
<td>- Generate data using an optimised design for direct integration into a national breeding programme</td>
</tr>
<tr>
<td></td>
<td>- Derive the weighting factors that might be placed on traits within a breeding objective and the impact on genetic gain for all relevant traits</td>
</tr>
<tr>
<td>A.2 Animal Well-Being, Animal Nutrition and Product Quality</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>A.2.1 Engagement with DAFM animal health services</strong></td>
<td></td>
</tr>
<tr>
<td>Establish the motivation and engagement patterns of key stakeholders with both DAFM’s animal health surveillance and diagnostic services in responding to animal health and disease events on farms.</td>
<td></td>
</tr>
<tr>
<td>The proposal should include the following aspects:</td>
<td></td>
</tr>
<tr>
<td>- An understanding of the social and psychological factors underpinning decision-making in responding to animal health and disease events on farms</td>
<td></td>
</tr>
<tr>
<td>- Development of a better understanding of how and why stakeholders engage with DAFM animal health surveillance and diagnostic services, and how that might be enhanced</td>
<td></td>
</tr>
<tr>
<td><strong>Limited to a small project. The maximum grant request for a small project is increased to €300,000 for this topic.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>A.2.2 Stakeholder understanding in respect of health and welfare of farmed animals</strong></td>
<td></td>
</tr>
<tr>
<td>Establish and evaluate the understanding, beliefs, attitudes, motivation and behavioural patterns of key stakeholders to the health and welfare of farmed animals in the context of commercial dairy, pig and poultry farm production systems.</td>
<td></td>
</tr>
<tr>
<td>The proposal should include the following aspects:</td>
<td></td>
</tr>
<tr>
<td>- An investigation and evaluation of stakeholder perception of animal welfare in these production systems</td>
<td></td>
</tr>
<tr>
<td>- An understanding of the social, cultural, economic and psychological factors underpinning decision-making on farm, which impact of the welfare of the animals</td>
<td></td>
</tr>
<tr>
<td>- Define key drivers of veterinary prescribing behaviour, at both veterinary practitioner and farmer level, in particular in relation to the use of antibiotics, and examine effective ways to achieve behavioural change to minimise the risk of anti-microbial resistance development</td>
<td></td>
</tr>
<tr>
<td><strong>Limited to a small project. The maximum grant request for a small project is increased to €300,000 for this topic.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>A.2.3 Biosecurity measures benefits</strong></td>
<td></td>
</tr>
<tr>
<td>Quantify the benefits of the implementation of biosecurity measures on a range of Irish farm enterprises, in particular commercial dairy, pig and poultry production systems.</td>
<td></td>
</tr>
<tr>
<td>- The proposal should focus on quantifying the impact of implementing internal and external biosecurity measures in terms of productivity, economics and the quantities of antibiotics being used.</td>
<td></td>
</tr>
<tr>
<td><strong>Limited to desk study or small project.</strong></td>
<td></td>
</tr>
</tbody>
</table>
| A.2.4 Tick species analysis* | Evaluate the effects of climate change on tick species and their distribution in Ireland

The proposal should include the following aspects:
- A nationwide tick surveillance programme (in areas of the country frequented by people and animals)
- Develop and improve skills in morphological identification and genomic characterisation of ticks.
- Use collected data to facilitate an update of the Irish tick species list
- Identify and report any new tick species not previously identified in Ireland
- Use collected data to generate predictive models of tick distribution for use in future disease prevention and eradication programmes
- Screen collected ticks for infectious agents that impact human and animal health

Limited to a standard project.

| A.2.5 Plant Characteristics/Composition impacts* | 1. Investigate the influence of the structural characteristics of grass and clover species on voluntary dry matter intake of grazing livestock

2. Investigate the influence of the chemical composition of grass and clover species on rumen fermentation, total tract digestion and product quality (milk and meat).

Where applicable, applications can address one of the above or where appropriate address both in a combined integrated proposal.

| A.2.6 Purity of Native Honeybee population* | Establish the purity of Ireland’s native honeybee (*Apis mellifera mellifera*) population – both managed and feral

The proposal should include the following aspects:
- Building on work completed to date, undertake a national genotyping component to determine the purity of the overall Irish honeybee population
- Determine whether *Apis mellifera mellifera* undergoes assortive mating (where bees of that strain will selectively seek to mate with other *Apis mellifera mellifera* bees)
- Determine the extent to which *Apis mellifera mellifera* may have undergone adaptive evolution
- A better understanding of the underlying dynamics that support the survival of feral *Apis mellifera mellifera* populations

Limited to a standard project.
### A.3 Plant Production

| **A.3.1 Heavy metal uptake in Horticultural Crops** | Development of mitigation strategies on the uptake of Cadmium and other heavy metals by horticultural crops.  
The proposal should include the following aspects:  
- A greater understanding of the fundamental mode of action and kinetics of soil amendments to mitigate Cd uptake.  
- Field based validation of remediation models by testing of soil amendment combinations.  
- The development of novel, rapid and portable detection methods including piloting electrochemical techniques in soils and possibly plants and fertilisers |

| **A.3.2 Innovations for cereal crop use** | Develop further innovations for cereal crop use in an Irish context that can profitably exploit existing or novel markets.  
The proposal should include (but is not limited to) the following aspects:  
- Evaluation of varieties of wheat to identify the most promising for use as a feed stock for the distilling industry – the evaluation should incorporate both field and laboratory based components  
- Incorporate industry involvement in the research from the outset  

**Limited to a standard project.**

### A.4 Plant Health and Breeding

| **A.4.1 Optimising grass and clover evaluation systems** | Develop and integrate on-farm evaluation systems for perennial rye-grass and white clover to increase the rate of genetic progress under Irish grassland farming systems.  
The proposal should include the following aspects:  
- Develop synergies of both on-farm and plot variety assessments to bring new science and innovations  
- Optimising the utility of generated evaluation data (including historic data)  
- Identify new traits, especially in relation to grazing, in order to enhance the environmental sustainability of Irish grassland systems  
- Develop recommendations to establish a more robust national grass and clover variety selection index  

**Limited to a standard project.**
<table>
<thead>
<tr>
<th><strong>A.5 Management of Natural Resources, Biodiversity and Ecosystem Services</strong></th>
</tr>
</thead>
</table>
| **A.5.1 Mitigating Phosphorus losses to water**<sup>*</sup> | Review, develop and test, cost effective multi beneficial and realistic intervention measures for mitigating phosphorus losses to water in high risk areas on commercial farms.  

The proposal should include the following aspects:  
- Farmer input into the practicality of applying most promising phosphorus pathway interception measures and other suitable measures in a selection of study catchments with water quality problems  
- Test land use and climate change impact scenarios  
- Develop a better understanding of the most socially, environmentally and economically appropriate measures in an Irish context for reducing water quality impacts from phosphorus  
- Measures proposed should be amenable for integration into agri-environmental schemes |
| **A.5.2 Evaluation of agri-environmental measures**<sup>(Please note that the EPA are co-funding this topic)</sup> | Evaluate agri-environmental measures across the areas of Water, Air (GHG & Ammonia) and Biodiversity to inform an integrated abatement strategy with multiple benefits for the environment (sustainable food production systems) and farm viability (economic).  

The proposal should consider and include the following aspects:  
- A holistic and integrated approach to evaluate the current state of the art in both a national and international context with a view to informing a beneficial national abatement strategy/strategies which incorporates the inherent interactions associated with Water, Air (GHG & Ammonia) and Biodiversity.  
- Develop a cost curve to provide quantitative estimates for the combination of total benefits/trade-offs accrued by each measure in each of the identified areas. The research should develop qualitative data also to inform the relative merits of different measures.  
- Evaluate and identify potential measures that could be readily adopted into farming practices and agri-environmental schemes in Ireland

**Limited to a standard project.** |
| **A.5.3 Mitigating impacts of Pesticide use on terrestrial ecosystems**<sup>*</sup> | Identification of measures to protect the structure and functions of a range of terrestrial ecosystem services from potential impacts of pesticide use in Ireland.  

The proposal should have particular focus on:  
- Measures to mitigate potential impacts of pesticide use on pollinators  
- Development of realistic soil risk assessment scenarios for pesticide use in Ireland  
- Development of a national soil monitoring programme for pesticides |
## A.6 Soils, Land Use, Climate Change & Trans-boundary Gases

### A.6.1 Soil carbon sequestration

(Please note that the EPA are co-funding this topic)

Bring together observations, measurements, mechanisms and modelling to develop an improved understanding of, and ability to assess, the nutrient budget and carbon storage potential of different soils under different environmental conditions and human practices

- Research must be undertaken in cooperation and coordination with the FACCE JPI’s ‘Thematic Annual Programming on organic matter sequestration in the soil’ (TAP-Soil) initiative. A more detailed elaboration on the scope and research required can be accessed on the FACCE-JPI website at TAP-Soil Call.
- Proposals should focus on soil carbon sequestration research that is relevant to Irish grassland and arable systems, and complement the ongoing research in this area that is being undertaken in the Agricultural Greenhouse Gas Research Initiative for Ireland (which is already participating in the TAP-Soil cluster international network)
- A maximum of €7,500 per annum of the proposal's total budget should be allocated to defray costs associated with the TAP-Soil cluster international networking activities

**Limited to a standard project.**
### 9.2 FOOD RESEARCH (NI institutions eligible under Topics denoted by *)

<table>
<thead>
<tr>
<th>Research Area</th>
<th>Research Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B.1 Food Processing Technology and Engineering</strong></td>
<td></td>
</tr>
</tbody>
</table>
| **B.1.1 Novel Technologies** | 1. Reformulation for reduction of sugar, empty calories, saturated fat and trans-fats for process and product innovation & replacement. A proposal should include the following aspects:  
  - Aim to improve the nutritional profile of food  
  - Focus on meat and dairy foods taking account of texture, quality, food safety and barriers to taste  
  2. Reformulation technologies for maximum utilisation of the fisheries catch. A proposal should include the following aspects:  
  - Aim to improve the quality and nutritional profile of food  
  - Take account of texture, quality, food safety and barriers to taste, traceability, authentication and certification  
  3. Development of novel manufacturing technologies to automate and optimise food processing. A proposal could include a focus on the following aspect:  
    - 3-D printing |

*Where applicable, applications can address one or more of the above or where appropriate in a combined integrated proposal.*
### B.1.2 Novel Processes & Solutions

1. Investigation and application of Quality by Design (QbD) principles to enhance efficiency and sustainability within the food industry. A proposal should include the following aspects:
   - Examine the state of the art as regards scientific, risk-based, holistic and proactive approaches to food product development
   - Examine how deliberate design effort from product conception through to commercialisation is used by the Irish food industry
   - Examine how product attributes and process relate to product performance and influence design and development

   **Limited to small project.**

2. Development of novel supply chain packaging and filling solutions for food products. Market intelligence, research and innovation state of the art, regulatory requirements and consumer needs and behaviour should be considered. A proposal should include some or all of the following options:
   - Investigate demand led new materials for increasing shelf life
   - Examine extended shelf life of pre-packaged raw seafood products.
   - Clean label food technologies

   This proposal may contain limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment.

### B.1.3 Processing & Bioactivity

1. Exploitation of Irish food materials as a source of novel enzymes or other bioactive ingredients.

2. Increase the understanding of quality changes and bioactivity of produce during processing and storage with necessary focus on microbiological safety, quality and nutritive stability. A proposal should examine all of the following:
   - Understand the quality changes and bioactivity of produce during processing and storage to increase preservation
   - Define processing and storage conditions to maximise food quality, safety and nutritive properties
   - Inform more sustainable practices for fresh produce handling and product development.

   **Limited to small project in the case of no. 2**
<table>
<thead>
<tr>
<th>B.2 Food Product Development, Formulation and Sensory Science</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B.2.1 Food Components / Ingredients</strong>&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>1. Development of food texture and physical structure research tools and technology to enhance the understanding of structure-function relationship for application in food design and development. A proposal should include the following aspects:</td>
</tr>
<tr>
<td>• Redesign of macro and micro structures of foods in order to create foods that have increased satiating potential</td>
</tr>
<tr>
<td>2. Development of molecular and structural understanding of colloid interactions in food systems particularly in enhancing emulsification applications capability.</td>
</tr>
<tr>
<td><em>Applications can address one or both of the above or where appropriate in a combined integrated proposal.</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B.3 Functional Foods and Health</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B.3.1 Functional Foods/Bioactives</strong>&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>1. Development of food ingredients and foods (including fortified foods) for one of the following cohorts of the population with specific nutritional needs:</td>
</tr>
<tr>
<td>a. physically active individuals and elite sports athletes</td>
</tr>
<tr>
<td>b. pre-pregnant, pregnant and lactating women</td>
</tr>
<tr>
<td><strong>B.3.2 Nutrition</strong></td>
</tr>
<tr>
<td>1. Identify the research gaps to substantiate the health and nutritional benefits of livestock products derived primarily from outdoor grazing production systems.</td>
</tr>
<tr>
<td><em>Limited to a desk study.</em></td>
</tr>
</tbody>
</table>
### B.4 Nutrition, Health and Diet Related Diseases

#### B.4.1 National food consumption and other food and health related databases

1. Further develop, update and exploit Irish national food consumption databases, related food compositional and other food and health data, for teenagers to address both nutrition and food safety issues. Appropriate bio-fluids could be collected to determine biomarkers of nutrition and health status and of food intake, as well as phenotypic and genotypic characteristics. Where appropriate, databases should include data on physical exercise and determinants of food choice and eating behaviour. Databases should be designed to facilitate investigation of exposure to food ingredients, food packaging, additives, contaminants, allergens, bioactives and microorganisms.

2. Generate specific consumption data on seafood. A proposal should include the following:
   - Conduct a specific food consumption survey to improve the characterisation of the risk from exposure to biotoxins and other contaminants from consuming shellfish.
   - Enable an accurate exposure assessment for food safety risk assessment
   - Prepare a search tool to allow for mining and extrapolation of data

3. Develop predictive models for accurate determination of the shelf life of fermented and smoked foods. A proposal should include the following aspects:
   - Develop quantitative data to produce predictive models for safer shelf life evaluation
   - Improve the determination of the safety of fermented and smoked foods over their shelf life
   - Prepare a search tool to allow for mining and extrapolation of data
| B.4.2 Diet and Lifecourse/Chronic disease* | 1. Establish proof of concept of Acute Challenge Studies to support research relating to food safety and food for health and to substantiate food claims. A proposal should address the following:  
- Detect the responses to a functional food / nutrient or suite of nutrients  
- Assess molecular and macro responses, bioactive synergies and efficacy  

*Proposals may contain limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment.* |
## 9.3 FOREST RESEARCH (No NI institutions eligible to participate)

<table>
<thead>
<tr>
<th>FORI Key Investment Area</th>
<th>Research Area</th>
<th>Research Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C.1 Expansion of the Forest Resource</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| C.1.1 Forest expansion – Land Availability | | Investigate, review and evaluate forest establishment and management practices and protocols with a view to proposing improvements which would enhance forest productivity and sustainability. Specifically, this work will investigate, with a view to informing policy and practice on these sites.  
- Establishment and performance of a range of tree species on high pH sites,  
- Examine issues including free calcium in topsoil, relationship with the water table, etc.  

*Limited to a small project.* |
| C.1.2 Forest expansion – Practice | | Investigate approaches to woodland and tree planting in conjunction with optimising agricultural land use.  
- Research should focus on woodland design, tree species choice, stocking densities and layout, maintenance of trees and woodlands established and synergies between trees and agricultural crops, livestock, pollinating insects, and the environment.  

*Limited to a desk study or small project.* |
### C.1.3 Forest expansion – Forest Genetic Resources and Tree Breeding

Investigate the genetics of the Irish Sitka spruce improvement programme. The proposal should include the following aspects:

- A programme of genotyping of parent trees in the Irish improvement programme breeding population.
- Investigate and develop DNA markers for monitoring tree improvement activities including aspects such as; estimating genetic diversity, germplasm identification, verification of controlled crosses, and estimating seed orchard efficiencies.
- Investigate the potential of genomic technologies for desirable trait selection in the Irish Sitka spruce breeding programme.

**Limited to a standard project.**

### C.3 Resource Utilisation

#### C.3.1 Resource Utilisation - Technology

Investigate the potential for integration of LiDAR data into Private Sector Roundwood Forecasting.

A significant limitation to the 2016-2035 forecast was the estimation of forest productivity, which used a Sitka spruce productivity model to estimate Yield Class for all other species. The LiDAR data would provide spatially explicit height information for each polygon, which can provide accurate estimation of top height as an input to growth and yield models for each species using up to date information.

The proposal should include:

- Comparison of efficiencies to be gained in terms of forecast accuracy and
- Compare outputs with the methodology employed during the 2016-2035 forecast.

**Limited to a desk study or small project.**
C.5 Forest Resource Protection

| C.5.2 Forest Resource Protection – Biotic Threats | Investigate the large pine weevil *Hylobius abietis* with a view to establishing an integrated pest management approach for reforestation sites.

The proposal should include:
- A review of possible alternative pesticides in the likely withdrawal of cypermethrin by certification bodies

*Limited to a desk study.*

C.6 Ecosystem Services

| C.6.3 Ecosystem Services – Forests and water | Examining the opportunities for forestry, as a land use, to contribute proactively to meeting Ireland’s obligations under the 2nd cycle of the Water Framework Directive (WFD).

The proposal should include the following aspects:

- Explore the range of ecosystem services which forestry, as a land use, can deliver in relation to water quality and related habitats and species (e.g. buffering against impacts for adjacent land use, sediment and nutrient interception, bank stability, the restoration of natural hydrology; water temperature regulation, mitigation against surface water acidification, the provision of appropriate in-stream inputs, flood mitigation, etc.); and

- Set out mechanisms to deliver these ecosystem services [for example, through the restructuring of existing forests, the creation of new forests and woodlands (including native riparian woodland), and the strategic deployment of measures, based on WFD]; and

- Increase awareness of these eco-system services and measures amongst Bodies coordinating and inputting into meeting Ireland’s obligations under the WFD, to ensure closer integration of the targeted deployment of relevant forestry measures into water policies land use.

*Limited to a standard project.*
| C.6.4 Ecosystem Services – Forests and Recreation | A review of forest recreation and its benefits at national level. Building and expanding on studies that have explored forest recreation in Ireland at a regional or individual forest level and establishing national statistics. The proposal should include the following aspects: Within the area of national forest accounts and ecosystem services, there is a need to  
- Generate annual figures on the use of forests for formal and informal recreational purposes.  
- Creation of a national forest recreation model. Ideally this would account for spatial variations in both demand and supply so that future expansions in forests or changes in management practices could be targeted to ensure efficiencies.  
- Explore currently available data sources that could be employed in the future to gauge changes in demand without the need for additional survey work. Limited to a small project. |
|---|---|
### 9.4 CROSS CUTTING RESEARCH (NI institutions eligible under Topics denoted by *)

<table>
<thead>
<tr>
<th>SHARP Key Investment Area</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Area</td>
<td>Research Objectives</td>
</tr>
<tr>
<td>D.1 Food Chain Integrity and Safety</td>
<td></td>
</tr>
<tr>
<td>D.1.1 Food Borne Pathogens</td>
<td>1. In the context of emerging food safety risks conduct a gap assessment, data generation and quantitative risk assessment and develop risk mitigation approaches to <em>Clostridium difficile</em> in the food chain.</td>
</tr>
</tbody>
</table>
### D.1.2 Presence of Nutrients and/or Microbiological / Chemical contaminants

1. Development of compositional, shelf life testing or challenge testing capabilities to support the Irish food industry particularly in light of changing parameters. A proposal should address one or the other but not both of the following:

   - Development of an analytical multi-methods equivalent to the individual ISO standards for Infant Formula (IF) and Follow on Formula (FOF) to enhance the speed of compositional analysis required to support labelling checks and export certification of IF/FOF in line with the specifications identified in the legislation of country of export. A proposal would have a focus on the determination of fat and water soluble vitamins.

   - Design shelf life studies that incorporate changes to parameters and carry out testing in parallel with the procedure for conducting challenge studies in EU Reference Laboratory (EURL) guidance document V3 2014. Regulation 2073/20005 sets out micro-criteria that food business operators must meet for *Listeria monocytogenes* in relation to ready-to-eat foods. The current requirement is to conduct shelf-life studies in parallel with the EURL technical guidance (V3 2014) for *Listeria monocytogenes*. A proposal should seek to improve on the current shelf-life studies to generate scientific data with the aim to simplify the EU Technical Guidance document and for the generation of scientific data for enhancement of predictive modelling so as aid compliance with Regulation 2073/2005 particularly in light of changing parameters.

2. Investigate if there are any potential public health implications arising from the consumption of any food products derived from livestock grazing pastures that were fertilised with N-(n-butyl) thiophosphoric triamide (NBPT) treated urea

Proposals under 1 may contain limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment and should be designed to include technology transfer to DAFM.

**Proposals under 2 are limited to a standard project.**
D.1.3 Traceability & Authenticity

1. Development of new cutting edge techniques to determine the authenticity of raw materials and finished foods using molecular and analytical approaches including high throughput DNA-identification methods, stable isotope technology and similar innovative technologies.

2. Development of advanced methodologies for the detection and control of contaminants, residues, toxins and micro-constituents in food materials or animal feed. A proposal may address one or both of the following:
   - Research for the development of a contaminants toolkit
   - Simultaneous detection of concurrent hazards in food or animal feed

D.1.4 Emerging Risks

1. Bisphenol A (BPA) in meat: confirmation and source of contamination. A proposal should consider the following:
   - BPA is a plasticizer used in food contact materials and in other non-food materials like paper. Recent concern about the health effects of BPA exposure has given rise to research that suggests harmful effects. Therefore further research is now required into slaughter practices and meat processing practices to further elucidate pathways of BPA contamination of meat and confirm whether it is a common contaminant

2. Development of novel intelligence systems including data analytics for categorisation, identification and evaluation of emerging food safety risks at national level and support for threat/vulnerability assessment at production and processing level.
| **D.2 Socio-economics** | 1. Against the background of the resource-efficient Europe flagship initiative and the launch of the EU Circular Economy Package (2015) and the upcoming proposal to design and implement an Irish national circular economy action plan (Point 130 - Action Plan for Jobs 2017) research is needed to identify where agriculture and food production and consumption in Ireland can optimise its opportunities along the circular economy value chain.  

A socio-technical study should address all of the following:

- a) Review all existing research to date in this area relevant to Irish agricultural, forestry, marine and bioeconomy (e.g. BioEire study) needs and circumstances, and;  

- b) Assess the system efficiency for production (e.g. C, N & P cycles and their interactions and synergies, soil productivity, water and energy use, farm productivity and quality of agri-food products) and also consumption, product demand, food surplus and waste management stages (aiming for prevention and valorisation of unavoidable wastes) of the Irish food system (from farm to consumer/citizen) taking account of the potential for new developments to increase resource efficiency, promote innovation, create new business models, regulatory considerations with regards to the food chain, consumer attitudes, contribution to environmental sustainability and enhancing a green reputation, and;  

- c) Examine possible trade-offs between agricultural, forestry, marine, bioeconomy, food safety and sustainability objectives, and;  

- d) Consider how to integrate the circular economy concept with relevant national agricultural, forestry, marine and bioeconomy policies, strategies and statements.

**Limited to a small project. The maximum grant request for a small project is increased to €300,000 for this topic.** |

**D.2.1 Circular Economy, Agriculture & Food**
### D.2.2 Plant Health Risk Register

1. Develop a plant health risk prioritisation register for pests to help prioritise action against non-indigenous plant pests and pathogens that threaten Irish agriculture, horticulture, forestry and the wider environment.

The proposal should include the following aspects:

- Identify a priority list of pests for inclusion on a national plant health risk register
- Set out as a minimum the key features of each pest, current mitigated and unmitigated risk ratings and actions to reduce residual risk
- Build on similar exercises undertaken by plant health control authorities in equivalent agro-climatic areas

**Limited to a desk study.**

### D.2.3 Options to support native breeding curlew population

1. Research appropriate land-use planning and management options in support of enhancing native breeding curlew populations.

Research should evaluate aspects of agriculture and forestry which impact positively and negatively on native breeding curlew and its feeding, breeding and nesting habitat, and identify practical solutions for existing and future land-use practices to enhance curlew populations.

**Limited to a small project.**

### D.2.4 Farm Safety*

1. Develop practical interventions to help foster behavioural change of farmers in relation to farm safety in the workplace.

The proposal should include the following aspects:

- Development of a better understanding of the multifaceted nature of farm safety including how the occupational characteristics and social and cultural context of farming influence farmer safety
- Development of behaviour change and safer work systems that are applicable for use at a farm level, and include pilot trials of the proposed systems.
- Interventions to be developed should be deliverable through a range of knowledge transfer mechanisms.
- Complement and coordinate with the activities planned in the [EU COST Action Safety Culture and Risk Management in Agriculture](https://ec.europa.eu/programmes/cost/policies/cultural-and-creative-industries) (CA16123)

**Limited to a standard project.**
APPENDIX A: Eligible Irish Research Performing Organisations

Research Performing Organisations (RPOs) eligible to apply for funding under these programmes are those institutions which fall within the meaning of Section One of the HEA Act, 1971 (Universities and Institutes of Technologies, etc.), plus Teagasc, the Marine Institute, Irish Cattle Breeding Federation and Birdwatch Ireland.
APPENDIX B: Relevant Strategies to the Call

As was set out in Section 1 – Background – this Research Call has been heavily informed by the strategies Food Wise 2025, Sustainable Healthy Agri-food Research Plan (SHARP) and Forest Research Ireland (FORI).

In addition to these strategies a number of other policy areas, strategies, plans, packages and agendas also give strategic direction to the on-going development of the agri-food, marine and forestry based sectors and have also helped inform this Call. Therefore due cognisance, and where appropriate reference, should be made to some of these (depending on topic area) in framing applications to the Call. These include, but are not limited to, those listed here.

National

- DAFM Statement of Strategy 2016-2019
- Forests, Products and People – Irelands Forest policy – a renewed vision
- Harnessing our Ocean Wealth
- Innovation 2020
- Action Plans for 14 Priority Areas in Research Prioritisation
- Action Plan for Jobs
- 2017 Action Plan for Rural Development
- Ireland’s Environment - An Assessment 2016 report
- Agriculture & Antimicrobial Resistance (AMR)
- FSAI strategy 2016-2018 & SafeFood
- Healthy Ireland - A framework for improved Health & Wellbeing 2013-2025, Health Promotion & Improvement and Obesity

EU

- The Common Agricultural Policy (CAP)
- The Common Fisheries Policy (CFP)
- EU Forest Strategy
- Horizon 2020 – Agriculture, Marine & Forestry
- EIP-AGRI Focus Groups
- EU Agriculture Research & Innovation Strategy
- Food 2030
- EU Bioeconomy and its strategy
- EU Circular Economy Package
- EU Digital Agenda & Innovation