



The Douglas Bomford Trust



## IAgrE Landwards Conference 2018

Tuesday 6<sup>th</sup> November 2018  
The Royal Academy of Engineering  
Prince Philip House, 3 Carlton Terrace, London SW1Y 5DG

**Engineering Collaboration for Success**  
**Best practice for knowledge exchange in Agricultural Engineering**

### Conference Officers

IAgrE President	Jane Rickson
Conference Convenor	Jane Rickson
Conference Secretary	Sarah McLeod
Chief Executive & Secretary	Alastair Taylor
Press & Communications Officer	Marion King
Membership Secretary	Alison Chapman
Editor Landwards Journal	Chris Biddle

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**To use the Wi-Fi at RAEng use the network PPH-guest and password Pph23chT**

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# IAgrE Landwards Conference 2018



## Conference Programme

0930	<b>Arrival, Registration and Networking</b>
1000	<p><b>Introductory Remarks</b> – <i>What is Knowledge Exchange and why is it important? How does it lead to transformational change? How will this conference help delegates to be better prepared for participating in future Knowledge Exchange? Overview of Conference</i></p> <p><a href="#">Professor Jane Rickson – President IAgrE</a></p>
1015	<p><b>Knowledge Exchange: The True Beneficiary</b> – <i>As good as the work of industry and university is and as exciting as the innovations are, they count for nothing if they are not taken on board by the end user. The purpose of the Agriculture and Horticulture Development Board (AHDB) is to inspire our farmers and growers to succeed in a rapidly changing world. How can engineers and the research community equip the industry with easy to use, practical know-how which they can apply straight away to make better decisions and improve their performance?</i></p> <p><a href="#">Dr Susannah Bolton, Knowledge Exchange Director - Agriculture and Horticulture Development Board</a></p>
1045	<p><b>The Knowledge Transfer Challenge</b> – <i>Advances in Agricultural Engineering and associated technologies are exciting and demand good knowledge transfer. How does this look on a modern farming enterprise. At Velcourt, Keith’s responsibilities include technical director and R&amp;D, management of in-house trials activities, collaborative research and knowledge transfer. Does Knowledge Exchange between engineers, researchers and farmers lead to ground breaking change in the field and what are the barriers?</i></p> <p><a href="#">Keith Norman – Independent Consultant, former Technical Director Velcourt</a></p>
1115	<b>Coffee Refreshment Break</b>
1145	<p><b>Making it Work</b> – <i>The University of Sheffield Advanced Manufacturing Research Centre (AMRC) helps manufacturers of any size to become more competitive by introducing advanced techniques, technologies and processes. What can Agricultural Engineering and AgriTech learn from the work undertaken at AMRC and the successful partnerships it has developed. What is the recipe for success?</i></p> <p><a href="#">Professor Keith Ridgway CBE - Executive Dean of the AMRC Group</a></p>
1215	<p><b>Opportunities for Investment in AgriTech</b> – <i>The obvious candidates include robotics, drones and smart machines for agriculture, remote imaging, satellites and intelligent crop monitoring, low-cost sensors and wireless networks, precision irrigation and water-saving technologies. How can Innovate UK help bring together industry with research and development? What does successful Knowledge Exchange look like? What are the pitfalls to be overcome?</i></p> <p><a href="#">David Telford – Knowledge Transfer Network (KTN)</a></p>
1245	<p><b>Elevator Pitches:</b> <i>Short explanatory sessions where industry and university experts talk about their engineering challenges and solutions. Get involved and join forces.</i></p> <p><a href="#">Chaired by Professor Jane Rickson – President IAgrE</a></p>
1315	<b>Lunch &amp; Networking</b>



## Conference Programme

1400	<b>Afternoon Programme</b>
1400	<p><b>Best practice in Knowledge Exchange</b></p> <p><i>Many successful partnerships already exist. What sort of work is being undertaken? What are the ingredients for success and pitfalls to be avoided? Short presentations from a number of current industry and research collaborations where Knowledge Exchange has been developed, leading to successful outcomes.</i></p>
1405	<p><i>The Harper Adams University/Precision Decisions “Hands-free Hectare” project has drawn much interest from many people and is a great example of a successful partnership. Kit and Clive will explore the partnership and how this has made the project a success as well as drawing much interest across the Globe.</i></p> <p><b>Kit Franklin (Harper Adams University) and Clive Blacker (Precision Decisions)</b></p>
1425	<p><i>Lincoln University has built up a reputation for its work with a range of partners from the food industry – particularly post-harvest and the intensive crop production and vegetable growing sector. Simon will showcase some of his work and explain how partnership have been used to develop best practice which is already having a positive impact across in terms of food production.</i></p> <p><b>Prof Simon Pearson (Director of LIAT, Lincoln University)</b></p>
1445	<p><i>Ian completed his PhD on the subject of Strip Tillage, sponsored by Frontier Ag Ltd and Douglas Bomford Trust. This example will show how partners from outside pure engineering bring together science, with engineering to develop new solutions which will benefit the Precision Farming agenda.</i></p> <p><b>Iain Dummett PhD Research Student, School of Energy, Environment and Agrifood, Cranfield University &amp; James Molden, Head of Technical Services, Frontier Agriculture Ltd</b></p>
1505	<b>There will be a round table discussion and Q &amp; A Session following these presentations</b>
1520	<p><b>Elevator Pitches:</b> <i>Short explanatory sessions where industry and university experts talk about their engineering challenges and solutions. Get involved and join forces.</i></p> <p><b>Chaired by Professor Jane Rickson – President IAgrE</b></p>
1550	<p><b>Conference Review</b></p> <ul style="list-style-type: none"> <li>• <i>Review of Conference</i></li> <li>• <i>Next Steps</i></li> </ul> <p><b>Alastair Taylor – IAgrE CEO</b></p>
1600	<b>Conference Closes</b>

# The Institution of Agricultural Engineers' Landwards 80<sup>th</sup> Anniversary Conference 2018



## Engineering Collaboration for Success

Best practice for knowledge exchange in  
agricultural engineering

**IAgrE President 2018-20**

**Professor Jane Rickson CEnv FIAgrE**



Jane Rickson is Professor of Soil Erosion and Conservation in the Cranfield Soil and AgriFood Institute, School of Water, Energy and Environment at Cranfield University. She holds qualifications in agricultural and biosystems engineering at MSc and PhD level. She has over 30 years' experience of research, consultancy and teaching in soil and water engineering, with focus on sustainable land management practices. She is a Fellow of the Institution of Agricultural Engineers, a Chartered Environmentalist, Fellow of the Higher Education Academy and member of the Institute of Professional Soil Scientists.

Jane is delighted to be the President of the Institution of Agricultural Engineers in its 80<sup>th</sup> year and warmly welcomes you to the Institution's Annual Conference 2018, focussing on collaboration and knowledge exchange. Working as an academic, Jane is all too aware that universities and research organisations are sometimes accused of being 'ivory towers', with little connection to the 'real world'. Whilst that's pretty difficult given the applied nature of agricultural engineering research, one way to overcome this accusation is through working collaboratively with industry and government. Indeed, Jane's own research is based on collaborations with many different groups: individual farmers, grower groups, agribusinesses, other academics and policy teams at the local, national and international level.

*"The aim of the conference is to share 'best practice' in finding and developing collaborations between commercial, industrial, research and academic partners. Ultimately, the strengths of each partner should bring synergies to create innovative solutions to specific challenges. The conference is also an opportunity to find like-minded people, forge future collaborative relationships and access the funding opportunities out there with organisations such as the AHDB and Innovate UK. The need for knowledge exchange between industry, government and research has never been stronger. Some of the world's greatest challenges - food security, coping with climate change, protecting our environment and sustaining rural livelihoods - require scientific and technological solutions that will increasingly rely on agricultural engineers working together."*



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## Knowledge Exchange: The True Beneficiary

### Dr Susannah Bolton

### Knowledge Exchange Director, Agriculture & Horticulture Development Board



Susannah is a highly experienced research manager and communicator of science. Most recently she has been Head of Crop Production Systems at AHDB responsible for managing a large portfolio of R&D projects and associated knowledge exchange activities.

Previously Susannah worked at Rothamsted Research in Hertfordshire, where she was responsible for the development of international research projects, science communication and knowledge transfer activities. She has a doctorate in Tropical Agronomy and her career has included three years of working at an agricultural research institute in Brazil. Susannah is the independent Chair of the FACTS Management Committee and a member of the BASIS Registration Ltd. Board. Current responsibility includes the development of a programme of KE activities for AHDB, building partnerships with other organisations in the delivery of KE and establishing a Farm Excellence Platform to optimise farmer access to innovation and farmer to farmer communication.

### *Making Better Decisions and Improving Performance*

*AHDB's overarching priorities are to inspire British farming and growing to be more competitive and resilient, and to accelerate innovation and productivity growth through coordinated research and development and the associated knowledge exchange (KE). AHDB is a major funder of applied agricultural and horticultural research in the UK, and AHDB KE builds on the fact that we are unique in being able to blend farm economics and skills development with technical advances and innovation. Our focus is to empower farmer decision making by providing the business management acumen and skills alongside technical information and tools to measure and benchmark performance. By placing farm businesses at the centre of our KE activity, we can maximise farmer engagement and uptake of best practice as well as ensuring new and potentially game-changing innovative technologies are introduced to the industry as quickly as possible. The Farm Excellence network of monitor and strategic farms builds on a body of research that has revealed that farmers learn best from those they trust and are more likely to make beneficial changes and adopt best practice if they see it in action on-farm and in their own region. Investment in new technologies needs to be informed by the best available understanding of the benefits that it brings to the farm business as well as its associated costs. Ensuring this information is available to farmers in a rapidly changing world is a challenge that has to be met. Novel approaches and opportunities for farmer participation and data provision make this challenge far more achievable than it has been in the past and our changing environment and political landscape make it more pressing than ever.*



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## The Knowledge Transfer Challenge

**Keith Norman**

**Formerly Technical Director Velcourt Ltd**

Keith graduated from Newcastle University specialising in Crop Production. Keith then followed a career in practical farm management for 6 years, initially as a working farm manager and eventually becoming arable manager on a 1200 hectares estate in Lincolnshire. Keith then changed to a more technically based role as Technical Director, supporting Velcourt's team of 45 farm managers in crop production technology and managing Velcourt's in-house research and development activity in 1989. Velcourt currently manage 53,000has in the UK.

Keith has worked on various overseas projects in Spain, France, Germany and Zambia and is actively involved in Velcourt's activities in France, Russia and the Ukraine.

Velcourt's R&D is primarily to provide its team of 46 farm managers with independent technical information. Velcourt are also partners in many collaborative projects. Velcourt R&D also work with all the major Agrochemical manufacturers, providing independent evaluation of new and existing active ingredients.

### *The Connected Farm – a need for collaboration*

*Keith will explore several innovative solutions being developed for tomorrow's crop production and illustrate how vital a two-way collaboration between farmers and engineers is needed to make it all work.*



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## Making it Work

### Professor Keith Ridgeway CBE Executive Dean of the AMRC Group

**Keith Ridgeway** is the Professor of Design and Manufacture and Executive Dean of the AMRC at the University of Sheffield. The AMRC comprises the AMRC with Boeing, the Nuclear AMRC and the AMRC Apprentice Training Centre. The AMRC with Boeing was established in 2001 to carry out research in manufacturing technologies directly related to the aerospace industry. In addition to Boeing, the AMRC has more than 100 sponsors, including Airbus, BAe Systems, Rolls-Royce, Messier Bugatti Dowty, Goodrich and Spirit Aviation. Application of the research developed has led to a step change in the manufacturing capability of many of the industrial sponsors and encouraged their on-going commitment and support.

The Nuclear AMRC was established in February 2010 and aims to increase the competitiveness of companies in the Nuclear New Build supply chain. Founding partners include EDF, Areva, Westinghouse, Rolls-Royce, Sheffield Forgemasters International and Tata Steel. In 2010 the AMRC was awarded £20m from the Regional Growth Fund and the European Regional Development Fund to build a futuristic reconfigurable, digital factory incorporating Industry 4.0, "Factory 2050". This opened in December 2015.

Professor Ridgeway is also the Executive Chair of the Advanced Forming Research Centre at the University of Strathclyde where he is also the Professor of Manufacturing in the Dept of Design Manufacture and Engineering Management.

Professor Ridgeway is a Fellow of the Royal Academy of Engineering, a Fellow of the Institution of Mechanical Engineers and a Fellow of the Royal Institute of Naval Architects. In 2012 he was awarded the prestigious Honorary Fellowship of the Royal Aeronautical Society. He was awarded the OBE for services to UK manufacturing industry in June 2005 and a CBE for services to Manufacturing Research in January 2012. Professor Ridgeway has over 200 publications including over 80 journals articles.

### ***Making it Work***

*The University of Sheffield Advanced Manufacturing Research Centre (AMRC) helps manufacturers of any size to become more competitive by introducing advanced techniques, technologies and processes. What can Agricultural Engineering and AgriTech learn from the work undertaken at AMRC and the successful partnerships it has developed. What is the recipe for success?*



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## Opportunities for Investment in AgriTech

**Dr David Telford**

**Knowledge Transfer Network (KTN)**



David works for the Knowledge Transfer Network (KTN), a UK-wide innovation network. An Accredited Animal Scientist, David has a wide network of academic and business contacts in Agri-Food and Agri-Tech and related areas. David holds a PhD in Agricultural technology adoption, and before joining the KTN, he worked as a technology translator for Genesis Faraday. He has extensive experience of livestock and aquaculture projects; encompassing a broad range of species, sectors and technologies, and also works in the application of new technology across agriculture, particularly in Precision Agriculture.

David is a former council member of the British Society of Animal Science and Coordinator of the Sustainable Agriculture Research and Innovation Club, a joint BBSRC and NERC initiative with approximately £10m funding for sustainable agriculture projects. David also provides Business Development and Innovation support to one of the UK Centres of Agricultural Innovation, Agri-EPI (Precision Agriculture and Engineering).

David Telford has extensive experience of helping companies to innovate via brokering new collaborations, and accessing significant amounts of grant funding, and is one of the organisers of the KTN Agri-Tech Investment Showcase.

### *The importance of collaboration for successful innovation in Agri-Tech*

*The UK is building a reputation for successful Agri-Tech Innovation, including in agricultural engineering, precision agriculture, and related areas. This presentation will explore some of the reasons for that success, with a particular focus on the importance of collaboration, as well as how funding can boost collaboration and innovation in Agri-Tech. The presentation will draw on examples from the work the KTN undertakes to support a broad range of Agri-Tech companies to successfully innovate in the UK.*



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## Best Practice in Knowledge Exchange

### Clive Blacker & Kit Franklin

#### “Hands Free Hectare”

The Harper Adams University/Precision Decisions “Hands-free Hectare” project has drawn much interest from many people and is a great example of a successful partnership. Kit and Clive will explore the partnership and how this has made the project a success as well as drawing much interest across the Globe.



### Professor Simon Pearson

#### Director of LIAT, Lincoln University

Lincoln University has built up a reputation for its work with a range of partners from the food industry – particularly post-harvest and the intensive crop production and vegetable growing sector, much of this driven by work on digital technology and robotics. Simon will showcase some of his work and explain how partnership have been used to develop best practice which is already having a positive impact across in terms of food production. Professor Pearson has recently been appointed as Principal Investigator of the new EPSRC Internet of Food Things DE Network, that aims to drive collaboration and partnerships in the agri food, academic and industry sectors.



### Dr Iain Dummett & James Molden

#### Cranfield University & Frontier

#### Agriculture Ltd

James and Iain will discuss their experiences of a PhD supported by industry and featuring a range of research methodologies from farmer-hosted field trials to experiments carried out under controlled conditions. Both speakers will reflect on their experiences going into the project (James sharing his view from industry and Iain sharing his view as the PhD student) and their perspectives on making collaboration between industry and academia work in the future.





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## IAgrE Landwards Conference 2018

### Delegates & Speakers

Ilan	Adler	UCL
Victor	Ahiaba	Royal Agricultural University
Silvia	Arpano	Cranfield University
Kabiru	Ayuba	Cranfield University
Chris	Biddle	Editor Landwards Journal
Clive	Blacker	Precision Decisions - Hands Free Hectare
Susannah	Bolton	AHDB
Stephen	Burns	Agri-EPI
Clare	Butler Ellis	Silsoe Spray Applications Unit Ltd
Robert	Carpmael	Marks & Clerk LLP
Alison	Chapman	Membership Secretary, IAgrE
Parmjit	Chima	Harper Adams University
Kirstie	Clayton	Agri-EPI
Chris	Cook	Cranfield University
Linsey	Cresswell	CHAP Solutions
Gavin	Dick	Agri-EPI
Iain	Dummett	Cranfield University
Iain	Flint	University of Cambridge
Kit	Franklin	HAU - Hands Free Hectare
Thomas	Fungenzi	Cranfield University
David	Gillingham	
Keith	Geary	LLEO Limited
Dick	Godwin	
Bruce	Grieve	Manchester University
Shaun	Groom	Pottinger UK
Paul	Hemingway	IAgrE President Elect
Kayleigh	Holden	AEA
Kamran	Hussein	KTN UK
Richard	Johnson	Oxentia Ltd
Marion	King	Press Officer IAgrE
Susan	Lee	University of Manchester
Jonathan	Lodge	City Farm Systems Ltd
Robert	Merrall	Merralls Consulting





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Sarah	McLeod	IAgrE Secretariat
James	Moldon	Frontier Agriculture
Sam	Moulding	G's
Seamus	Murphy	Oxford Lasers Ltd
Andy	Newbold	
Keith	Norman	Velcourt Ltd
Steve	Parkin	Biosystems Engineering
Aditya	Parmar	Natural Resources Institute
Simon	Pearson	LIAT, Lincoln University
Alan	Plom	Douglas Bomford Trust
Jonah	Prout	Cranfield University
Shaun	Rawson-Smith	
Vaughan	Redfern	Stonebridge House
Peter	Redman	
Karen	Rial-Lovera	Royal Agricultural University
Jane	Rickson	
Keith	Ridgeway	AMRC Group
Richard	Robinson	Autoguide Equipment
Fernando	Rubio-lopez	Cranfield University
John	Sartain	
David	Seccombe	Environment Agency
Emmanuel	Solomon	Cranfield University
Yashvini	Shukla	UCL
Michael	Stephenson	
Alastair	Taylor	CEO IAgrE
David	Telford	KTN
David	Tinker	
Thangavelu	Toniappa	
Alastair	Tulloch	
Phil	Underwood	SocEnv
Sam	Wane	Harper Adams University
Nigel	Warner	Royal Agricultural University
Chris	Watts	
David	White	Harper Adams University
Mike	Whiting	
Jane	Williams	Hartpury University

