Institution: Harper Adams University
Unit of Assessment: 6 – Agriculture, Veterinary and Food Science

a. Overview

1. Harper Adams University is a specialist institution focusing on the rural economy and industries reliant upon the rural economy, with a specific commitment to sustainable agriculture. It comprises five academic Departments within which undergraduate and post graduate teaching is organised and managed. Research is managed by the Deputy Vice-Chancellor (Mills), supported by a Research Coordinator (Kettlewell). Research is delivered increasingly through interdisciplinary research centres (e.g. Soil and Water Management Centre, Centre for Integrated Pest Management and the National Centre for Precision Farming) or, where appropriate, research themes where critical mass of researchers occurs in areas such as animal nutrition, welfare and behaviour; food; and bioenergy. Centres have Directors (Ward, Leather and Blackmore) and within Centres, areas of activity have an identified lead scientist to coordinate activities. The University has an integrated approach to research across the entire agri-food supply chain and as such is presenting a single group of staff to REF within an overall theme of 'Sustainable Agriculture'.
2. The University Research and Knowledge Transfer Committee develops policy and strategy which is subsequently approved by Academic Board. 'Research' is a standing item on the agenda of University and Department staff meetings. The University Research Office monitors research opportunities from all sources and provides research active staff with relevant information. The Research Office and Finance Department also provide support for grant applications, further supported by a Business Development Officer within the National Centre for Precision Farming and Soil and Water Management Centre.
3. Innovations across the agri-food supply chain drive improvements in productivity, reduce costs and contribute to global food security. The University is well placed to contribute to tackling the challenges that 21st century agriculture faces through applied research and knowledge transfer activity. A rapid increase in research funding, creation of research facilities coupled with the support provided by industrial and public sector funding sources, and appointment of research active staff in recent years has transformed the contribution that Harper Adams is making to the challenges of sustainable intensification.
4. The University helps develop innovative approaches for the provision of high quality food, whilst at the same time minimising the impact of food production on the environment, at a time when there is considerable structural change and growing volatility in global food systems. The University's expertise in agri-food production systems across the agri-food chain, agricultural engineering, animal health and welfare, environmental management and bioenergy production provide a resource that is addressing some of the most critical challenges faced by the UK over the next few decades. By continuing to conduct research that supports industry, and training future generations of applied research scientists who will work within the agri-food chain and help manage our rural resources, Harper Adams University will also play a distinctive and important role in underpinning the UK's response to achieving global food security.

b. Research Strategy

5. The University *Strategic Plan 2012-2017* contains a key objective to; *'Enhance the role of Harper Adams as a critical contributor to applied research and as a leading source of the next generation of those working in the agri-food chain and the rural economy as the UK addresses the challenge of global food security'*

The UK has to address two aspects of delivery that have been given scant attention in the last 20 years. These are a need for applied research and development together with the translation into practice of innovations in basic science and technology, and the need to secure new entrants at all levels to the land, food and farming sectors and to the rural economy more generally. In seeking to establish Harper Adams as a critical part of the 'supply line' for these requirements we have strengthened our position as a contributor to the health of the UK agri-food chain, as well as ensuring that the UK agri-food system can make a substantive contribution to addressing the challenge of global food security. Importantly, this includes a focus on closely related subject areas

in animal nutrition, health and welfare, and agricultural engineering. Our role in renewable energy production is another key feature of our academic activities. We anticipate greater attention to be directed at renewing the higher level skills of those working in industry over the planning period, underpinned by our near market research. In addition, we play a key role in acting as an independent and authoritative source of advice and comment on issues of concern to the agri-food supply chain and to the wider rural economy as evidenced by contributions to Government bodies and committees. We measure success in this objective in terms of research income and outputs, the level of our engagement with industry (c. 500 businesses) and in periodic independent assessments by key stakeholders of the profile and contribution of the University.

6. Key objectives achieved over the 2008-2013 planning period have included development of human and physical resources for research; increases in research income from a range of sources; and establishment of research centres with critical mass. This is evidenced by significant changes e.g.;
    a. Significant recruitment of research active staff has taken place over the assessment period. Nine professorial appointments have been made (7.6 FTEs) in areas covering agricultural engineering/precision farming, animal science, entomology, plant breeding, plant pathology, plant physiology, soil science and bioenergy. A further 21 research active academic staff have been appointed over the same period. This represents a significant investment for a small institution and has formed the basis of creation of our three interdisciplinary research centres.
    b. Total research student numbers (PhD and MRes, the latter being a new award within the assessment period) have increased from 26 in 2008 to 57 in 2013.
    c. The University's infrastructure to facilitate research has seen considerable investment of more than £15m since 2008 (see section 10).
    d. Research income has increased over the assessment period. Total value of awards secured in 2008 was £377k compared with £3.1m in 2012/13. Whilst the University continues to attract funding from traditional sources such as the UK Levy Boards, industry, Defra and the EU, the diversity of income sources has increased since 2008 and now includes the Technology Strategy Board, and possibly most significantly, RCUK including 2 research grants from the EPSRC (2013) and three from the BBSRC with a total value of £1.11m.

7. Research and knowledge transfer activity form a continuum and neither component is considered in isolation. Our Research and Knowledge Transfer Strategy, which was updated in 2013, has a main objective of; *The successful operation of an integrated research and knowledge transfer strategy to address key challenges in the rural sector and develop the University's profile over the planning period*

Key components of our future research plans over the next 5 years are to;

- establish a bioenergy research centre
- attract further industry investment for co-location of research facilities
- strengthen key collaborative engagements with appropriate research partners such as international universities and research institutions, the Centre of Excellence for UK Farming, industry , Levy Boards, Local Enterprise Partnerships and devolved Governments
- appoint a further 6 Professorial staff
- appoint research-led academic staff in under-represented areas
- pursue a profile raising campaign for applied research
- increase by 50% post-graduate research student numbers

Critical elements of our Research and Knowledge Transfer plans involve addressing industry needs, working with partners and building capacity. The University, in 2013, negotiated co-location on campus of a private sector product innovation centre (c. £4m investment). The University has strongly endorsed the UK Government's recent (2013) announcement of an *Agri-tech strategy* and at the time of writing is actively pursuing partnerships with industry and academia to;

- adopt a leading role in establishing a multi-centre agricultural engineering innovation centre

- be active participants in other emerging centres including possible centres for bioinformatics, soil and water, animal science and arable crops.

Development of these national, multisite/stakeholder centres will be facilitated through the existing University Centres established within the last planning period.

8. The University has an additional cohort of staff (c. 15) which conducts confidential research for a range of industry partners but which does not produce conventional REF visible outcomes. For example, our Engineering Department has conducted a number of projects to develop and improve agricultural equipment and has also designed a new gear box for electrically powered vehicles (patent pending). Similarly, research to improve the efficiency of animal diets is usually conducted on a commercial basis.

9. Increasingly, relationships with industry partners for research are now being established over long term periods (5 years) to facilitate the strategic development of facilities and career prospects for junior researchers. Contracts with the Agriculture and Horticulture Development Board are frequently now also for periods of 5 years (instead of 6- 12 months). These changes reflect a) our desire to establish higher value, longer term research programmes and move away from short term projects, and b) the regard that sponsors hold the University's work.

10. The University's infrastructure to facilitate research has seen considerable investment of more than £15m since 2008 representing >60% of the total investment at the University. Major developments include a Dairy Unit (£2.475m used by Sinclair and Rutter); Anaerobic Digestion Unit (£3.79m; Theodorou and Humphries); Agricultural Engineering Innovation Centre (£2.93m; Incorporating the National Centre for Precision Farming); research and development facilities with the Regional Food Academy (£3.6m; Vriesekoop and Monaghan); Poultry Research Facilities (£600k; Pirgozliev); Entomology facilities (£200k; Leather and Pope); the addition of a multi-purpose research laboratory (£180k); Intermediate pyrolysis capability (£150k); and future developments in Veterinary Physiotherapy Facilities (£600k; research staff currently being appointed); and young stock facilities (£500k) both due for completion in 2014.

    Further investment in laboratories and bioenergy facilities is planned over the next 5 years.

11. The University is responsive to international and national initiatives. Examples include;

- proactivity in establishing national priorities, an example of which is the Institute of Agricultural Engineers report on 'Agricultural Engineering: A key discipline enabling agriculture to deliver global food security' which was instigated by, and launched at Harper Adams (by the Government Chief Scientist in 2012, Professor Sir John Beddington).
- partnering China Agricultural University in the BIS and Chinese Ministry of Education funded Sino-UK Higher Education Research Partnerships for PhD Studies in Applied Mechatronics;
- participation in UK-Brazil Science without Borders and UK-Indonesia DIKTI mobility programmes for PhD students
- active participation in consultations such as the Royal Society 'Reaping the Benefits'; Defra 'Tree Health'; BIS Agri Tech Strategy; the Witty Review of University/Business collaboration.
- delivery of research degrees through the BBSRC Advanced Training Partnership in partnership with Nottingham and Cranfield Universities
- involvement in the BBSRC/DfID funded Sustainable Agriculture for International Development: Accelerated breeding of Black Rot resistant brassicas for the benefit of East African smallholders
- involvement in the European Initiative, 'Future Farm'

12. Dissemination of research occurs through a wide range of conduits including;

Peer review publications, popular articles in trade journal, systematic reviews, Harper Adams website articles, video clips, conference presentations, end user workshops, undergraduate teaching, and post graduate teaching (including the BBSRC ATP programme). In addition, the University has established 'OpenFields' which is an online repository of KT materials holding 3,383

items (at time of writing). After 4 years operation, OpenFields is running at 50,000 'views' of individual items a year with downloads of complete publications running at 15,000 items a year.

13. Research Groupings.

Research activity is organised into either multidisciplinary research centres or research 'themes'.

- Soil and Water Management Centre

The Soil and Water Management Centre (S&WMC) (Ward, Mills, Kettlewell, Monaghan, Chaney, Hartley), is an industry-led initiative (sponsored by 8 industry partners and the Rothschild Foundation) to help UK farming manage its two most precious assets. The Centre instigates and supports applied soil and water management research addressing particular challenges and improvement opportunities. The S&WMC acts as a central source of soil and water management information and expertise and as a forum for establishing essential improvement priorities. The Centre is led by Professor Shane Ward and has further staff expertise for farmers in themed groups of vehicle-soil interactions, soil chemistry and bio-diversity, water in agri-food and bioresource systems, and cross cutting themes of smart systems and sustainable technologies. In its first year of operation the Centre has appointed 2 members of staff (Ward, Hartley) to augment existing staff (Mills, Kettlewell, Monaghan, Chaney), is delivering research programmes in controlled traffic farming (CTF), soil microbiology relating to shortened rotations, irrigation/root architecture, and soil compaction/grassland management. In addition, workshops have been delivered to c. 400 'end-users' on topics such as land drainage systems, CTF and 'repairing the damage' following the wet summer of 2012.

- National Centre for Precision Farming;

The recently established National Centre for Precision Farming (NCPF) is based within the newly built £2.93m Agricultural Engineering Innovation Centre at the University. The NCPF promotes and evaluates the use of technology as a vital aspect of precision agriculture, building upon the University's reputation as an innovator in the field of engineering. New technologies are helping improve and reduce the cost of food production by targeting inputs to optimise outputs. The Centre is led by Professor Simon Blackmore and is staffed by experts in the fields of robotics, mechatronics and hydraulics as well as general engineering. Current research includes a multi-partner EU project developing unmanned vehicles for use in vineyards and orchards and an international exchange programme funded by British Council with the China Agricultural University. Outputs from this centre have to date been commercial-in-confidence, but publicly funded research will increasingly focus on future REF-visible outputs.

- Centre for Integrated Pest Management;

The Centre for Integrated Pest Management (Leather, Pope, Edwards, Mills) is a multidisciplinary team addressing UK and global issues in agricultural, forestry and horticultural crop production with active research interests in entomology, chemical ecology, pest monitoring, application technology, nematology, pesticides and their alternatives, plant pathology and weed science. The Centre is led by Professor Simon Leather and has expertise in UK and tropical forestry, arable crops, horticultural crops, field vegetables, soft fruit and protected crops.

- Fresh Produce Research

The Fresh Produce Research Centre (Monaghan, Pink, Hand) comprises a multidisciplinary team addressing UK and global issues in horticultural crop production across the supply chain with research on crop breeding, crop production, post-harvest physiology and food safety. It has expertise in field vegetables, soft fruit and protected vegetables.

Research themes

Research activity that does not currently reside within a centre at the University, but nevertheless has critical mass in terms of staff effort and facilities includes the following themed groupings;

- Animal Nutrition, Welfare and Behaviour (Sinclair, Rutter, Kershaw-Young). The University has a structured programme of research in animal, welfare and behaviour science, including funding by DairyCo (>£1m) in partnership with the Universities of Reading, Nottingham, the Royal Veterinary College and SRUC investigating the improvement of dairy cow performance,

health and welfare through grassland and alternative forage management, mineral and protein nutrition. Collaborative programs have been developed with Cornell University and the University of Sydney in sheep nutrition and reproduction and alliances have been developed with industry (e.g. Alltech Ltd.,) to support research in developing areas such as pig nutrition and welfare.

- Food (Vreisekoop, Edwards, Dickin, Monaghan). Expertise applied to food supply chain issues includes reduction in human health risks from toxins and pathogens carried in e.g. irrigation waters or from contaminated currency.
- Bioenergy. The University has developing expertise (Theodorou, Humphries) and facilities for agri-related sustainable energy research including anaerobic digestion (bench scale, farm/small business scale up to commercial scale [499 kWh]), pyrolysis and is involved in four international/national consortia (1. Interreg Project; Bioenergy North West focused on promoting the use of green bioenergy power facilities fuelled by waste materials across five regions of North West Europe: West Midlands (UK), Eindhoven (The Netherlands), Ile-de-France (France), North Reine Westphalia (Germany) and Wallonia (Belgium); 2. EPSRC funded project (led by Durham University) investigating the potential for macro algae to be preserved through ensiling to create an effective intermediate energy carrier for the production of fuel-grade hydrocarbons via gasification and FTS; 3. EPSRC funded project (led by Aston University) on integration of pyrolysis (intermediate and fast) with anaerobic digestion (AD), to improve the overall energy conversion efficiency of the substrate by integrating these two technologies to obtain a greater energy yield; 4. Defra/BPEX project on; Anaerobic digestion of porcine carcase material; quantifying the risks of disease transmission associated with on–farm digestion of fallen stock [to inform EU policy]).

14. Mechanisms and practices for promoting research;

Vitality within the research community at the University is developed and maintained through many research active staff being members of research centres or themed groupings (described above). The University Research Office provides intelligence on research grant opportunities, support for applications and leadership on IP issues. A Business Development Officer provides a critical link between researchers and industry in particular for creating consortia for public/private partnership programmes. This activity is further enhanced through extensive programmes of end user conferences, workshops and industry training delivered by the University (reaching approximately 4,000 people annually). The University also runs active seminar programmes of internal and external speakers (external visitors in recent months including Sir Gordon Conway, Professor Sir John Beddington, Professor Tim Benton, and Michael Seals). The University has also recently produced a document summarising research activity aimed at policy makers and non-specialist stakeholders (http://www.harper-adams.ac.uk/publications/research/).

15. Evidence of multi- and interdisciplinary developments.

Four multi/interdisciplinary centres have been established at the University (see above). These provide opportunities for natural scientists, engineers and social scientists to address some of the challenges facing the agri-food sector. Examples of this include our research on 'controlled traffic farming' that requires input from soil physicists, soil biologists, crop scientists, engineers, equipment manufacturers and will involve social scientists and soil microbiologists in the next phase of the research; and work within the CIPM involving natural and social scientists.

c. People, including:

I. Staffing strategy and staff development

16.

- The University Strategic Plan 2012-2017 has a key objective '*to enhance the role of Harper Adams as a critical contributor to applied research'.* Actions associated with this objective include; Underpinning academic strengths by appointing academic staff with demonstrable research abilities; developing closer sector specific links with key areas of the agri-food chain; and identifying key staff who can act as advocates for/commentators on agri-food and rural developments

- Key professorial appointments have been made to establish strategically important research centres and themes e.g. Blackmore (NCPF), Leather (CIPM), Ward (S&WMC), Pink (fresh produce) and Theodorou (bioenergy). Further appointments of research active staff have been made to support centres and themes (e.g. Pope (CIPM), Hartley (S&WMC), Kershaw-Young (Animal Nutrition, Welfare and Behaviour).
- The University has enthusiastically accepted the 7 principles of the Concordat to support the career development of researchers.
- All University staff undertake equality and diversity training. Since 2009, 74 academic appointments have been made of which 52 % are male and 48% female. The average age of University academic staff has risen from 46 in 2008 to 48 in 2013 reflecting both the recruitment of more senior staff at professorial levels and also changes to the retirement age. The University is positive about appointing those with disabilities (and has the 'Two Ticks Positive about Disabled Scheme' accreditation). Use of the University 'on-line recruitment portal' actively facilitates applications from across the world. The University has an Equality and Diversity Working Group dealing with operational matters in this area.
- The University aims to maintain a sustainable staff structure through appointment and retention of suitably qualified PhD students and through proactive succession planning (e.g. Pope; entomology. Hartley; soil chemistry.) The University's 'Talent Management Programme' provides a progression route from Teaching Assistant to lecturing staff, appoints 'Associate Heads of Department' as a mechanism to develop senior management capability and is engaged with the 'Aurora' scheme which aims to develop female managerial talent.
- The University provides effective development and support of research work of staff through provision of a time allocation for research, through encouragement of staff to undertake research degrees and through the proactive search for appropriate funding opportunities and guidance on grant applications by the Research Co-ordinator and the Research Grants administrator.
- Development of the research of early career researchers and support for integrating them in to the wider research culture through training, mentoring and inclusion into Centres or research groups under the direction of established researchers.
- Research career development of established researchers is through a comprehensive staff development programme, a cross institution research seminar series, annual Research Forum to disseminate best practice, conference attendance, promotion, equal recognition of KT in promotion criteria (up to and including Professorial positions), and financial support for undertaking research degrees.

c. II. Research students

17.

- The University recognises that successful research encompasses more than simply academic skills and is increasingly dependent on a range of attributes, including being able to communicate research to others, being aware of the inter-disciplinary impact of one's work, innovation, leadership skills, and financial and organisational understanding. To assist research students in their development, training is provided by the supervisory team and University.
- Student's training and development needs are identified at a meeting between the student and the Personal Development Planning Advisor (PDPA) and form the basis of the Researcher Development Framework (RDF) and the RDF Planner. The RDF planner is an online resource for research students, which captures development activity and is the University's recommended tool for record keeping for all research students. Reports from the RDF planner are used to review personal development annually, and are considered by the PDPA, supervisory team, Specific Degree Registration Report examiners and final thesis examiners.
- Students are encouraged and supported to attend international and national conferences to present research.
- Students across the University are co-located in multi-occupancy offices to encourage interdisciplinary activity.
- Research students meet regularly as a group, have a representative on the Research and Knowledge Transfer Committee, organise social activities and have recently instigated an external speaker seminar series covering extramural topics for the University.

The University has CASE (BBSRC) and further studentships involving industry sponsorship (50% of current PhD students have industry support). A consequence of the applied nature of the research undertaken at the University is that a high proportion of the research undertaken by PhD students is adopted by end users. Examples of this include research on cereal mycotoxins, animal nutrition, controlled traffic farming and farm vehicle efficiency.

d. Income, infrastructure and facilities

18. Investment in research facilities since 2008 has been extensive (see Section b, paragraph 10). Many of the facilities listed below have been constructed since 2008:

- The University has extensive laboratory facilities (molecular, Cat II microbiology, general multipurpose, nutrition, soils, crop protection, diagnostic, food science, taste panel laboratory).
- Engineering (purpose built indoor Soil Hall, well-equipped engineering workshops and a JCB Engineering Design Centre with Computer Aided Engineering (CAE) technology; the University also maintains a wide-ranging fleet of agricultural machines and vehicles).
- The University farm includes a dairy (serving 400 cows and incorporating computerised identification and milk yield recording, individual feeding facilities for 60 cows and a metabolism unit to investigate physiological and metabolic mechanisms), sheep metabolism facilities, pig performance and metabolism units, beef, and poultry units, extends to more than 640 hectares on a number of diverse sites and features a variety of crop production and environmental management systems.
- An Anaerobic Digester plant, constructed in 2011 at a cost of >£3m formed part of the 'transformational' projects under the Higher Education Funding Council for England's Revolving Green Fund complements bench scale AD facilities and on-going research to develop farm scale facilities.
- The University has accommodated intermediate pyrolysis equipment (c.£1m) exploring the use of agricultural waste streams to generate heat and power
- The Regional Food Academy has food processing and sensory evaluation facilities and supplementing these facilities, in October 2013, a major UK food manufacturing company has announced relocation of their dairy innovation research facility to the University (£4m investment for > 40 research scientists).
- The Crop and Environment Research Centre (CERC) is a specialist centre for research into crop science, technology and the environmental implications of modern crop production.

19. Collaborative use of University facilities.

- The University is a partner and host for intermediate pyrolysis equipment (c.£1m) exploring the use of agricultural waste streams to generate heat and power as part of a EU funded INTERREG IVB project the European Bioenergy Research Institute (EBRI) led by Aston University and including 14 European partners.
- The University farm and Dairy Unit are central to the delivery of the DairyCo sponsored research (>£1m) in collaboration with the Universities of Reading, Nottingham, the Royal Veterinary College and SRUC.
- Sheep nutrition and metabolism facilities have underpinned research projects with Cornell University and the University of Bristol focussing on milk and meat product quality.
- Anaerobic Digestion facilities are integral to the delivery of EPSRC funded research involving Harper Adams, the Universities of Aston, Southampton, Leeds and the Open University.
- The University facilities for fermentation technologies and silage production are central to delivery of the EPSRC funded project MacroBioCrude, assessing the potential of macroalgae for sustainable energy production in partnership with Durham, Greenwich, Aberystwyth Swansea, Highland and Islands, and Silage Solutions

20. Major in-kind contributions

- Engineering equipment to the value of > £450k has been provided in the last 5 years. Precision farming capability on the University farm has been augmented by donations of equipment from Vaderstad (Tempo F8 maize drill), John Deere (GPS and auto steering, Self-**Propelled Forage Harvester with** HarvestLab™ and Constituent Sensing) and soil mapping plus variable rate cultivation using an Opico HEVA Subsoiler (courtesy of SOYL; £10k).

21. Policy and practice in relation to research governance
The Research and KT committee advises Academic Board on and supports the development of research strategy and policy. This committee is also responsible for allocation of 'pump priming' funding. The Committee is supported by an Ethics Committee which advises individuals and also provides advice to the University on ethical issues relating to research and research funders. Research is undertaken based on the principles set out in the Defra/BBSRC/FSA Joint Code of Practice.

e. Collaboration and contribution to the discipline or research base

22. Staff submitted within this sustainable agriculture group are embedded in international and national networks and act as experts on a wide range of committees and management groups.

- Eight of the submitted group review grant submission for BBSRC, NERC, EPSRC and ESRC. (Hand, Pope, Kettlewell, Sinclair, Dickin, Pink, Leather, Mills). Internationally, staff have also reviewed for the Swiss National Science Foundation (Edwards); the Ontario Ministry of Agriculture, Food and Rural Affairs (Rutter); The New Zealand Ministry of Science and Innovation, the Romanian National Council for research and the Georgian National Science Foundation (Vriesekoop); FP7 (Ward). Pink is also a BBSRC member for Plants, Microbes food and sustainability, IPA, Crop Science committees, and Pink and Monaghan are members of Defra Link PMC.
- Fellowships have been awarded to or associated with Monaghan and Pope (HDC/EMR/HTA Fellowships), and Sinclair was awarded the British Society of Animal Sciences highest award of the Sir John Hammond memorial prize for his 'outstanding contribution to research in applied ruminant nutrition.
- Staff act as senior editors on editorial boards for; Leather: Insect Conservation and Biodiversity (Ed in Chief), Asp. of Appl. Biol. (Sen. Ed), Ecol. Ento., Ag. and For. Ento, J An. Ecol: Monaghan; J Hort. Sci. and Biotech: Kettlewell; J Ag. Sci.: Pirgozliev; Arch. An. Nutr.: Pink; Folia Hort., J Pol. Soc. Hort Sci.: Edwards; Eur. J Plant Path.: Rutter; Appl. An. Behav. Sci., J Integ. Field Stud.: Vriesekoop; Crit. Rev. of Biotech., J of Inst. Brewing:
- Staff collaborate with a wide range of institutions internationally including MIT, California Davies, Sao Paulo, Cornell, Missouri, Michigan State, Penn State, Melbourne, Wageningen, Beijing Uni Chemical technology, China Agricultural University, Palacky Uni Czech Republic, INRA, Uni West Indies and nationally with the major research institutions in the topic area e.g. Imperial College, Warwick , Nottingham, UEA, Coventry, Cranfield, Lancaster, Plymouth, Bristol, Greenwich, Bangor, John Innes, Rothamsted, ADAS, AFBI and NIAB TAG.
- The group works closely with major industry stakeholders who act as partners and sponsors of research e.g. AB Agri, ABVista, AGCO, Agrii, Agrovista, Alltech, Animal Nutrition, Basis, Coop Farms, Danisco, Dairy Crest, Edme and Naturis, Elsom's Seeds, Eurofins, Fargro, GrowHow, Hutichinsons, Interagro, Kerry Feed Ingredients, Limagrain, Nickersons, NRM, Nunhems, Pancosma SA, Rijk Zwaan, Syngenta, Vaderstad, Velcourt and Viridaxis.
- The group collaborate with international and national agencies and NGOs e.g. CABI, KARI (Kenya), FERA, and provide expert opinion to organisations such as Defra Hort Link Management Committee, Red Tractor Board, BBSRC Crop Improvement Club.
- Staff engage with international and national initiatives e.g. Leather (member of the Defra Tree Health and plant biosecurity expert group); Mills (Horticulture Innovation Partnership and member of UKTI Prime Minister's delegation to Brazil 2012); Pope (Secretary to IRAG); Pink (BBC Rural Affairs Comm., member of LEAF Advisory Board, Agri Tech Catalyst assessor, Defra UK Fruit and Veg Task Force, Steering Group member for BBSRC Hort and Potatoes Initiative); Edwards (Joint Expert Comm. of WHO/FAO on food additives, UNIQ-PT steering Comm., ILSO Europe Expert Group on natural toxins, Expert at EU Commission agricultural contaminants Fusarium toxins, FSA cereal mycotoxin group, Assoc. Cereal Food Manufacturers).
- Mechanisms to promote collaborative research include the Defra Vegin network for industry and academia (Pink and Hand), the IOBC working group (Pope), instigation of the inaugural meeting between the American Soc of Ag and Biol Engineers and EU counterparts (Ward)