

<p>Institution: Newcastle University</p>
<p>Unit of Assessment: UoA 6 Agriculture, Food and Veterinary Science</p>
<p>a. Context</p> <p>Our impacts result from our overarching research theme of ‘Food Security’ embracing food safety, nutrition and sustainability. This encompasses: (i) human and animal health and welfare; (ii) the economy (productivity gains relating to animal and crop health; understanding stakeholders’, including consumers’ behaviour; food chain performance; improved public health); commerce (spin out businesses Powerhouse, Geneius; technological development e.g. PigSafe pen design); (iii) production (changes in husbandry methods); (iv) the environment (mitigation of negative environmental impact, management and protection of natural resources); and (v) policy agenda setting. The Unit also makes significant impacts on governmental and public understandings of rural development (through generating intelligence on the farm and non-farm rural economy). Examples of beneficiaries include:</p> <ol style="list-style-type: none"> 1) UK Government and International Agencies (e.g. Defra; Department of Health; FSA; European Food Safety Authority; Australian Dept. Agriculture, Fisheries & Forestry, WHO and FAO). 2) Livestock, poultry and crop breeding organisations (e.g. KWS SAAT AG; British Wheat Breeders; Swiss Genetics; Syngenta; PIG/Genus; JSR; Aviagen; Inst. for Pig Genetics NL). 3) Animal and plant production and ancillary supply organisations (e.g. Nutreco; Novus Europe; BOCM; Elanco Animal Health; British Free Farrowing Farmers Consortium; Prairie Swine Centre (Canada); Danish Meat Council; Riverlea (Australia); Certification Bodies for farm assurance (e.g. Soil Association, Freedom Food; Red Tractor); divisions of the Agriculture & Horticulture Development Board (AHDB); British Poultry Council, British Egg Industry Council). 4) Food producers (e.g. Greggs; Kavli; Nestlé; PepsiCo; Sensus b.v; Moy Park; Tulip). 5) Nutritionist related stakeholders (e.g. NHS Dietetics Services; Danone; The Dairy Council). 6) Land owners/managers (e.g. Game and Wildlife Conservation Trust). 7) Retail industries (e.g. Tesco; Waitrose; Sainsbury’s; Marks & Spencer; Wal-Mart [ASDA]). 8) Scientific organisations (e.g. ILSI Research Foundation; ILSI Europe; CEFIC). 9) Programme development for national and international funding agencies and research sponsors (MISTRA Sweden; Swiss Science Foundation; EU JPI A Healthy Diet for a Healthy Life; Technology Platforms (e.g. ‘Food for Life’). <p>The Unit is committed to knowledge exchange and is experienced in the management of collaborative research programmes funded by industry, government (Defra; Technology Strategy Board, BBSRC, NERC and ESRC), BBSRC Bioscience KTN, and the EU (FP6 and 7). In the REF period the Unit has hosted the RCUK funded Directors Office for the Rural Economy and Land Use Programme (RELU). Specific Newcastle-led RELU projects have focused on knowledge exchange and have developed a ‘Stakeholder Impact Analysis Matrix’ (SIAM) to track impact.</p>
<p>b. Approach to impact</p> <p>We identify the needs of our beneficiaries through a series of partnerships and collaborations developed and managed in the following ways:</p> <ol style="list-style-type: none"> 1) <i>Supporting the creation of spin out companies:</i> ‘Geneius’ (trading since 2010) employs 28 staff providing advanced food and drink testing services using DNA-based techniques. ‘Powerhouse’, specialising in targeted, personalised nutrition advice, was established in 2012. 2) <i>The use of knowledge intermediaries including:</i> <ul style="list-style-type: none"> • A Dissemination Officer from the Nafferton Ecological Farming Group (NEFG), focusing on low-input and organic approaches to management, runs a regular programme for production organisations and land managers. A member of NEFG has also been on the Soil Association Farmer Grower Board since 2008. • A dedicated Industry Development Manager (IDM) working with the food industries (e.g. Greggs, Kavli, SK Chilled Foods, Citrox) as a business relationship and KTP manager. The manager has also used Biosciences KTN funding to promote the Nu-Food facilities. • A Science Communications Manager working with land managers and the public sector. About 80% of stakeholders reported that the manager had heightened the likelihood of non-academic impact. • Close liaison with the Levy Bodies and their knowledge transfer managers under the ADHB umbrella, and similar international organisations such as the International Poultry Council and the International Egg Council. • A Rural Network Manager who established relations with rural development practitioners

Impact template (REF3a)

through the 1,700-member Northern Rural Network. In an evaluation of the Network, 36% of the respondents said that they had accessed expert advice from the Unit.

- Work package activities included in several EU projects on global food safety and security foresight, regarding future research agenda setting (e.g. Pegasus, Collab4safety).

3) *Achieving impact through strategic investment in research facilities:*

- The anaerobic digestion plant (£1.91m) at Cockle Park Farm is a research technology platform on sustainable energy production. Investment included a knowledge transfer scheme on energy from farm waste. To date, 540 stakeholder visits and 18 feasibility reports have been completed for farms and rural businesses.
- The 'NU-Food' food & consumer research facility (£700k) provides research and training facilities used by food manufacturing and retail industries. The facility also has a community outreach agenda (e.g. use by a regional health promotion organisation, Food Nation).

4) *The development and maintenance of engagement networks to facilitate the development of relations with users and beneficiaries including:*

- The University of Newcastle Agricultural Society, founded in 1900 and with a membership of over 700, involves senior stakeholders from organisations including Syngenta, Dairy Crest, Moredun Institute and the NFU in its programme of seminars and events.
- The Food Quality and Health research group has created and maintains a database of >4,000 people willing to take part in intervention/diet studies through the 'NU-Food' facility.
- Unit members are involved in the Newcastle Institute for Research on Sustainability (NIReS) as Theme Leaders. NIReS holds a programme of public events supported through their links with stakeholders e.g. a public debate on [Sustainable Intensification versus Low Input Farming](#) with high profile speakers Jonathon Porritt and John Atkin.
- We support the development of networks administered by other NU Units e.g. 'Voice North', a regional initiative to involve older people in research and advocacy run by UoA1.

5) *The commitment of staff time to stakeholder initiatives including:*

- Appointment to public committees and International Advisory Groups (e.g. BBSRC KTN; FSA ACNFP; Northumberland National Park Authority; Defra Science Advisory Committee; Defra/LINK Sustainable Livestock Production Programme Management Committee; Defra-DECC Social Science Panel; Livestock Environmental Partnership of the FAO; UK FSA Social Science Research Committee; Scientific Advisory Board of the JPI HDHL; Swiss Science Foundation Health Nutrition and Sustainable Food Production Steering Committee; Farm Animal Welfare Council; EFSA AHAW Panel; Chair SAB, Agrotecnio, Spain).
- Delivery of >500 reports and presentations to non-academic research users (e.g. to the veterinary profession on animal welfare; Farm Business Survey farm management benchmarking reports; KT material to Industry Stakeholders; ILSI reports).
- Membership of organising committees of international conferences (e.g. 1st International Conference on Insect Reproduction and Development, Prague; Whole Grains Global Summit, Minneapolis; EU Healthgrain Forum; Society for Risk Analysis Europe, 2009).

6) *Contribution to public discourse through media interviews*, including BBC Countryfile; BBC national and regional radio; Good Food Magazine; Broadsheet newspapers, German Public Radio; Danish Public Radio.

The Unit has an Industrial Advisory Board (IAB) providing input into the direction of research and impact activity across the Unit; members represent all areas of the food supply industries, land managers and environment agencies. The success of the Unit in attracting recent TSB funding is a direct outcome of exchanges at the IAB. The University's Enterprise Team provides support for all enterprise activities, including commercial collaborations, KTPs, contract research and consultancy. It is also responsible for managing and exploiting Intellectual Property.

c. Strategy and plans

The strategy is to further strengthen our key research theme 'Food Security' with investment on:

- Supporting staff to undertake collaborative research e.g. using the Unit's Strategic Research Fund to support staff to achieve impact from research; continuing to encourage involvement in stakeholder initiatives through appropriate management of workload.
- Developing stakeholder networks to reach new audiences (e.g. engage with volunteers for nutrition-related studies through research updates and workshops; expansion of global expert databases to inform the development of strategic research agendas and to improve the

Impact template (REF3a)

dissemination of results).

- Enhancing the effectiveness of the intermediary work through on-going monitoring of impact on beneficiaries, under the scrutiny of a Director of Engagement.
- Continuing to invest in infrastructure that supports research and impact e.g. new equipment for precision agriculture research and demonstration on the farms; use of NIREs infrastructure funding to maintain quality analytical capacity; examination of the feasibility of a rural smart grid at Cockle Park in concert with the development of an urban smart grid by NIREs.

In 2012 a Director for Engagement was appointed to focus our relationships with external partners and to promote a culture where good practice in achieving impact is shared. The Director chairs an Impact and Engagement Committee constituted of staff that have direct experience of working with the key beneficiaries. Actions for 2013 – 2018 are:

- 1) The 'SIAM' tool will be further developed and implemented to gather evidence on the achievement of impact.
- 2) Instigate staff secondments to industry and government in collaboration with the IAB to improve staff understanding of production and manufacturing practices. The IAB will assist in identifying appropriate placements and brokering access to the relevant companies.
- 3) Increase numbers of KTPs and the use of Technology Strategy Board funding. The University Enterprise Team will work with Unit staff to proactively target TSB funding while the Industry Development Manager will continue to develop relationships with companies seeking KTP opportunities. This will be further supported by investment in marketing the Nu-Food facilities.
- 4) Enhance collaboration with Industry on activities of Horizon 2020 (EU funding scheme).
- 5) Deliver impact training through workshops and training programmes for the PDRA and PhD community, including through ATP.
- 6) Introduce an internal annual award that celebrates an outstanding impact achievement.
- 7) Appointment of key industrialists and academics (including international visitors) with a track record for excellence in impact as Visiting Professors/Fellows.

d. Relationship to case studies:

Evidence of the *direct impact of our research on the development and implementation of policies by government agencies* is shown in ICS1 (Biodiversity Management of UK Upland Hay Meadows). Impact from ICS1 arises from basic and applied research funded by MAFF and Defra to identify best practice for ecological management of upland hay meadows. This research *has been translated into practical guidance* for implementation of the schemes and is incorporated by Natural England in their Technical Information Notes central to the Higher Level Stewardship Scheme for restoration of upland meadows applied to 60% of all the remaining upland hay meadows in England. ICS4 (Increasing EU Spending on Environmental Management and Rural Development 2008-2013) demonstrates how our research had a *direct influence on UK government's modulation of spending on the Common Agricultural Policy*, specifically benefiting the allocation of funds for environmental management and rural development. The research on the impact of modulation produced by the Unit was promoted through *direct interaction with policy makers at a UK cabinet level* through secondment [Ward] to the Prime Minister's Performance and Innovation Unit (PIU) in the Cabinet Office, to review rural and agricultural policy and to advise the Prime Minister and other key ministers directly on how the government should pursue CAP reform in the UK. The UK modulation strategy arising from this advice has since been adopted across 14 EU member states. ICS2 (Improving Animal Welfare Through Effective Pain Assessment and Alleviation in Laboratory Rodents and Rabbits) provides evidence of *successful dissemination through website, workshops, conferences, text books, review articles and a Dutch television documentary* which has led to worldwide changes in a range of policy statements, practice guides, institutional policies (academic and industry) and practice. In the UK alone this impacts directly on 470k animals per year that undergo procedures under anaesthesia and so may require analgesics. ICS3 (Increased Productivity, Profitability and Environmental Sustainability of Commercial Soil-based Greenhouse Production Systems) is a clear example of how impact was *generated through NEFG dissemination work and the close relationships with stakeholders in our research*. The research underpinning this Case Study was undertaken in collaboration with commercial growers in Europe. Targeted exposure of research output to stakeholder producers has resulted in adoption of integrated crop management protocols for the control of soil-borne and foliar diseases in organic and soil-based greenhouse crop production systems across Europe.