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# Landwards

# THE AG-TECHNICIAN OF THE FUTURE

## CHANGING FACE OF THE DEALERSHIP

***In this issue***



IAgrE

# Biosystems Engineering

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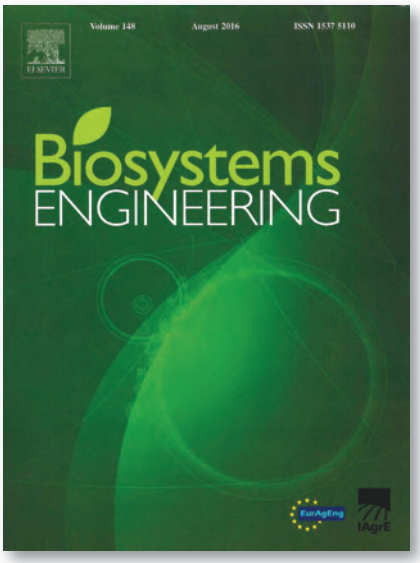


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The Managing Editor of Biosystems Engineering, Dr Steve Parkin, has kindly summarised a selection of the papers published in the last three issues which he thinks will be of interest to IAgrE members.

### Biosystems Engineering

Volume 154, February 2017, Pages 25–34
**Special Issue: Spray Drift Reduction**
**Wind tunnel measurements and model predictions for estimating spray drift reduction under field conditions**
**M.C. Butler Ellis, R. Alanis, A.G. Lane, C.R. Tuck, D. Nuyttens, J.C. van de Zande**
Silsoe Spray Applications Unit Ltd, Wrest Park, Bedford, UK
Institute for Agricultural and Fisheries Research (ILVO), Merelbeke, Belgium
Wageningen University and Research Centre, Plant Research International, The Netherlands

Recent changes to UK regulations have allowed buffer zones greater than 6 m to be included, providing that 75% drift reduction conditions are used. However, there is an implicit assumption that the level of drift reduction is independent of distance downwind, so that measurements relating to a 6 m buffer zone can be applied to 20 m. An investigation of the relationship between wind tunnel and field data was carried out with the purpose of establishing if drift reduction measured between 2 and 7 m in the Silsoe wind tunnel can be extrapolated to 20 m in the field. A computer-based spray drift model was used to explore some of the factors influencing downwind spray drift to support this extrapolation. It was concluded that spray drift reduction is dependent on distance downwind, but that wind tunnel measurements can be used to estimate this at least up to 20 m downwind.

### Biosystems Engineering

Volume 155, March 2017, Pages 96–123
**Review: Rethinking environment control strategy of confined animal housing systems through precision livestock farming**
**Sébastien Fournel, Alain N. Rousseau, Benoit Laberge**
Institut national de la recherche scientifique (INRS), Québec City, Québec, Canada
GSI Electronics Inc., St-Hubert, Québec, Canada

Recording and analysis of animal behaviour can give input about its welfare. Environment control in confined animal housing systems is typically based on heat and moisture production rates at predetermined ambient temperature levels. This traditional control method can fall short in meeting the true thermal needs of the animals since it does not account for factors now acknowledged as affecting the animal's productive responses to surrounding conditions. Also, advancements in animal genetics, nutrition, and management practices have led to considerable changes in sensible and latent heat loads of modern livestock buildings. In this context, precision livestock farming technologies enabling the automatic monitoring of environmental, physiological, and behavioural variables, can be used to continuously assess livestock performance and well-being in relation to their environment. This paper presents a critical review of the state of the art of precision environment control of livestock buildings, identifying knowledge gaps, research opportunities, and technical challenges.

### Biosystems Engineering

Volume 156, April 2017, Pages 38–50
**On-line fresh-cut lettuce quality measurement system using hyperspectral imaging**
**Changyeun Mo, Giyoung Kim, Moon S. Kim, Jongguk Lia, Kangjin Lea, Wang-Hee Lee, Byoung-Kwan Cho**
National Institute of Agricultural Sciences, Republic of Korea
Environmental Microbial and Food Safety Laboratory, ARS-USDA, Beltsville, MD, USA
Department of Biosystems Machinery Engineering, Republic of Korea

An online quality measurement system for detecting foreign substances on fresh-cut lettuce was developed using hyperspectral reflectance imaging. Algorithms were developed for this system to detect contaminants such as slugs and worms. The optimal wavebands for discriminating between contaminants and sound lettuce as well as between contaminants and the conveyor belt were investigated. The subtraction imaging algorithm to classify slugs resulted in a classification accuracy of 97.5%, sensitivity of 98.0%, and specificity of 97.0%. The ratio imaging algorithm to discriminate worms achieved classification accuracy, sensitivity, and specificity rates of 99.5%, 100.0%, and 99.0%, respectively. The overall results suggest that the online quality measurement system using hyperspectral reflectance imaging can potentially be used to simultaneously discriminate foreign substances on fresh-cut lettuces.

# **EDITORIAL:** BRING ON THE REVOLUTION

REVIEWING the content of this issue of Landwards, there is a tangible sense of the quickening in the pace of technological change. A fascinating recent review of advanced vehicle technology in agriculture by the NFU forecast that battery-electric tractors 'could be available from 2020 onwards'. The author of the report, Jonathan Scurlock says "Imagine a farm where electric agricultural vehicles, some autonomous, some conventional, are connected to charging points in large solar PV equipped 'carport-style' machinery sheds, earning additional income from so-called 'vehicle-to-grid' network balancing services while they are on charge"
That's an ambitious timescale, coming on the back on the recent launch by John Deere of a concept battery electric tractor at SIMA. Mind you, the R&D teams involved need to get a move on. One US manufacturer of autonomous tractors says that the batteries required to run such a tractor "would cost $350,000 – and weigh more than the tractor itself!" Other developments, gaining traction include the vision and development of the energy independent farm, currently being trialled by New Holland. How timely then that both New Holland President Carlo Lambro and NFU's Jonathan Scurlock, who wrote the report on advanced vehicle technology, should feature in the speaker line-up for this year's IAgrE Conference to be held at Rothamsted on 11 October. A must-attend event.

Technological change requires high calibre skills in a support role. On a recent visit to John Deere dealer Burdens Agri in Kent for the feature on The Ag Technician of the Future, it was impressive that the majority of the service support team were university graduates, with degrees often not connected agriculture. Our recruiting sights today should be set on encouraging the 'millenials' to step into our industry. Those with IT skills and savvy should be our target. We know we have an exciting career in prospect, so we need to encourage 'outsiders' to step inside for a taster, get the bug and experience the challenges. Our industry has been evolutionary to date – I've a feeling that a revolution is just over the horizon.

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# *IN THIS ISSUE*

*Volume 72, Number 2 2017*











**OTHER FEATURES**



**LANDWARDS PRODUCTION TEAM**
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# GREAT PLAINS CEASES UK PRODUCTION

## *Sleaford factory to fully close in 2018*

Great Plains Manufacturing has announced its decision to stop production of Great Plains products at its Sleaford factory site and close the facility.

The company says this decision comes in the wake of an extended downturn in the worldwide agricultural economy.

Current production is to be completed by mid-2017. Other operations will be phased out after the 2017 autumn season with the facility to be closed early in 2018.

It states in the future, parts and service operations will be continued under the responsibility of Great Plains Manufacturing with support from its sister company, Kverneland Group.

Linda Salem, President of Great Plains Manufacturing, said: "We examined many options before we chose this path but we have concluded that the long-term weakness in the agricultural economy has made it no longer viable to keep the facility in operation."

The news comes after the company announced in March last year it was to shed 40 jobs in a move to compete with a "challenging market".

David Holmes, UK Sales Director said "Since the beginning of the year we have had a restructuring process which was really based around the fact that for the last 40 years we have been manufacturing high quality tillage and seeding farm machinery and have managed to grow the business and increase our markets across existing and new markets worldwide."

Great Plains had acquired the Sleaford firm Simba in 2010 (Simba being founded in the area back in 1976) and invested heavily in the site to make it its main base for Western Europe.

# STRONG TRACTOR SALES

## *Registrations up by over 20% in first four months of 2017*

**According to figures released by the Agricultural Engineers Association, tractor registrations stood at 4096 for the first four months of 2017, a change of +20.2% compared with the same period in 2016.**

**Stephen Howarth, Agricultural Economist for the AEA said, "After the very strong performance in March, growth in UK registrations of agricultural tractors (over 50hp) was more restrained in April, but the different trends probably partly reflect the timing of the Easter holidays, which fell in March last year but April this year."**

# PASSING OF AGCO FOUNDER

## *Guided the company through 21 acquisitions*

The founder of AGCO, Robert J. Ratliff, passed away in April at the age of 85.

Mr Ratcliff is credited for guiding the growth of AGCO from a small North American company into one of the world's largest manufacturers of agricultural equipment.

Through his entrepreneurial spirit, Mr. Ratliff led the management team that purchased Deutz-Allis Corporation in 1990 as part of the formation of AGCO.

Under Mr. Ratliff's leadership, AGCO acquired many of the most well-known and respected equipment brands in the industry. In 1994, AGCO purchased the worldwide holdings of Massey Ferguson. In 1997, AGCO purchased Fendt. In 2002, Mr. Ratliff led the acquisition of the Caterpillar agricultural track tractor business and the Challenger brand. In 2004, AGCO completed the purchase of Valtra.

Mr. Ratliff guided the Company through a total of 21 acquisitions as it grew sales from $200 million in 1990 to over $5.4 billion in 2005 and retired as Chairman in 2006.

Martin Richenhagen, AGCO's Chairman, President and Chief Executive Officer stated, "Bob Ratliff's commitment to excellence and complete dedication to AGCO, our customers, dealers, employees, and shareholders helped our Company become what it is today. He will be greatly missed, and our thoughts are with his wife Gini and his entire family.

# PROFESSIONAL REGISTRATION

## *New Guide available*

The new ***2017 Pocket Guide to Professional Registration*** has been published by the Engineering Council and is available to download.

The Engineering Council's booklet, also known as the pink book, has been updated and a printed version of the guide will be available over the coming weeks.

The guide has been developed for use by all those working within the professional engineering community. It explains the relationship between the many organisations working within this community and aims to provide key information about registration with the Engineering Council, our titles and literature. It includes a page on each of the 35 professional engineering institutions that are licensed to assess their members for professional registration, as well as a page on each of our 21 Professional Affiliates. *www.engc.org.uk*

# NEW AEA PRESIDENT

***Same Deutz-Fahr UK's Mark Ormond***

Mark Ormond, managing director of Same Deutz-Fahr UK has been elected President of the Agricultural Engineers Association (AEA). He took up his position at the Association's Annual General Meeting held in London on Tuesday 11 April and succeeds Ian Small of Briggs & Stratton.

Mark (*pictured with AEA director-general and CEO, Ruth Bailey*) gained an HND in Agriculture at Shuttleworth Agricultural College. He was part of the global sales team for Vaderstad for two years, based in Stockholm, before returning to the UK to take up the post of managing director of Grimme in Boston, Lincs.

In 2007, he was appointed General Manager of Lemken UK Ltd where he stayed for over 7 years before his appointment as Managing Director of SDF in March 2015.

Guest speaker at the AEA lunch was Simon Weston CBE, the Falklands Veteran and Charity Campaigner. He spoke about his experiences during the Falklands conflict during 1982 when the Sir Galahad was destroyed in Bluff Cove on the Falkland Islands. Welsh Guardsman, Simon's message was one of achievement, of triumph over adversity, of seizing the moment and succeeding.

# SLIGHT RISE IN FARM INCOME IN 2016

***Lower input costs rather than farmgate prices***

Total income from farming (Tiff) in the UK rose by 1.5% or £59m in real terms to £3.9bn in 2016, Defra figures show.

Tiff represents business profit and although it rose, this was because of lower input costs rather than better farmgate prices. The value of output overall fell by 3.4% to £23.5bn. This was mainly driven by falls in both volume and value for cereals and milk.

"We would have expected the total income figures to be a little bit higher," commented Richard King, partner and head of business research at the Andersons Centre.

Overall cereal production was down, with the exception of oats, driven by a return to more typical yields following the record yields of 2015.

Despite market prices strengthening in the latter part of the year, cereal prices for the year as a whole were lower and both milk production and prices were lower in 2016.

The importance of currency is demonstrated by the effect of the weaker pound in 2016. This led to an increase of 18% in the value of payments under the Basic Payment Scheme, with payments set in euros and converted to pounds using the exchange rate set by the European Central Bank every September. In 2016 this was at €1=85.2p compared with €1=73.1p in 2015.

"Although the overall profitability has recovered to a certain degree, we are still far from seeing levels that will sustain a long-term and profitable farming industry," said NFU president Meurig Raymond.

Gross domestic product (GDP) from farming fell by £165m to £8.5bn, which in real terms is a 1.9% decrease. Mr Raymond called for the next government to put in place an agricultural domestic policy that makes farming a more stable and profitable industry.

Tiff represents business profits and returns for work done by owners and other unpaid (usually family) workers. It excludes changes in the values of assets, including stocks, due to price changes, but includes non-agricultural activities such as further processing or tourist activities where these cannot be separated from the agricultural business.

# BBSRC INVESTS £50.9 IN ROTHAMSTED RESEARCH

***Announces 5-year strategic programmes***

The Biotechnology and Biological Sciences Research Council (BBSRC) is to invest £50.9 million in support of agricultural science at Rothamsted Research.

This is to address challenges faced by farmers and society for the sustainability of food production and the environment.

Every five years, Rothamsted Research develops a revised science strategy. Its 2017-2022 version comprises five multidisciplinary, interdependent programmes that are collaborative within the institute, funded from multiple sources and in some cases, across institutes and other organisational research programmes.

The 2017-2022 institute strategic programmes include '***Designing Future Wheat' 'Tailoring Plant Metabolism for the Bioeconomy', 'Soil to Nutrition (Optimising Nutrient Flow)' Smart Crop Protection'*** and '**Achieving Agricultural Sustainable Systems'** (ASSIST) which aims to develop and test innovative farming systems that increase food production and its resilience, while reducing the environmental footprint of agriculture.

A strategic approach to knowledge exchange and commercialisation of research (KEC) is an integral component of the Rothamsted Research 2017-2022 science strategy, to ensure the effective dissemination of knowledge and accelerate delivery of innovation to farmers nationally and internationally, according to Rothamsted.

Professor Achim Dobermann, director and chief executive at Rothamsted Research says: "We are delighted to have the long-term commitment and support by the BBSRC for the delivery of research objectives aiming to offer solutions for agriculture in some of the most challenging issues."

## AGRI-EPI APPOINT

### *New Finance and Regional Directors*

The Agri-EPI Centre has announced three new appointments.
Chartered accountant Uilleam Cameron joins CEO Dave Ross at EPI HQ in Edinburgh as Chief Financial Officer. He brings considerable international experience gained in Hong Kong, Australia and UAE, where he led the KPMG corporate finance team. He has held senior finance roles in industry with Scottish Hydro-Electric and Seawind Resources and is currently a partner in Jenson Solutions, specialising in working with start-up ventures to attract investment.

Meanwhile the new Agri-EPI Centre at Harper Adams is almost finished and now has local leadership with the appointment of Dr Robert Merrall and Victoria Cooper as Regional Co-Directors.
Rob is current President of the Institution of Agricultural Engineers (IAgrE). With a background in farm machinery, Rob's focus will be on effective support for and commercialisation of applied agricultural engineering research.
Vickie has a background in the legal profession but had a change of career five years ago when she joined Merralls Consulting in 2012. She worked in law firms from the age of 16 and gained a broad range of hands on experience whilst completing her studies. After qualifying as a solicitor and practising for a few years, she decided to do something more exciting and made a move over to the agricultural sector.

## IAGRE STAFF CHANGES

After 24 years with IAgrE, Finance Office Elizabeth Stephens has announced her retirement this summer. Meanwhile, Sally Wood, who joined IAgrE two years ago to work on the redesigned website and other projects has left the Institution to focus on her flourishing gardening business. IAgrE is currently advertising these posts and in the process of recruiting replacements for Elizabeth and Sally. An appreciation of Elizabeth's role will be in the next issue of Landwards, and IAgrE is making plans to recognise her contribution to the Institution over the many years.

## PROMOTING CAREERS IN SERVICE ENGINEERING

### *CLAAS raising awareness of options*

Since launching its '*Engineer your Career*' campaign at LAMMA, the team at CLAAS UK have been attending careers events and shows throughout the UK and Ireland.
The latest initiative in the campaign to raise awareness of the careers options available within the high-tech agricultural machinery service industry has been the creation of a short video.
CLAAS says the agricultural service and support industry has changed out of all recognition in recent years, and the number of roles now available under that 'broad brush' title is extensive.
To highlight this, the video profiles CLAAS service engineers at all levels of their career, from current apprentices through to service managers, giving a quick oversight of their job, what it involves and the satisfaction they gain from their role.
"Many people fail to appreciate that agriculture is an exciting industry, with machinery that uses state-of-the-art technology on a par with aerospace and other cutting-edge industries," says Trevor Tyrrell, CEO of CLAAS UK.
"It's an industry that has embraced the internet, satellite technology and computers like no other, as we continue to develop machinery that will help farmers feed an ever growing population."
The new 'Engineer your Career' video can be viewed via the CLASS UK Facebook page or via the official CLAAS You Tube channel.


## HIT OR MISS?

### *IMechE report on Government initiatives for engineering*

The Institution of Mechanical Engineers (IMechE) has published a report summarising the key features of recent government initiatives which will impact engineering the education and skills systems in England. Most recently these have been the industrial strategy green paper and the budget supporting technical education. The purpose of the paper is to make recommendations based on an overview where interactions between initiatives could be improved.
The paper has a specific emphasis on further education, technician skills and apprenticeships. Attention is also drawn to opportunities that have so far been missed, to increase the availability of engineering talent to meet industry needs.
The report identifies key issues such as the need for professional engineering institutions to use their unique position to uphold standards of personal competence as systems change. It finds that institutions' work should be based on providing guidance for their members on skills and that they must adapt to offer standards for all Vocational Qualification levels as well as those that naturally fit the existing Engineering Technician (EngTech), Incorporated Engineer (IEng) and Chartered Engineer (CEng) grades of professional registration.
The paper finds that Apprenticeships need to focus not only on quality but also on perceptions and awareness. IMechE highlights that the Apprenticeship levy will bring a boost in resources but must also drive change in behaviour. It cites the use of UCAS to promote degree apprenticeships alongside other degree courses as an excellent example of progress. According to the paper, incentives are needed to encourage more STEM graduates into teaching in schools, while in further education, the assessment of how colleges train and maintain the professional learning of their lecturers needs to be an explicit and a critical part of Ofsted inspections. *www.imeche.org*

# SIMPLE ENGINEERING

*The rewards of 'tinkering in sheds'*

## President's Musings

IAgrE President
Dr ROBERT MERRALL
MIAgrE, EngD

"Sustainable Intensification" is a difficult concept that means different things to different people. I first came across the term, which I first heard used by the then Government Chief Scientist, Prof John Beddington, whilst the Institution was preparing a response to a UK Government's Foresight Project on Global Food and Farming Futures back in 2012.

My understanding of sustainable intensification (which many believe to be something of an oxymoron), is simply the inevitable process humanity must follow in trying to feed a growing population without ruining the environment. Increasing efficiency by taking an overall systems approach to the problem is the "big picture" solution, and one which, with backing from our Institution, is receiving attention from some of the best minds in the UK through the Royal Academy of Engineering. This is important stuff, and our Institution is playing its part in that piece in highlighting the relevant sector opportunities, and something we will build on in our autumn conference "Decarbonising UK Agriculture" at Rothamsted on 11th October.

However, there are many under-utilised and often very simple engineering interventions that can be implemented to good effect in our quest to produce more from less. These might be devices to minimise run-off in tramlines, sensors that enable cultivation depth to be varied on the go, and the proper implementation of guidance aids that simply reduce the inevitable overlap between one pass and another.

I said "simple engineering interventions". Perhaps I should qualify that. Sometimes they really are simple modifications to existing equipment. But sometimes they are not quite so simple. What I really mean by "simple engineering" is without the need for the complex chemistry involved in pesticide re-formulation (and years spent achieving regulatory approval), or the painstaking implementation of genetic marker techniques in breeding programmes which require years of screening trials before a new variety can be launched. Perhaps it is just me, but I have a feeling there are quite a few of us in the agri-tech community who felt more comfortable at school in physics and design technology than in chemistry or biology. Not that agricultural engineers are compromised when it comes to the hard science that is such an important part of getting food on our plates. Far from it in fact, but I do hold dear the notion that the potential contribution to society of those of us who like "tinkering in sheds" has yet to be fully recognised.

*Still scope for truly simple engineering interventions to have significant impact.*

As I mentioned, there is still scope for truly simple engineering interventions to have significant impact. However, sometimes driving production efficiency by controlling variability in animal and crop production systems involves the amalgamation of more complex but readily available components. You couldn't call a computer "simple" but they are certainly ubiquitous and now relatively inexpensive, and for most of us, the benefits of our brave new connected world reach into every aspect of daily life. I guess it would be stretching a point to call machine vision technology "simple", but it is certainly becoming ubiquitous. Has anyone else been astonished by their smart phone's ability to pick out faces in photographs?

### COLLABORATION

I really do think that collaboration is the key to achieving some measure of "sustainable intensification" and the prospects for doing so in a meaningful way are much greater now than they have been for many years. Technology is available which facilitates much smarter approaches and the UK's Agri-Tech Strategy is doing its part in pulling technology from practitioners in every sector into the food production arena and it will be very interesting to see how all of this plays out over the next few years through the new Agri-Tech Centres. At Sainsbury's recent R&D conference at the Royal Institution, Ian Noble spent some time highlighting some of the tech transfer we might expect to see. He powerfully highlighted just how far behind the UK is in terms of agricultural productivity on a world stage, and although this wasn't news to me, his presentation has really got me thinking about where the quick wins might be found for "sustainable intensification". So here's to all you tinkerers in sheds. Get collaborative and get thinking. We have a job to do to feed the world.

# LOOK, NO HANDS!

## *Harper Adams team complete drilling phase*

The Hands Free Hectare team have successfully got over their first major hurdle of the project; drilling the hectare site at Harper Adams University with their self-driving tractor.

The project aims to be the first in the world to plant, tend and harvest a crop by only using autonomous vehicles.

The end of the six hour long drilling operation was marked by cheers of relief and delight from the team – their tractor, which they only received in December and then made autonomous, had successfully navigated the whole hectare site and sown the spring barley seeds.


The drilling came after the pre-seeding herbicide application which the tractor also completed successfully using a GPS controlled precision sprayer developed for the project.

Martin Abell, from Precision Decisions, the project's industry partner, said: "The tractor is able to navigate the hectare using an autopilot system for drones. This allows it to follow a pre-determined path in the field. It runs entirely on GPS and follows the requested route making its way between waypoints. The waypoints are digital GPS markers created using our software that we have positioned at the ends of the field for the tractor to navigate to; like a more advanced version of dot-to-dot. Our waypoints for the drilling also incorporated lifting and lowering signals that picked the drill up at one end and place it back down once it had turned around.

"The SimTech Aitchison drill that we used is normally for drilling in-between the vines of vineyards to plant cover crops used as green manures to help fertilise the vines naturally. It's suited us perfectly as it's a conventional agricultural system, just on a smaller scale; like our whole project."

Kit Franklin, agricultural engineering lecturer at Harper Adams University and project lead added: "Although the system sounds very technical at the moment, and a lot of work has gone into making it work, we do hope that in the future systems based on this concept will exist. They'll be easy enough for a farmer to use by simply inputting what they require in their computer and the robotic vehicles will go off and do it.

"I believe that farmers will be able to concentrate on agronomic and business decisions, whilst overseeing and managing a number of smaller automated machines; instead of sitting in a large tractor with 300 plus horsepower driving up and down the field.

"In order to achieve this, there'll be a vast opportunity for careers in the agricultural engineering sector which will be very rewarding and exciting. Those people will be changing agricultural machinery as we currently know it."

To get to where they are now, the three engineers have had support and assistance from a number of people in different areas in agriculture. The third member of the team, robotics researcher at Harper Adams University Jonathan Gill, said: "So far everything on the Hands Free Hectare project has been a real team effort. For the drilling we had Simon Clarke from SimTech come and calibrate our drill for us, also setting the seeding along with Kieran Walsh from Hutchinsons, who's the Hands Free Hectare agronomist. In addition, Precision Decisions' Harry Cadwallader set-up our spraying system for the liquid fertiliser that was placed whilst seeding.

"Now we have to start thinking towards the future. The seeds are in the ground and we've got to consider the agronomy; how're we actually going to do that? We have to start thinking about using our ground rover to produce visuals for Kieran. We also have to start using the drone to capture our multispectral imagery to see where the first emergences are going to be and how we're going to start treating our crop."

Updates on the project will be shared by the team via social media: Twitter @FreeHectare, You Tube and Facebook @HandsFreeHectare

# CEO *Reflections on a changing world*

# IT'S ALL IN THE NAME

**ARTISAN (ar : ti : san)**

*Noun* a person skilled in an applied art; a craftsperson.

***Alastair Taylor*** *IEng CEnv MIAgrE*

I was intrigued to hear a South African engineering colleague refer to the Artisan Engineer. This is not a term I had heard before but when defined, the concept of the Artisan Engineer or Artisan Technician made perfect sense. I am sure you can think of engineers and technicians who demonstrate those wonderful skills and attributes which makes them almost artistic in the engineering skills they display.

In some respects the term Artisan might best be associated with the construction industry. We will all have come across carpenters, plasterers, plumbers and bricklayers who produce such wonderful work and to watch them in operation is like watching an artist at work. In my view, the same goes for engineers and technicians. I can think of any number of people working as toolmakers, welders, fabricators, pipe fitters, mechatronics engineers, and agricultural engineers who are a joy to watch. Truly Artisan in the skills they demonstrate.

*The term "Fitter" has been driven from our vocabulary*

I was sharing this idea with an old friend who worked as a Power Station Charge Hand. In effect this meant that he was responsible for running the show – even a nuclear power station – yet the term "Charge Hand" somehow undervalued the importance of his role.

We talked about how some highly skilled engineers in power stations were called "Fitters". My friend talked about how these people could be sent anywhere in the plant to undertake a wide range of important tasks – replacing motors and pumps, servicing moving parts, testing for faults and diagnosis of problems. In agricultural engineering the term "Fitter" has been driven from our vocabulary, and rightly so as it conjures an image which is far away from the reality of our industry.

**SKILLS RECOGNITION**

In our world, the titles of Service Engineer and Service Engineering Technician have emerged. These are great titles and ones which our community should be rightly proud of. The word "Service" is an important element of these and for me, carries a dual meaning – service as in servicing equipment and service as in customer service and the correct attitudes and attributes for a highly customer driven world.

Another term which has disappeared from our vocabulary is the term "journeyman". I recall, about thirty years ago a dealership service manager, when referring to an apprentice that he would make a good journeyman. It is worth reminding ourselves of the meaning of the term:

*A "**journeyman**" is a skilled worker who has successfully completed an official apprenticeship qualification in a building trade or craft. They are considered competent and authorised to work in that field as a fully qualified employee. A journeyman earns their license through education, supervised experience, and examination. The term journeyman was originally used in the medieval trade guilds. Journeymen were paid each day, and this is where the word 'journey' derived from- journée meaning 'a day' in French. Each individual guild generally recognised three ranks of workers; apprentices, journeymen, and masters.*

*TIAgrE will mean something to those who choose to use them*

My point is that there is a community of engineers and technicians, working at a certain level who we need to recognise for the skills and expertise they bring to the table. We need to accept (perhaps reluctantly) that although there are a wide range of terms used to describe these people, there is an underlying principle and standard which bonds these people together.

At IAgrE we have identified this through our new Technician grade of membership. We hope the letters TIAgrE will mean something to those who choose to use them. I certainly believe that recognition at this level is vital for a broad range of people working across all aspects of Agricultural Engineering and related science subjects.

It is our ambition that all Technicians, their employers, and down the line, their customers, whether working in Service Engineering, Precision Farming or Soil Science, will recognise the value of being professionally recognised for their wider work. Do please help us to promote this new grade of membership.


# IAgrE joins Royal Academy of Engineering Mission to Ethiopia

***On 8 April 2017, IAgrE CEO Alastair Taylor joined a small group of UK professional engineering institutes, specially invited by the Royal Academy of Engineering, to attend a conference held in Addis Ababa, capital of Ethiopia which would consider the infra-structural, engineering and food producing challenges facing sub-Saharan countries. He reports for Landwards on the event and considers how IAgrE might offer future support.***

Think of Ethiopia and you may well be drawn back to the heart-breaking reports of famine and hunger captured in the now famous Michael Beurk BBC report back in 1984. The worldwide response which followed and the work of those many charities and celebrities who launched the live aid initiative was a ground-breaking move and now, this part of Africa is at the forefront of our minds.

When the Royal Academy of Engineering asked if I would like to attend the GCRF Africa Catalyst Conference 2017 in Addis Ababa in Ethiopia the week before Easter, it was with some trepidation that I answered "Yes" and even more anxiety that I set off on the overnight flight to Addis (on the night of my Birthday! Sadly, Ethiopian Airways forgot to offer me an upgrade as a Birthday gesture – oh well …)

The experience could not have been more different to what I had anticipated and I am so pleased that IAgrE was invited to get involved and that we were able to contribute. As I reflect, there may well be further opportunities as the project develops. So what's it all about?

## GCRF Africa Catalyst

Under its remit as a delivery partner for the Global Challenges Research Fund (GCRF), the Royal Academy of Engineering launched this capacity building programme in September 2016 and at present is supporting a wide range of short pilot projects with the intention to evaluate the result of different interventions. Lessons learnt and successful models will help shape the future of the programme.

The overarching aim is to ensure there is sufficient, and appropriately skilled, local engineering capacity to participate in and drive national and regional development in sub-Saharan Africa. GCRF Africa Catalyst helps achieve this by focusing on better connecting Professional Engineering Institutes (PEIs), Engineering Councils/ Associations and other organisations working to strengthen engineering capacity, to the engineering research, policy and business communities. These organisations are supported to take a leadership role by working to ensure appropriate accreditation, professionalism and opportunities for engineers nationally and regionally. The objectives are to:

- Build engineering capacity by improving engineering education at all levels to meet recognised international standards.
- Support the development of professional engineering institutions/councils/associations that can effectively support the profession and promote professionalism.
- Support the Federation of African Engineering Organisations (FAEO) in its leadership role across the continent.
- Strengthen the evidence base for the role robust engineering institutions play in driving development, such as mapping engineering capacity in sub-Saharan Africa.

## The Africa Challenge

Look at a satellite image of Africa at night and you will realise why this is called the "Dark Continent". Other than the well-known cities there is very little sign of light. If you overlay a map showing those continents where


the engineering profession is mapped against recognised international standards and the picture shows a similar lack of activity in Africa.

Whilst our universities forge strong links with institutions in China and India which success is promoting professional registration in those countries, there has been little successful intervention across Africa. That said, some of the larger UK PEI, and IAgrE, have had some success in registering engineers in Africa but overall, the proportion remains low.

The impact of unregulated engineers in Africa is starting to show. A wrongly designed bridge might be swept away by a flood. A poorly constructed dam or irrigation system may lead to higher levels of soil erosion and flooding. The view from my hotel room of the new hotel being constructed next door (mainly from poured concrete) illustrates this well.

## F2 Room with a view

Apart from the lack of attention to health and safety and fascinating use of timber props to hold up the next layer you are left wondering if there is a qualified design engineer or civil engineer who has given any thought to the quality of the concrete mix, the design of the reinforced steel mesh, whether the vibrating poker has been effective in removing air pockets, the thickness of the floor, the depth of the foundations, and so on. Workers were active on this site from 0500 to 2230 with all concrete mixed and carried by hand.

## The Conference

Forty-one delegates from across Africa and Europe were in attendance. The goodwill, excitement and enthusiasm for the project gave a great "can-do" feeling to the whole event although the challenges of progressing this agenda became more apparent as things progressed. For starters, the network of PEI and similar organisations across sub-Sahara Africa is very mixed. Some, such as in South Africa, are relatively well established whilst in other places one key champion (with no office or financial resources) is starting to draw together those with an interest in marking their professionalism in some way. The challenges are huge so the need for capacity building and general support is much needed. Where do you start? It certainly brings home the long history of our UK Learned Societies and Institutions.

There was much enthusiasm for use of the Washington Accord across Africa. This is an international accreditation agreement for professional engineering academic degrees, between the bodies responsible for accreditation in its signatory countries. This is well established throughout the world but not yet in Africa. It seems that with so much work already in place, its adoption might be a "quick win". However, the challenge will be in engaging universities in adopting these standards. Having universities on board will be an essential element if international standards are to be set and maintained. This is before you even start thinking about the process of assessing universities through accreditation visits and similar.

On the subject of universities, it was interesting to learn about some exciting projects designed to support post graduate internships. Its seems that universities across Africa are good when it comes to promoting careers in Engineering (with an oversupply of engineers) but often these have very little practical experience and too often their degree programme includes very little business and entrepreneurial skills development. Like Europe, employers have little interest in graduates who can pass the exams but can't demonstrate "how" and "why". There was much enthusiasm for a talk on the higher-level thinking skills associated with the upper echelons of the "Blooms Taxonomy". Clearly, there is work to do to develop the practical element of degrees and post graduate internships as well as an understanding of educational philosophy and practice. Again, university engagement will be key.

Another element of the conference, and one which was discussed with much enthusiasm, even feistiness, was the work being done to bring more women into engineering and how these can be better supported. UK has much to learn in this respect (Currently we are 29/29 when compared to other European countries – hardly a good place!). Many African countries are much better than UK when it comes to recruiting women to join engineering degrees but when it comes to employment the same prejudices and challenges need to be overcome. It was great to see the enthusiastic efforts a small number of countries truly making a difference with oversubscribed lists of women wanting to get involved and traditional employers rethinking their past prejudices about women in engineering. It was truly inspirational work.

Another presentation talked about the importance of Vocational Education and Training (TVET), an educational tier which is not well represented across Africa. It was interesting to learn that in some countries the engineering technician or craftsman is often called an "artisan engineer" which feels a great title and as I reflect, describes well some of the amazing skills which these engineers demonstrate. IAgrE Fellow, Mark Moore often refers to this group of engineers suggesting that for machinery exporters, there is

a strong need vertical integration of systems so that alongside the tractors and machinery is the training of support technicians and engineers.

In another discussion, the idea that a country might analyse training needs for the nation (in a similar way to the Local Enterprise Partnership here in UK) was a new idea although as one delegate put it. " we are moving from a commodity based to innovation based economy so science, technology and innovation will need to be the driver – we need to plan for that"

## Way Forward

It would be so very easy for us to take a paternal attitude in our offer of help in developing the objectives of the GCRF but given Agenda 2063 this would be inappropriate. In effect, Agenda 2063 is saying that Africa should be developed by its own people "By Africa, For Africa". This is an interesting vision and who wouldn't disagree?

## OUR ASPIRATIONS FOR THE AFRICA WE WANT

- A prosperous Africa based on inclusive growth and sustainable development
- An integrated continent, politically united and based on the ideals of Pan-Africanism and the vision of Africa's Renaissance
- An Africa of good governance, democracy, respect for human rights, justice and the rule of law
- A peaceful and secure Africa
- An Africa with a strong cultural identity, common heritage, shared values and ethics
- An Africa whose development is people-driven, relying on the potential of African people, especially its women and youth, and caring for children
- Africa as a strong, united and influential global player and partner

Against this background, we, the IAgrE might usefully ask what we can do as the GCRF progresses. This a project which runs through to 2021, so I suspect there may be plenty of opportunities. Clearly, we need to think about all of this given our limited resources but it would be sensible that we offer our African friends the opportunity for secondments, to see what we do, how we engage our members, how we regulate the profession and how we work with universities and vocational training organisations.

But there is more we can do and I call out to IAgrE members to think about this. If you work in a university, perhaps you might want to think about how you can link up with an African equivalent to help them support accredited degree courses and the development of good quality educational practice.

If you work for a global machinery manufacturer, you might want to think about your work in Africa and whether there is some way you can link up with engineering institutions across Africa to help them deliver their aims. A little to help oil the wheels will help immensely.

It was interesting that those PEI's attending the GCRF Africa Catalyst Conference were very specialist by nature and all relevant to some of the wider challenges facing the continent. The Chartered Institution of Water and Environmental Management, the Institute of Water, and the Institution of Agricultural Engineers, together with their members and wider partners all have a role to play if Africa is to feed its people. There is a real place for specialist institutions.

Although there was some discussion about Agricultural Engineering provision in some African countries, I am left wondering the scale and range of training across the continent. Perhaps we need to work with our new friends to build up a picture. There is a job to be done to help these produce more agricultural engineers in order that the people across Africa can harness new technologies to feed their population. After all, we do not want to return to the famine of 1984 any time soon!

I would like to thank The Royal Academy of Engineering for inviting IAgrE to get involved with the GCRF Africa Catalyst Conference and Louise Olaffson for her excellent co-ordination and guidance before and during the event.

## Systems not silos

*Royal Academy of Engineering calls for new Government strategy*

IAgrE was amongst 38 professional engineering organisations affiliated to the Royal Academy of Engineering who collaborated in producing a report, ***Engineering an economy that works for all*** which calls on government to ensure that its proposals for industrial strategy will rewrite the rules of previous strategies and avoid short-term policy. It says "UK industry, academia, government and investors must break out of their silos and work together. This approach is critical if the UK is to maximize the opportunities and mitigate the risks presented by the UK's departure from the EU".

The report calls for the strategy to embody an ambitious and bold long-term vision that harnesses the UK's international reputation for engineering excellence and forges a new global identity for Britain as a top destination for inward investment and global talent.

Key recommendations include:

- Government should set a target of 3% of GDP for combined public and private research and development investment, creating a roadmap to achieving that goal.
- Continue the drive for world-class, secure and resilient digital connectivity and act urgently to promote digital skills.
- Demonstrate a greater willingness to accept the risk of failure, or perceptions of it, and explain how risks for innovative technologies are being managed.
- A UK-wide register of 'national innovation assets', which can serve as test-beds, demonstrators and focal points for skills development.
- Sensible and proportionate arrangements should be in place to retain and attract non-UK nationals who are essential to the UK's success in engineering, research and innovation.
- Extend the measures proposed in the industrial strategy to primary and secondary schools, taking decisive action on teacher shortages in STEM subjects.

## 2017 **IAgrE** LANDWARDS CONFERENCE

# CARLO LAMBRO, PRESIDENT NEW HOLLAND AGRICULTURE TO SPEAK ON ENERGY INDEPENDENT FARMS

***Conference to address the control of agriculture's carbon footprint***

Across industry and society there has been much progress in introducing innovative solutions to reduce the carbon footprint, but where next? That is the subject of the **2017 IAgrE Landwards Conference** to be staged at Rothamsted Research on 11 October.

The carbon footprint of agriculture is complex. At one end, tractors and mechanisation systems are big energy users whilst natural resources such as forests and the soil can be managed to capture carbon. Decarbonising UK Agriculture is about finding the symbiosis needed to make this successful.

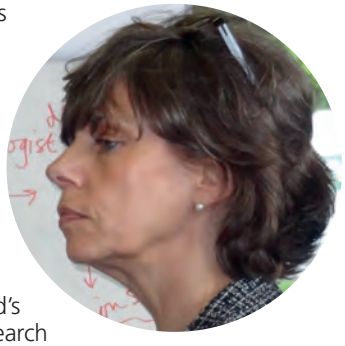
A line-up of influential speakers will explore a broad range of perspectives with a view to helping those responsible for policy and practice choose the right approaches and develop the technologies and practices required if reliance on carbon is to be reduced.

Following the conference opening, when IAgrE President, **Dr Robert Merrall** will establish the facts and current carbon balance, **Dr Jonathan Scurlock,** Chief Adviser, Renewable Energy and Climate Change, National Farmers Union will review the future for managing agricultural emissions, including the latest developments in battery energy storage and possible vehicle-to-grid applications for farmers.

President of New Holland Agriculture, **Carlo Lambro**, will then consider the Energy Independent Farm whereby farmers would generate their own energy to run their farm and agricultural equipment. By using wind systems, solar panels or biomass and biogas processes located right on the farm, the farmer can independently obtain electricity and use it to generate hydrogen to power farm machinery and also to supply electricity.

New innovative solutions will be explored by **Jonathan Lodge** of City Farm Systems who will outline different ways of producing food closer to its market. Up on the roof, down underground – and what about harvesting crops just before the point of sale with no transport? Are we on the verge of a new way of farming and what would be the impact of all of this in reducing the carbon footprint? **Professor Jane Rickson** of Cranfield University will promote the importance of soil, recognised for its vital role as a carbon sink. Showing that good management will assist in maintaining the soils ability to continue to act as a carbon sink.

Finally, **Dr Ian Shield** and **Dr Chris Watts** from Rothamsted Research will discuss the latest research and how that fits with the BBSRC Strategic Programme on "Cropping Carbon" and provide an opportunity to look at Rothamsted's current research and development programmes.



An enthralling agenda from leading specialists in the field, this conference is ideal for engineers, scientists and technologists, farmers, growers, producers, and movers and shakers working in policy and sustainable development.

## WHEN, WHERE, COST AND BOOKING

**When:** Wednesday 11th October 2017
**Where:** Rothamsted Centre for Research & Enterprise, Harpenden, Herts AL5 2JQ
**Cost:** Early Bird £100, Delegate £120, Retired £75 Student £40 (all plus VAT)
**Booking:** www.iagre.org/conference-2017


*Tralee Winning team (l to r) Tim Corridon, Mark Duffy, Gareth Durkin, Simon Griffin (Rexroth Bosch) and Richard Robinson (IAgrE)*

# IT TRALEE WIN 2017 YOUNG ENGINEERS COMPETITION

## *Triumph after all-night road journey from Co Kerry to Oxfordshire*

The 2017 IAgrE Young Engineers Competition was staged at the impressive Training School of Kubota UK at Thame, Oxfordshire on 4 April.

This year 8 teams entered including an enthusiastic contingent from Institute of Technology, Tralee who were originally booked to travel by air, but because the connections did not work out travelled overnight by mini-bus driven by lecturer Chris O'Donoghue from Co Kerry in the south-west of Ireland to Oxfordshire, returning overnight after the competition ended.

Their effort was well-rewarded with the IT Tralee Team 2 of Tim Corridon, Gareth Durkin and Mark Duffy emerging as overall winners, beating the Notorious ENG team of Scott Parodi and Daniel Sheppard from Easton & Otley College who were second, and the Norfolk Ford team of Lewis Eves and Ryan Doggett, also from Easton & Otley in third place.

Other competitors were from John Deere/ProvQ, the JCB Academy, Scottish Rural University College (SRUC) and Plumpton College

The competition is open to all UK training and education providers and involves creating a remote or radio controlled vehicle. Teams are given a set of standard wheels, a battery and maximum dimensions and the challenge is to produce the top performance vehicle of the competition.

The vehicle that powers its way to the highest point up a curved ramp is the winner.

Peter Leech an IAgrE past President and member of the judging panel said, "We had a brilliant day. Kubota were fantastic hosts

*Easton & Otley third spot: Lewis Eves and Ryan Doggett*

The event is sponsored by Autoguide Equipment and Bosch Rexroth. Cash prizes were awarded to the winning teams by IAgrE plus power tools by Simon Griffin from sponsors Rexroth Bosch Group.


*Easton & Otley runners up: Scott Parodi and Daniel Sheppard*

*Richard Trevarthen, Peter Leech and Richard Robinson*

*Elliot Pye and Edward Taylor of JD team set up*

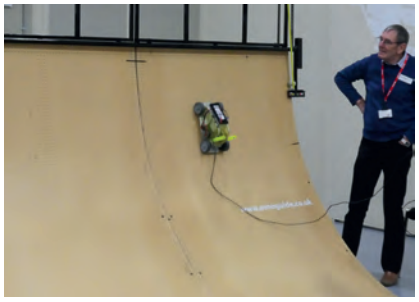
*Richard Robinson presents plaque to Keith Miller of Kubota UK*

*Easton and Otley team talk*

*Tralee team start their winning run*

*Scores on the board*

*The Tralee team 1 and 2 with lecturer Chris O'Donoghue*



*Reaching the summit*

*Keen attention from the competitors*

# Kubota's investment in training for staff, dealers and customers


***(ABOVE: Dave Roberts launches Skills Competition)***

This year's Young Engineers Competition was staged at Kubota UK's impressive, newly upgraded on-site training school at Thame.

The new facility opened in March 2015. Dave Roberts, Kubota UK managing director said "Kubota UK as a company has expanded considerably in recent years and investment in training resources is at the heart of this. We've doubled the size of our training school to allow concurrent training courses to be held and the expansion has also allowed us to double the number of training days we can deliver to match the continued increase in the size and complexity of our product range."

Kubota stages an annual skills competition a two-day event that seeks to put the technical competence of its staff and technicians working at dealerships across the manufacturers extensive network to the test.

Each contestant undertakes a 100 question written assessment followed by an intense 90-minute practical challenge, with competitors tasked with diagnosing and fixing five faults on a Kubota tractor.

***(ABOVE: Kubota skills competiton)***


***(ABOVE: Identifying faults)***

In addition to the traditional product training, Kubota UK also invested in interactive AV equipment to make the training more engaging and interactive for the students.

Japan-based Kubota Corporation committed to a multi-million-pound investment in its European infrastructure at the end of 2014, which included the official opening of Kubota's second European manufacturing base in Bierne in northern France in 2015.

# IAgrE 2017 AWARDS


**The 2017 IAgrE Awards were presented in front of a large gathering of members and guests at the UK headquarters of John Deere at Langar, Nottinghamshire on Thursday 27 April. The Awards were 'topped and tailed' by the 2017 IAgrE Annual General Meeting and an update on current technological developments within John Deere Worldwide by Training Centre Manager, Richard Halsall.**

***TOP: Rob Merrall and Alastair Taylor, Ruth Bailey (AEA), Andy Newbold and Elizabeth Stephens, Richard Halsall (John Deere)***

## AWARD FOR CONTRIBUTION TO LANDBASED SECTOR (Joint winners)

### DAVID R WHITE C Eng CEnv FIAgrE
Harper Adams University


A farmer's son, David completed a degree in Mechanical Engineering at Staffordshire Polytechnic (now Stafford University) in 1981 and an MSc in Agricultural Machinery Design at the National College of Agricultural Engineering, Silsoe in 1982. From there he went to work at the Scottish Institute of Agricultural Engineering as a Scientific Officer; only to move back to NCAE in 1983 as a Research Officer working on tractor-implement dynamics and major design and construction projects.
He was appointed as a Lecturer at Harper Adams in 1989 where he has focused on teaching engineering mechanics, soil dynamics and mathematics in the undergraduate programmes. Since 2011 he has been heavily involved with the design and execution of the major long term Tillage and Traffic project at Harper Adams and it's sister programme at the University of Illinois.
David is a Trustee of the Douglas Bomford Trust, whose aim is to assist in the education and development of agricultural engineering. He has devoted his life to agricultural engineering education, training and research for a total of 35 years and consequently has made a very significant contribution to the landbased sector and influenced many 'young' agricultural engineers who are currently operating in design and management positions throughout the industry worldwide.

### CAROLINE DRUMMOND MBE
Chief Executive LEAF (Linking Environment and Farming)


Caroline Drummond is the Chief Executive of LEAF (Linking Environment and Farming). She has been running the farming and environmental charity since it started in 1991. Caroline graduated in Agriculture and has broad practical agricultural experience gained from both the UK and overseas. Her work at LEAF focuses on encouraging more sustainable farming practices and building a better public trust and understanding of farming, food and the environment – values that she is personally extremely passionate about. In the 2009 Queen's Birthday Honours Caroline was awarded the MBE for services to the agricultural industry and has an Honorary Doctor of Science from Harper Adams University, a Nuffield Scholarship on 'Health by Stealth - *What can farmers learn from science to improve the nutrition of our food'*, and was awarded Honorary Fellowship for the Society of the Environment. She has been a director for the Rothamsted Research Institute, a governor for the Royal Agricultural University, a trustee for CPRE (Council for the Protection for Rural England), and a director for IGER (the Institute of Grassland and Environment Research) and the Oxford Farming Conference.
She is a Fellow of the Royal Agricultural Societies (FRAgS), a Fellow of the Institute of Agricultural Management, a Fellow of the Royal Society of Arts, a Fellow of the Society of Biologists and Chartered Environmentalist and a director for LEAF Marque.

## IAgrE AWARD OF MERIT

### DUNCAN RUSSELL MIAgrE

Duncan was with the AEA for over 17 years, his name is particularly synonymous with the National Sprayer Testing Scheme (NSTS). He has exponentially developed the Sprayer Testing scheme, taking sprayer testing under his stewardship from some 150 machines per year to now testing approximately 16,500.
NSTS has now become an integral part of UK agriculture. As a requirement of the Sustainable Use Directive (SUD) and of Crop Assurance (who demand an annual test), the NSTS stands as the independent and impartial body with the authority to assess and accredit national test centres and issue valid test certificates to machines.
In 2015 Duncan was instrumental in launching the National Spreader Testing Scheme. Based on the realms of good practice and efficient resource management, it is expected that fertiliser spreading and the testing of spreader equipment will grow to become a fundamental part of farm management.
2016 year saw the 50th Tillage-Live event and Duncan's 27th event. Duncan's responsibility within the AEA has been for Tillage-Live and Scotgrass. Duncan has also been secretary to the Chemical Application Group, Education & Training Committee and also the Landbased Engineering Training & Education Committee (LE-TEC). After leaving AEA last December, Duncan was appointed Chief Executive of the National Association of Agricultural Contractors (NAAC).

## MICHAEL DWYER MEMORIAL PRIZE (Joint Winners)

### ROBIN CARTER
JCB Ltd

Robin gained a 1st Class MEng honours degree in Off Road Vehicle Design from Harper Adams University College in 2007, having been a JCB sponsored student from the start of his second year of studies and also worked for JCB during his placement year. Being involved with JCB right from the start, it was not surprising that he was recruited into the company as soon as he graduated.
Robin started in JCB as Systems Engineer working on the Fastrac Electronics and then moved up to be a Design Engineer and by April 2011 was the Lead Engineer working on the Fastrac and subsequently was the Engineering Lead / Project Manager on developing the Fastrac 4000 Series. Robin is currently Head of the Engineering Department for JCB Fastrac tractors, where he leads a 45 person strong, multi-disciplinary, engineering team to deliver ongoing development of the Fastrac and product support.
Robin is a Chartered Engineer with a practical perspective and in-depth technical knowledge of driveline, structures, suspension, hydraulic and electrical / electronic systems.
He has an interest in all manner of engineering products and considers himself expert in the field of agricultural products / business.
Robin is an active committee member of the Wrekin Branch of IAgrE and in addition to the above, still finds time to participate as a partner / joint owner of his family farming business.


### JONATHAN HENRY
John Deere UK

Jonathan spent his early career in Ayrshire working as a technician for a John Deere dealer, Grangestone Farm Equipment. He represented Scotland in the John Deere Technician of the Year Award competition and then went on to study at the Scottish Agricultural College (SAC).
After graduating from SAC in 1993 with a HND in Mechanisation, Planning and Business Management, Jonathan joined John Deere. He started as area manager product support (AMPS) in south-west England, and from 1997 to 2001 as a territory manager in the north of England and borders of Scotland.
Subsequent appointments included product manager of the agricultural management solutions (AMS) precision farming technology range, key accounts manager, combines product manager and division sales manager from January 2006.
Since February 2009, Jonathan has distinguished himself in various Product Marketing assignments with platform operations, including Mannheim Germany, Waterloo Iowa, and East Moline Illinois and has been planning director for Deere's global crop harvesting business, where he successfully led product planning, partnering functions, and in-organic growth strategies for their Global Crop Harvesting Business.
In July 2016 Jonathan was appointed Sales Branch Manager, United Kingdom and Ireland, reporting directly to John Deere's Vice President, Sales for Europe, North Africa, Near and Middle East.


*Chris Whetnall*


*Jonathan Henry (centre) presented with Award by Peter Leech (left) and Alastair Taylor (right)*

## STUDENT AWARDS WINNERS


**JOHNSON NEW HOLLAND AWARD**: **Daniel Robertson**, Harper Adams University for **Experimental Studies in the benefits and drawbacks of vibrating a conventional winged subsoiler tine.**

**STUDENT PROJECT AWARD**: **Phillip Mattey**, Coleg Sirgar for his **Roto-8 project.**

**STUDENT SAFETY AWARD:** **Michael Matthias**, Coleg Sirgar for his **Trailer Brake adjustment alarm.**


## DOUGLAS BOMFORD PAPER AWARDS

### BIOSYSTEMS ENGINEERING

"Estimation of the density of pomegranate fruit and their fractions using X-ray computed tomography calibrated with polymeric materials" **by Ebrahiema Arendse, Olaniyi Amos Fawole, Lembe Samukelo Magwaza** and **Umezuruike Linus Opara,** Biosystems Engineering, Volume 148, August 2016, Pages 148-156, ISSN 1537-5110

### LANDWARDS

Malcolm Carr-West for his excellent article on Ethical Engineering in the Spring 2016 issue of LANDWARDS


## 2017 IVEL AWARD FOR ENVIRONMENTAL INNOVATION

The Witham Group won the Ivel Award for best new product or environmental innovation for a product called Prolan,, an environmentally friendly, protective lubricant that provides incredibly long lasting protection from rust and corrosion.
Prolan is unique as it's made from lanolin derived from sheep's wool and a blend of natural oils. It is a powerful natural moisturiser and protector which has proven to be extremely effective for preventing corrosion, even in the toughest environments.
Nigel Bottom managing director (pictured receiving his Award from Dr Robert Merrall) said, "Prolan is completely natural, non-toxic and non-carcinogenic and so surpasses other petrochemical products as a safer, environmentally sustainable alternative". The Ivel Award was originally announced at LAMMA in January.


### NOTE

A report on the 2017 IAgrE Annual General Meeting and the Branch Meritorious Awards are in the Membership Matters and Branch Reports starting on page 26 of this issue.

# THE AG-TECHNICIAN OF THE FUTURE

YOU cannot assess the role of the ag-technician of the future – without considering the ag dealership of the future.

It is 100 years since Harry Ferguson's 'eureka' moment when he spotted the weakness in a tractor and plough as separate units. No matter that his original prototype three-point linkage hitched a plough to a Ford T car, the seed was sown. Early versions in 1921 were mechanically operated, but Ferguson was soon to develop a hydraulic system which was to revolutionise the farm tractor. After flirting with Ford and incorporating the system into a Ford-Ferguson tractor in 1939, Ferguson struck out on his own when the joint relationship broke down. The former Standard Motor Company factory at Banner Lane, used as an armaments factory was refitted and production of the iconic Ferguson TE20 'Grey Fergie' commenced in 1946.

So why the history lesson?

It is arguable that despite the addition of many 'bells and whistles', and of course the ever increasing size of tractors, that today's farm work-horse is essentially a scaled-up version of Harry Ferguson's creation.

So whilst the challenge of growing more food from finite resources has exercised the minds and skills of plant breeders, biotechnology and chemical 'boffins' – mechanical solutions and systems to meet the demands of food production in the future just haven't kept pace.

Certainly that is the view of Professor Simon Blackmore who heads the robotic farming unit at Harper Adams University.

***The dealership of the future will be a different model, employing specialist skills and selling services rather than products says CHRIS BIDDLE. Our industry evolves, but the revolution in new agri-technology has only just begun.***

"We know that the public at large doesn't like chemicals being used on our crops. There is an increasing drive by environmental lobbies to reduce or ban active chemicals. But it often it is not the chemical itself, but the machines used to apply them. When farmers are spraying a whole field, and only 10% goes on the crop, there is huge wastage and potential damage caused by the chemical going into the ground water. So the issue is with the machine not with the chemical"

Higher and higher yields are being squeezed from cropping fields but bigger, better and faster machinery is no longer enough. Smart farming is the watchword, and that is changing the portfolio of machinery and equipment appearing on farms today – and will shape the future direction of suppliers and dealers in the years ahead.

## DEALER DEVELOPMENT

If we trace the development of farm machinery dealers post-war, they have been a recognisable stereo-type. Tractor manufacturers urging dealers to increase 'the park' of their product in their area. Market share the key indicator of success. All the discount allowed on a new tractor was invariably given away to a farmer because the profitability, in theory, was gained from parts and service. Salesmen toured their patch in Cortinas or Mondeos, drumming up business from farmers, often developing personal relationships to gain business. A constant battle raged between the sales department and the service department on the cost of PDI's, or who paid for what in the grey area between genuine warranty and policy repairs. On the fringes, the parts department – the 'piggy-in-the-middle' –the poor relation rarely unable to please everyone.

But we have moved on. Market

***ABOVE: Professor Simon Blackmore***


***ABOVE: Left David Sturges and right Luke Alexander of Burden Bros Agri***

share is no longer the holy-grail. Warranty is slicker, faster and more realistically operated – and even the beleaguered parts department are now following their counterparts in in the automotive trade and using sophisticated methods to reduce the huge stockholding of parts they used to stock – just in case. Slick logistics and computer modelling have made the parts operation into a significant contributor to dealership profits.

Recent years have seen enormous technological advances in tractors and machinery in order to improve operating efficiencies through the rise and rise of connected equipment. Precision agriculture enabling the application of precise and correct amount of inputs like water, fertiliser, and pesticides, increasing productivity and maximizing its yields.

All the major manufacturers are developing systems to meet advancements in precision farming which really only emerged in the latter part of the 1980's.

The introduction of 'intelligent' tractors and machinery only marked the start of a technological revolution that is already shaping the dealer of the future – and by definition the quality of staff required to act as the efficient support between the manufacturer and the farmer.

To see the changing impact on a dealers' 'modus-operandi', I recently visited Burden Bros, a John Deere dealership in the south-east of England (*not to be confused with Burden Group, the Lincolnshire-based ag dealership)*

What a fascinating set up and a pointer perhaps to future farmer, dealer, manufacturer relationships.

The Burden family are farmers based on the Isle of Sheppey. Starting in 1968 with 540 acres of arable land the operation has grown to farming in excess of 4,000 acres of arable and 5,000 acres of grazing and large dairy unit.

Burden also operate a large machinery division, buying, selling, and exporting second hand machines and spares, and a contracting division employing more than 25 people offering specialised services to farmers across the south-east.

In 2007, Burden Bros added the John Deere dealership which currently operates from three branches, Stockbury near Sittingbourne, Framfield in East Sussex and Ashford in Kent.

*Deere are in the software business rather than in the machinery business*

Finally, the Burden Bros portfolio includes a pub! The Ferry House Inn on the Isle of Sheppey is a 16th century country public house with restaurant, accommodation and popular wedding venue.

Following the sudden death of Peter Burden whilst out shooting in Devon in 2015, the divisions are run by his four sons, John (Farms and Contracting), Guy (Machinery), Dale (John Deere dealership) and Alex (Ferry House Inn).

The undoubted advantage of establishing a new 21st century dealership, such as Burden Bros, is that the support services required for the new age of tractors and machinery can be incorporated into the fabric of the business right from the start.


***ABOVE: A John Deere FarmSite department***

Luke Alexander, Group Operations Manager illustrates the huge sea-change that has taken place in recent years. "It is interesting that John Deere CEO, Samuel Allen now says that Deere are in the software business rather than in the machinery business" he says. "That is the way we are developing our business".

So the big question is "Are you selling machinery – or service today?

"Both, of course" says Luke "but our role is to work closely with the farmer to provide solutions that will increase his productivity whether it be GPS steered tractors (over 60% of tractors sold by Burden incorporate Deere's automatic steering system), intelligent controls or remote maintenance checks on combines or sprayers"

No longer does the farmer have to plough a lonely furrow, nor is the dealer pure salesman, nor order-taker. They are forming partnerships in which the dealer plays an absolutely critical role in advising the customer on bespoke solutions for his farming operation. The dealership acts as the technical nerve-centre, most remotely, to ensure that down-time is kept to an absolute minimum and has the tools to know when a machine will develop a fault.

All of which is shaping a new breed of dealer, where support staff are well trained and disciplined in IT systems, software analysis and advance communications. And that means a gradual breaking down of the traditional dealer structure – and creates the need to recruit high calibre staff.

Being a relatively new dealership, Burdens has been able to build a highly qualified team. A few months ago, David Sturges, joined as Head of Strategy and Business Development. The move has been a return to his roots, and although his high-profile career had included spells as sales

***LEFT: John Deere concept SESAM electronic tractor***

and marketing director of Hayter, managing director of Countax and more recently CEO of John Deere turf dealer Godfreys, David came from a farming background and gained a BSc in Agricultural Technology at Silsoe and an MBA from Cranfield University.

"I cannot think of a more exciting time for agriculture" says David "Just like the development of mobile phones, a new piece of technology or upgrade is being added almost daily and we have to ensure that we can embrace and react to constant change"

He joined a Burden team well-staffed with university graduates. Luke Alexander has a BA from Lancaster University, whilst the FarmSight precision farming division at Burdens is run by Kris Romney and Chris Cormac-Walshe, both from farming backgrounds and both have studied to degree level at University.

There are growing pains however, says Luke Alexander. "The traditional dealership – sales department, parts and service departments – still lie at the heart of the business, and there can be issues in integrating the FarmSight operation from time to time".

However, what is clear from the Burdens model is that the traditional role of the farm machinery salesman, and of dealer service teams is changing rapidly. No longer are there 'all-rounders'. They are being replaced by product specialists, highly versed in selling sprayers, or forage equipment or combines. The FarmSight team are Consultants, their role is to act as business advisors to farmers, helping them optimise the performance of expensive machinery and maximise the return on their investment.

No longer do dealers necessarily need to 'mug-up' on a tractor's technical specifications - horsepower, torque, turning circle, payloads, fuel capacity and the like. What counts are the 'embedded economics', according to Professor Blackmore.

*What counts are the 'embedded economics'.*

"A good example is Autosteer on tractors, which can cost around £15,000 - £20,000 but allows farmers a positioning accuracy of 2 cm, thus providing farmers with precise data on where their tractors have been and minimises the skip and overlap of applied treatments. Usual savings of employing this technology are between 10-15% on chemical expenditure, so many farmers can gain pay-back for it within just a few years and are quite happy to invest".

"However" says Blackmore "new technology needs to make the farmer's life simpler. Agricultural technology has to be developed like any other piece of high-tech equipment, like your smartphone. It has to be developed to a level of sophistication on the inside that makes it revolutionary but has to remain simplistic on the surface so people can just pick it up and use it without having to have a PhD and an engineering degree to be able to understand it"

*We are facing a cultural as well as technological change.*

"New technology has got to make the farmer's life simpler, and do what it says on the tin, and then they will start to invest in it"

At the World Agri-Tech Investment Summit in London last November, Joachim Stiegemann of Claas warned about the danger of a disconnect between the farmer and the over-production of data. "We are producing more and more data and reports, and I fear that more data in the end will result in us selling less machines. We are facing a cultural as well as technological change"

## ROBOTICS

On the horizon for dealers are many new technologies that they are sure to have to embrace in the coming years. Robotics in particular. We see robotic milking parlours increasingly used and a plethora of robotic equipment for harvesting crops, picking fruit, even shepherding sheep. Many are still in the embryonic stage, but leading farm machinery suppliers will wait until they see the economic case before buying the developer or commissioning the research.

Then there are drones. Who would have forecast their inclusion in the farming package even 10 years ago?

And what about the growing alternatives to the diesel powered tractor? What is the future for a Tesla-style tractor? In the US, the Autonomous Tractor Corporation has been one of the first to develop a robotic system for its Spirit tracked vehicle using a local guidance system based upon laser/radio naviagation.

At the SIMA Paris show this year, John Deere showed off a battery-

***ABOVE: Thorvald robotic field assistant***

electric tractor. However, battery capacity will limit it to around 4 hours work with a three-hour recharge leaving many unresolved issues. Kraig Schultz, CEO of the Autonomous Tractor Corporation said recently "Teslas today carry about 100 kilowatt hours of batteries, but even just a 200 horsepower electric tractor would need about 1,500 to work for a full day. Batteries alone would cost farmers about $350,000 (£275,000) for such an electric tractor and would weigh more than the tractor!"

Biofuel and part-biogas powered tractors are also on the horizon. Valtra's range includes dual-fuel options, running on diesel alone or a mix of diesel and 90% biogas, whilst New Holland have adapted a T6 prototype which runs on 100% biomethane, a technology already used by commercial road vehicles – and have also produced an experimental renewable hydrogen-powered concept tractor working out of a futuristic energy-independent farm.

In a recent report, the National Farmers Union anticipates that both diesel-electric hybrid and battery electric tractors will be widely available from 2020 onwards.

## MILLENIALS

However, technological advances alone may not be enough: there will also be a need for agronomists, farmers and dealers to understand how to use data and advanced control systems to enable improved agricultural production. Dealers themselves will probably be recruiting agronomists, crop specialists and others to work as part of their team.

So dealers, such as Burdens, have a vital role to play in the future as an important cog in enabling efficient, timely and profitable food production.

Innovative machinery solutions need to be coupled with hard-headed business advice to ensure a return on investment for farmers. The machine itself is no longer the key driver – it's what it will achieve in terms of quantifiable benefits for the farmer, particularly at a time when farm incomes and labour availability are under pressure.

*The National Farmers Union anticipates that battery electric tractors will be widely available from 2020 onwards.*

There already problems emerging with the compatibility of software systems, particularly between machines of different origins. Issues which dealers regularly have to resolve.

Hence the need for highly-qualified staff. It could be said, that if the industry managed to get its recruiting act together, then those often referred to as 'millenials' or Generation Y, already have the IT skills to make a success of a career in agricultural machinery. The word 'fitter' has thankfully been consigned to the bin, 'mechanic' is even old-hat, 'technician' the current preferred nomenclature.

But visualise a future where farming is conducted via an Uber-style system, where machines are hired via an app for a specific time-scale or task. We will certainly see the rise of specialist precision farming companies, such as Precision Decisions, where farmers can just buy a farming solution off-the-shelf via a service company rather than buying a tractor and having to develop the expertise needed to run that tractor.

In the meanwhile, dealers must ensure that they have the expertise in-house to react to change. As Luke Alexander says "Technology doesn't stay still, but wherever it goes, we will be ready"

The skill sets of dealer staff will evolve, electronics will come into greater play – but repairing a robot is likely to involve the replacement of a CPU and reprogramming via a laptop, much the same as with today's machinery.

The Burden Bros model is fascinating.

Here you have a farming company, linked to a contracting business, linked to a sales route for used equipment – with a John Deere dealership tacked on to supply new machinery along with ongoing upgrades and improvements.

One thing is for sure. Looking twenty years ahead might seem a stretch. And yet, it is only 25 years since the internet came into full use. Young recruits joining now will only be in their late 30s in 2037, with a long career ahead of them.

Ours is an industry based on evolution, yet from where we stand today, the revolution has only just started.

# Feedback

## R&D RESOURCES

As evidenced from the Spring issue of *Landwards*, robots are in the news as the answer to labour shortages on British farms. My company has been innovating since I formed it with a colleague in 1981. Virtually all the products we now sell have been designed and developed by ourselves in- house. As a result I believe we are in a perfect position to take on even more challenging developments - but the odds are stacked against us. The problem is resources. Within the EU we are supposed to operate in a level playing field but we know of overseas competitors who receive substantial support towards the cost of R&D as well as the costs of the main exhibitions in Europe from their Governments. We have now apparently successfully struggled through the last 18 months or so of very low milk prices, even maintaining a salesman in southern Europe, in the hope of better times, and without any of this kind of support, (hence my support for Brexit)

Only recently I tried to seek some grant aid for a significant project only to be referred to Innovate UK. A colleague in the industry, who regularly seeks this type of support for research, tells us that only about 1 in 10 applications are successful. This is not a satisfactory method of supporting successful companies. If we decide to develop an idea we generally have to get on with it, competition being the driving force. This means that the scope for R&D is limited to what we can afford from our earnings.

In spite of this I believe there is an untapped wealth of innovative ability existing in companies such as mine.

I believe that many Engineers tend to keep a low profile. We do not blow our own trumpets enough. It is partly our own fault if we are held in low esteem by those who hold the purse strings.

We are the only truly British manufacturer of milking parlours. Fortunately we are now seeing some indications of an improvement in the market with some farmers now looking to invest in new parlours. But competition is fierce and as yet farmers have not yet decided to look at a British product before choosing a foreign supplier. Our system collects data, ID and milk yields, and calculates feed rations for both in and out of parlour feeding with our own management software. The system includes a unique sort gate and portal antenna system, using an antenna technology which won two prestigious awards over 16 years ago. Innovation is obviously the key. We have an abundance of ideas but our resources are limited to what we can support from our profits. In a similar vein we have also noted criticism by the government on the lack of expansion by many smaller British companies. Is it really beyond their ken to understand the reasons why we are in such a difficult position?

Now some questions:

Has the Institution ever considered that the resources are already in place for a considerable expansion of technology but are not being exploited because of government policies?

Further to that, have IAgrE considered trying to encourage a change in policy which would enable innovative companies to have a direct rebate on their normal tax payments?

During the year before the plunge in milk price we paid over £500k to the government. I don't know the statistics but the number of real innovative manufacturing companies must be small in comparison the total number of companies in the UK. The cost to the exchequer of such a tax rebate should be manageable and the rewards for the country as a whole substantial.

**Robin Sadler, CEng, FIAgrE**
**ATL Agricultural Technology Ltd**
(Edited version of Mr Sadler's original letter)


## AWARDS THANKS

I would like to thank the Institution of Agricultural Engineers for the Award for Contribution to the Landbased Sector which I received last Thursday. It was an honour and a privilege to receive such an award. My mother was very proud of her son. The certificate has pride of place on my desk at home. Once again, the AGM and Awards ceremony ran like clockwork. Congratulations to all who were involved in running the event.

**David White CEng, CEnv, FIAgrE**
**Harper Adams University**

I'm absolutely delighted to have been presented this award, thanks to the Institution and Jim Loynes for nominating me and kind words.

Thank you Harper Adams - lecturers, friends and notably the late Geoff Wakeham who really persuaded me to sign up to my course at Harper. I especially remember my interview where he brought out his favourite Ransomes plough turnover pivot and explained fatigue.

I am enjoying a great career with JCB and work with a fantastic team. Our latest Fastrac 8000 Series has just won 'Tractor of the Year' so special thanks to my original boss and predecessor Ray Clay for taking me under his wing.

We must always understand our customer requirement and put them first - their businesses and expectations are constantly evolving so I really challenge my team and don't take no for an answer.

**Robin Carter MEng (Hons), CEng**
**JCB Ltd**

Responses to **Landwards** Feedback to the Editor chris.biddle@btinternet.com

# THE INNOVATORS

***Turning original ideas into practical use***

## LIGHTBULB MOMENT FROM LANOLIN

**NIGEL BOTTOM, Group Managing Director, the Witham Group Originator of Prolan, the natural lubricant that won the IVEL Award for best environmental innovation and the overall Innovation Award at LAMMA 2017**

Many innovators will talk about their 'light-bulb moment'. Those occasions where everyday products or techniques provide the spark for an opportunity that others may have missed.

Think Edison and his original 'light-bulb' moment, Hans Willem Geiger and his radioactive detector and Edwin Budding who designed a cylindrical cutter for removing the rough knap from the cloth used for guardsman's uniform - but his eureka moment was in adapting that technology to come up with the world's first lawnmower.

Nigel Bottom, MD of Lincoln based lubricant paint and oil specialist, Witham Oil and Paint, probably wouldn't pretend to be in such exulted company, but his 'light-bulb' moment came during a conversation with a trade contact in New Zealand. The privately owned company, founded in 1921 had a proud history of innovation and had held the Royal Warrant as a supplier to HM The Queen for over 25 years.

The talk turned to lanolin, sometimes called wool grease, which is a wax secreted by the sebaceous glands of sheep. Raw lanolin provides a protective coating on the sheeps fleece for protection in harsh conditions. Crude lanolin constitutes about 5–25%of the weight of freshly shorn wool. The wool from one Merino sheep will produce about 250–300ml of recoverable wool grease. Lanolin is extracted by washing the wool in hot water with a special wool scouring detergent to remove dirt, wool grease (crude lanolin), suint (sweat salts), and anything else stuck to the wool. The wool grease is continuously removed during this washing process by centrifuge separators, which concentrate it into a wax-like substance melting at approximately 38°C (100°F).

"With a huge sheep population, New Zealand produces significant quantities of lanolin, and farmers over there had already recognised that it had moisture repelling properties and were using it in a relatively basic format as a long-lasting protective barrier in the most corrosive environments"

**ENVIRONMENTAL PRODUCT**

"As a long-standing supplier of lubricants and paints we were very keen to improve our environmental offering and I realised that, if we could use the skills of our lubricant engineers in Lincolnshire who understand the corrosive problems encountered by many industries to blend the lanolin into a viscosity that would suit the UK market, we potentially had an exciting product on our hands" he said

"Our customers require a high quality lubricant but today more than ever wish to have a more environmentally safe product on their machinery to protect their staff and the environment in which they work. Lubricants and other chemicals can affect rural areas such as agricultural fields, waterways and forests. Witham Prolan products are non-toxic, non-carcinogenic and biodegradable – making them safe for the environment and good for health and wellbeing.

Recently launched in the UK by Witham Group, Prolan offers a range of specialised, high performance lubricants and corrosion inhibitors for metal and wood surfaces and electrical components. With natural lanolin as the main ingredient, the moisture repelling properties create a long lasting protective barrier in the most corrosive environments whilst providing an environmentally friendly solution.

Agriculture can be hard on machinery and constant protection is required from exposure to fertilizer, manure, pesticides and weather. Prolan provides long-lasting protection for farm equipment, keeping it lubricated to prevent breakdowns, and It has been proven to extend the longevity of farm machinery and enhance resale value.

Prolan lubricants have gained a number of International Food Safety Approvals and in the UK are NSF approved for both H1 and H2 requirements. This means they are certified as approved "food-grade lubricants" and can be used in sensitive environments such as food and drinking water processing industries.

"The versatility of Prolan" says Nigel Bottom "makes it suitable for a wide range of on-farm uses, and with NSF approval as a food-grade lubricant, it is safe to use within dairy, vegetable processing and fishery sectors. Prolan won't wash off with a cold-water jet wash – it needs steam or a degreaser to remove it, so its long-lasting credentials make it a must-have treatment for those looking to prevent corrosion."

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Secretary: Paul Miller
Administrator: Elizabeth Stephens

# Trustees Board meeting held in April

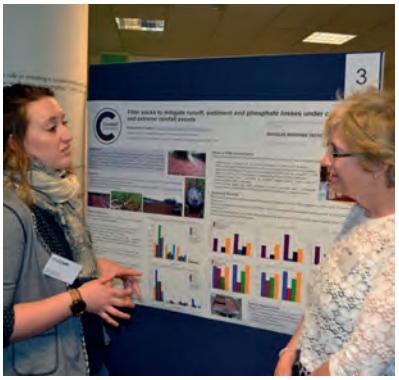
A Board meeting of Trustees was held at the IAgrE/DBT offices on the Cranfield University campus on 19th April 2017 and was attended by six trustees, an observer and two administrative staff – see photograph. At this meeting, Trustees:

- Reviewed the financial position of The Trust with respect to the actual and expected future income from investments together with current and future planned expenditure;
- Considered revised and new applications for funding support: it was agreed to support a PhD at Nottingham University concerned with the use of image analysis techniques to monitor dairy cows during calving, a PhD at Cranfield University concerned with the variable rate application of plant protection products and project work concerned with UV light radiation and absorption by plants at Lincoln University: outline support for a continuation of the work at Harper Adams University concerned with controlled traffic, low ground pressure vehicles and tillage options was also agreed;
- Reviewed progress with funded projects including the appointment to the lectureship post at The Royal Agricultural University.

***Trustees at the Board meeting held on April 19th. From left to right: Peter Redman (trustee), Jonathon Bomford (trustee), Alan Plom (observer – to be new secretary from Nov 2017), Malcolm Crabtree (Chairman), Nick August (vice Chairman), John Fox (Emeritus trustee), Mark Moore (trustee), Mark Kibblewhite (trustee), Paul Miller (technical secretary) and Elizabeth Stephens (Finance/administrative officer). David White (trustee) joined the meeting by skype link. Apologies for absence from: Geoffrey Davis and Keith Hawken.***

## Trust sponsored students participate in the AFCP Student Forum held at The University of Hertfordshire on 5th April.

Three Douglas Bomford sponsored students and the sponsored lecturer from The Royal Agricultural University took part in The AgriFood Charities Partnership (AFCP) Student Forum event hosted at The University of Hertfordshire on 5th April 2017. Our sponsored participants Alexandra Cooke, Nikos Koukiasas, Karen Rial-Lovera and Iain Dummett were among twelve who, having reached the third year of their PhD or recently completed it, gave a ten-minute oral presentation as well as presenting a poster. Those participants at earlier stages of their project work presented a poster only. All the participants had received some sponsorship from AFCP member charities and in his closing remarks, Lord Curry of Kirkhale praised the work that all the students had presented and emphasised the importance of research in addressing the needs of future agricultural systems to keep it competitive and sustainable. The day generated some lively discussions and provided a good environment for the students to exchange experiences with others working in related fields.



***ABOVE: Debbie Beaton, new CEO of AFCP (r) with Alex Cooke at her poster.***

## The Trust continues to support the Arkwright Scholarship scheme.

The Trust has continued its support for The Arkwright Scholarship Scheme with a total of four students now being sponsored – two per year with each student sponsored for two years. As well as providing a financial contribution, a proportion of which is paid directly to the students, sponsors are strongly encouraged to engage with their students and provide some insight to engineering activities that they are engaged with. One of our students who began his sponsorship in autumn 2016 (George Hammond) asked The Trust to arrange a visit to John Deere Ltd and so two students, an accompanying dad and the technical secretary of The Trust visited the company on Thursday 13th April. The Trust is very grateful to Jonathan Henry and Richard Halsall from John Deere for their hospitality relating to the visit and for the time that they both spent with our two sponsored students – both students recognised the visit as very valuable experience.

***Arkwright scholars at John Deere Ltd. (Left to Right) - Paul Miller (Technical secretary of The Trust), Alex Williams (2nd Year Arkwright scholar), George Hammond (1st Year Arkwright scholar) and Richard Halsall (Training Centre Manager, John Deere Ltd).***

As a result of this successful visit, The Trust will be aiming to work with the Agricultural Engineers Association to establish future visits of this kind for our sponsored Arkwright scholars.

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# Seventy-first IAgrE Annual General Meeting and an Extraordinary General Meeting

*Held at John Deere, Langar on Thursday 27 April 2017*


An excellent representation of members plus guests attended the AGM and EGM chaired by President, Dr Robert Merrall. They heard CEO Alastair Taylor summarise another excellent year for IAgrE. He said that the five-year development plan had made good progress in delivering the Institution's business objectives, whilst maintaining the need to operate within the rule of the Charities Commission.

He made particular mention of the enhancement of the IAgrE website and improvement to the member's database. The new membership records system allowed for better integration with the website and allowed for on-line payments to be made whilst introducing industry standard security measures.

"The website is designed to showcase the agricultural engineering industry, in particular in relation to meeting the needs of younger engineers and technologists in the quest to attract new members" he said.

"IAgrE has also continued to build on opportunities to raise its profile with the wider engineering and scientific community to further promote agricultural engineering as a profession. Towards the end of 2016, IAgrE had engaged with the government department of Business, Energy and Industrial Strategy with a view to explore the opportunities and challenges in moving Agri-Tech developments forward.

## Memorandum and Article of Association

He outlined the process and rationale behind the updating of the IAgrE Memorandum and Articles of Association which whilst the objectives had hardly changed since their original creation "needed some measure of simplification, particularly to reflect 21st century language". The main objectives were:

The language updated to reflect current legislation and practice

- Removal of redundant terminology
- Future proofing with elements of articles reclassified as regulations to allow for more frequent reviews
- Permit electronic communication and proxy voting
- Firm up the role of the Trustees (Executive) who take corporate responsibility and the Council which is advisory
- Introduction of new grades for 'Technician' and 'Affliate' members
- Firm up terms of office and committee structures

To achieve this, he said, the due diligence process had to be robust and rigid along the following lines

- Consultation with Executive, Council, Membership Committee and wider membership
- Approval by Charity Commission to meeting their requirements
- Approval by Engineering Council and 'Privy Council' to meet Royal Charter requirements
- Legal advice from an EngC approved lawyer was received at all stages
- Benchmarked against other institutions

The amendments to the Memorandum and Articles of Association were passed unanimously by members.

## New Technician Grade

IAgrE used the Annual General Meeting to announce the launch of a new grade of membership to recognise the importance of the role of the technician in the landbased sector.

Alastair Taylor said in his introduction "It is so important that we recognise the important role which our technicians fulfil across agricultural engineering in all of its forms. These people do such a great job and whether they are working as a Service Engineer in a dealership, as a Precision Farming Technician in wider agriculture or as a Soil Science technician. This new grade is a great way of recognising their achievements."

The Technician grade of IAgrE Membership is for those who are qualified at a vocational or technical level and have completed an apprenticeship or extended diploma. This grade may include farm machinery service engineers, people working in precision farming and soil science working as technicians, instructors and trainers.

IAgrE Technician members will have a technical qualification in agricultural engineering, land-based technology or related engineering or scientific subject at Level 3. This will include, for example, an extended diploma, advanced apprenticeship or equivalent in an appropriate subject.

IAgrE President, Rob Merrall added: "There are many reasons why it is good to be a member of a professional body. It is recognition and acknowledgement of your experience, personal skills and knowledge. This leads to a professional identity and greater job satisfaction, recognition and respect from employers, colleagues and customers for the expertise held. It helps you with continual professional development opportunities (CPD) and to stay abreast of technology. In the long term it offers greater career prospects and earning potential as well as greater self-esteem, confidence and professional assertiveness."

## EAST MIDLANDS BRANCH

**IAGRE AWARDS**
**Branch Meritorious Award**
**David Wilks** AMIAgrE, East Midland Branch Treasurer

David Wilks joined the Institution in February 1975, and having maintained continuous membership, means he has been a member now for 42yrs, which is quite a record in itself.
On graduating from the Royal Agricultural College in 1963, David joined the Ministry of Agriculture, Fisheries and Food as a Scientific Assistant. Then, prior to his retirement, David worked for the Health and Safety Executive, having been involved with the Safety of Agriculture since the introduction of the Act in 1974.
David became a member of the East Midlands Branch committee 17 years ago and has been the Branch Treasurer since 2004, a role he feels, after 17yrs, he needs to step down from.
However, David has not just been "the treasurer" keeping watch over our finances and maintaining meticulous records, he has been the bedrock of the committee for many years with his words of wisdom, ideas, and 100% support for all the activities. Suffice to say "Every Branch needs a David"
We, as a Branch totally understand David's decision to stand down, and are unanimous in supporting this Award, as we feel it is a fitting tribute to David and also a way of saying a very sincere thank you to him for all that he has done and all that he stands for.
We understand that David is maintaining his Membership of the Institution, and we hope that this will continue for many years.


**BRANCH VISIT TO DOUBLEDAY GROUP**
**14 February 2017**
***Report by Richard Trevarthen***

Some 22 East Midlands Branch members and guests very much enjoyed a superb evening hosted by John Deere dealer, the Doubleday Group, at Station Road, Swineshead, Boston, Lincs courtesy of Dealer Principal Zoe Spencer, Service Manager Luke Spencer and members of their Staff.
The evening commenced with a warm welcome by Luke, who then went on to give a brief history of the company, formed when JW Doubleday, Evergreen Tractors and Bourne Tractors merged just a few years ago. Following on from that Luke's presentation, was based on the Companies' philosophy of good customer support, and continuous follow-ups that their customers enjoy, and the process in place to ensure that they are rigidly complied with.
It was during this presentation that Luke suddenly received a call on his mobile. He apologised and felt he had to answer the call as he recognized the call was from a valued "customer". We then had it explained that this 'customer' was out in the field ploughing and was experiencing problems with the diff lock!
Well this of course led on to a practical demonstration of the "JD Link" to view the operators screen in the cab, and advise setting changes which with computer diagnostics, Luke solved the problem there and then. A great demo showing just what is possible on a day to day customer support level.
Following this we were split into small groups and had a tour of the very modern showroom, workshops, and parts department, all pristine and very well laid out.
Finally, our evening closed with a Question and Answer session, whilst tucking in to a delicious buffet. Just a great evening and again sincere thanks to all at Doubleday for taking so much time and trouble in preparing and delivering such a great event.

**TALK BY PETER HARDING**
**After Sales Dealer Development, Europe Middle East, AGCO**
**14 March 2017 Quorn Lodge Hotel, Melton Mowbray**
***Report by Charles Szabo***

Peter kindly stepped in at short notice after the tabled speaker was whisked off to China.
Peter's career has always been in agricultural engineering, starting as a time served apprentice. Following this he experienced various short forays in different industries, and then moved to P Tuckwell Ltd where he became their workshop manager. Peter now works for AGCO where he is the Manager After Sales Dealer Development, Europe, Middle East.

As Peter's talk unfolded it was obvious that much time and thought had gone into the preparation of this talk, and his nice touches of humour were appreciated by the 24 members and guests in the audience.
One of Peter's tasks is to help dealers develop a strategy of making the most of a sale so the customer is happy and comes back again. After-sales means supporting the customer not so much from the sales point of view, but from the workshop and parts point of view. This can be done in a number of ways such as service contracts,

marketing of workshop expertise etc. Service managers buy and sell time. The workshop makes or loses money depending on how efficient the manager is at:

- **Marketing his expertise**: e.g. out of season servicing, flyers with offers.
- **Work in progress**: Repair or service and return the machine as quickly as possible, avoiding delays while waiting for decisions or parts etc
- **Timely invoicing**: This often depends on how quickly the job card is submitted, properly completed with time and parts so the service department can then invoice to the customer.

When Peter starts a company health check he assumes absolutely nothing and starts by asking the simple and obvious questions**.**
For example, do all three departments (sales, parts and service) work in harmony? He will use information from payroll to calculate how much the workshop costs to run and brings it down to an hourly basis. If dealerships invoice on a monthly basis and they offer 30 day terms that's 60 days to payment.
If the workshop technician only hands in his job cards at the end of the week and the workshop and parts managers take another week to raise the invoice it can be 70 + days to payment.
When the physical audit has been done, Peter will again meet with the dealer principal, draw up a plan which will involve a 90 day project to rectify any highlighted problems.

Peter's talk was extremely interesting and many of his remedies seemed obvious. It shows how remarkably easy it is to become complacent and often it just needs somebody to look in from the outside. Following the talk there was a very good question and answer session, which again proved Peter had given much thought to the topic. It really was a very interesting evening. Thanks again to Peter, he certainly gave us "much food for thought".

## WEST MIDLANDS BRANCH

**IAGRE AWARDS**
**Branch Meritorious Award**
**Michael Sheldon** IEng CEnv FIAgrE
West Midland Branch Treasurer

For as long as most people in the branch can remember, Michael has been the West Midlands Branch Secretary. He has done the job conscientiously and quietly. Often it has meant sorting out notes of meetings, suggestions for technical meeting subjects contacting the relevant speakers and making all the necessary arrangements from booking the room though to arranging greeting and organising hospitality.
Certainly this has often taken quite a lot of time. Often the first thing we knew after a committee meeting or discussion was a comprehensive branch programme circulated and information that he had sent it to 'Silsoe'. (Yes I know it has changed). At the same time he was doing a similar job for the local branch of the Institute of Horticulture and often shared their programmes with our branch member list to our mutual benefit. Some of those meetings were very interesting.
For several years he offered to retire but we never found a replacement, then he got a firmer statement about retirement and then eventually gave us, I think two years notice of cessation! Many of his documents were passed to Ian Moore and we now share them on a Dropbox.
Professionally he was a lecturer at Moreton Morrell College but eventually retired. Since then he has continued his professional interest and at a recent meeting gave us a talk on the tractors and equipment he had seen in Germany.


## WESTERN BRANCH

**TALK BY PROFESSOR Dick Godwin**
**All you ever wanted to know about successful min-till.**
**Western Branch AGM : Wednesday 15 March 2017**
**Report by Mike Whiting**

Professor Dick Godwin took us through the "pro's and cons" associated with leaving the plough and power harrow in the barn and implementing the minimum tillage approach to crop establishment. Citing the conclusions from a development project, supported by the Worshipful Company of Farmers (www.farmerslivery.org.uk), leading tillage machinery manufacturers and tyre companies, Dick made clear that min-till "is not a religion", more of a tool available to the farmer for managing and improving soil structure for maximising yields.
Dick reminded us that we're not implementing new technology here, but more fine tuning what we already know. Cast your mind back to the 1970's and the Hestair Bettison Direct drill was often seen in use, following up after some sub-surface work with the Howard Paraplow.
The Paraplow was notably an original development by ICI, a result of joint collaboration between engineers, soil scientists and agronomists. The straw burning ban presented a significant challenge with the result that poorly chopped damp straw was forced into the ground, attracting slugs and harbouring fungi.
Just like the original hair styles of 1980's pop bands, the management of lengthy un-chopped straw from three decades ago is still an issue today. So if you want to join the "min-till" club, what procedures and kit do you need to establish a seedbed? In summary, Dick reminded us that getting the basic's right helps, in summary;

- What classification of soil profile do you actually have? A presentation slide showing soil mapping of the UK considering 50 sample sites provided a clear indication of where minimum tillage could match the yields from conventional tillage, and also where its use could be counterproductive.
- Timeliness and patience are necessary to prevent damaging the soil structure, and maximising the use of available soil moisture content.
- Pulling out the drainage map and clearing any silt is essential to allow machinery operation at optimum times.
- Ensure the combine's straw chopper and associated spreader units are serviced to maximise distribution. This ensures material can be broken down sufficiently by following tillage systems.
- Organic matter content of the soil remains a key attribute in maintaining "contiguous pores" within the structure. Any opportunity to apply farm yard manure or compost material can only bring long term benefits.

Bringing us back up to date, Dick went into some detail on the advantages of

## WESTERN BRANCH

strip-tillage. The benefits of targeted seed placement with wide rows lead to improved germination due to increased soil temperatures.
Moving onto controlled traffic farming (CTF), the impact of having reduced wheeling's has demonstrated an increase of up 400% of moisture infiltration through the soil. Although sticking to those working routes year in year out with high capacity machinery requires detailed planning for seed placement and harvesting.
As for the benefits of introducing a minimum tillage regime compared with traditional soil inversion methods, Dick provided us with some figures which would make any arable farmer give it serious consideration. In summary;

- An increase in crop yield of 15% is possible with a CTF system, implemented using low ground pressure tyres.
- Direct drilling with no prior tillage resulted in a machinery cost input of £40.78 per hectare compared with £78.40 for ploughing and a combination drill set. However yields were slightly lower than a minimum tillage approach with some prior cultivation.

Dick concluded that minimum tillage systems are not the utopia for everyone's crop establishment. Working in wet conditions poses a challenge, which then entices in slugs and snails. In addition there is the capital investment required in equipment.
Overall it was a very informative and enjoyable evening's presentation. We're all aware of the crop plot combine, but when one of the slides referred to using scissors to hand harvest a selected area, it demonstrated the accuracy and dedication applied! Questions for Professor Dick Godwin covered the subject matter well and took us way past our normal end of session time.

**IAGRE AWARDS**
**2017 Branch Meritorious Award**
**NICK HANDY** CEng MIAgrE

Nick Handy has served both as Branch Secretary and then Branch Chairman for a total of six years until 2014 but has remained an active member of the Branch Committee as Information Officer. He has arranged many branch lectures and visits and continues to provide meeting publicity posters and write ups for Landwards. Nick's posters have certainly caught the eye and attract many members, guests and students to participate in branch activities.
Nick's background in both agricultural and automotive engineering is certainly an asset having worked for TH White and MAN Trucks UK.
For these reasons Western Branch committee decided to nominate Nick for the Branch Meritorious Award for his long service and dedication.

## WREKIN BRANCH

**LAMMA INNOVATION AWARDS JUDGING**
**Wrekin competition for students**
**Report by Henry Thorpe and Tom Bowers**

Spaces were made available by the LAMMA committee for young engineers to help judge at the 2017 LAMMA show at Peterborough. In October 2016, the Wrekin Branch of the IAgrE held a competition open to all members 25 or under, within the Wrekin area to compete for a place to be on the judging panel for each of the categories. The aim of the competition was to get young engineers more engaged with the IAgrE. The competition required a CV and a statement outlining why the candidate would be suitable for a place on the judging panel and so wasn't difficult nor time consuming to enter. The judging places were taken by Henry Thorpe, Tom Bowers and Ieuan Evans, Harper Adams University Agricultural Engineering students, and Sam Vallone, an LTA member from Morris Corfield's Broseley depot.
The IAgrE Wrekin Branch kindly booked a bed and breakfast in the vicinity for the Young Engineers because of the early start in preparation for the judging on the day. This made it much easier to be on the showground before the masses and quick to get in. As a result the Young Engineers were on the showground ahead of time and had a good hour before the start of the judging to look around the show and find breakfast.
The judging was a valuable experience for all those involved, it was good to be part of a team offering practical and operational questions to aid understanding of the products being judged. The Young


*Henry Thorpe*

Engineers had experience of using some of the modern machinery that some products were based around, this product knowledge was useful when asking questions during judging.
The LAMMA Innovation Awards organisers were very impressed by the level of knowledge and professionalism of the Young Engineers and valued their contribution, and have asked the Wrekin Branch to run the competition again for next year.
The event proved to be very useful in terms of networking because of the different areas of the industry which the judges were from, as well as meeting representatives from the companies being judged.

## WREKIN BRANCH

**Henry Thorpe. Harper Adams University, Agricultural Engineering, BSc second year student**
*"All in all I would truly recommend the experience to anyone out there who is considering it for LAMMA 2018 because I gained a huge wealth of knowledge and made new contacts.*
*It was really great to meet the other judges and to look in depth at some of the products on display at the show. Being a judge forced me to look at some products that if I was just a show visitor I would have previously just walked by.*
*Being a member of the judging panel is also a fantastic way to see more of the show. Being on site early gave me chance to look around before many other visitors arrived and as the judging was finished by early afternoon it gave me plenty of time to look around the show afterwards as well"*

**Tom Bowers. Harper Adams University, Agricultural Engineering, BEng first year student**
*"The judging was a great experience and I have gained inspiration from the day by looking into new ideas and machines which are entering the industry. Judging allowed me to get much more from the show than what I would being a general visitor, as I was able to ask more probing questions and get more technical answers.*
*It was interesting to see a wider range of equipment on show which I am not familiar with and wouldn't usually come across"*


Tom Bowers

**IAGRE AWARDS**
**Branch Meritorious Award**
**David Clare AMIAgrE, Wrekin Branch Secretary**
Nominated by Jim Loynes, Wrekin Chairman

David graduated from Cranfield Institute of Technology in 1989 with a BEng (Hons) degree in Agricultural Engineering and took up a job offer at Land Rover.
David worked for Land Rover for 20 years, working in Chassis Concepts, Vehicle Dynamics, and Hybrid Powertrains. Specialising in electronically controlled chassis systems and 4wd systems, as well as the development of off road performance objective metrics. Notable projects include 'Range Rover' air suspension, 'Discovery' active roll control, 'Discovery III' and 'Range Rover Sport' off road target setting, 'Land Rover's' terrain response system, and 'Freelander II' 4wd.
David joined the Engineering Department at Harper Adams University (HAU), as a Senior Lecturer – Electronics and Mechatronics, in 2010 and soon became involved in the activities of the Wrekin Branch of the IAgrE.
After a short time when he settled into his role at HAU, we managed to persuade him to take over the role of branch secretary.
I am very pleased to say that he has performed the role of branch secretary with great care and to good effect and extend the branch committees thanks and best wishes to him for his continued support of the branch and IAgrE in general.


**Visit to Morris Corfield CLAAS main dealer, Broseley**.
3 April 2017
Report by Bill Basford

Following an interest to understand a dealer's perspective, LTA activities and how a major manufacturer links to dealer activities Wrekin members visited this bustling dealer depot.
Being a main agent for Claas products plus 9 other main franchises an introduction to the dealer history when Messrs Morris and Corfield came together was given by Colin Arnold from Claas.
From small beginnings with Zetor and Steyr interests to a successful relationship currently with Claas was described, Morris Corfield now employing 62 staff covering the West Midlands and north, including the Isle of Man with 70% turnover being Claas based products.

Both Morris Corfield (MC) and Claas have sites developed from building industries, MC using a glazed pipe works site at Broseley and Claas a brickworks in Harsewinkel in 1913.
Colin then explored Claas history and range of products to the present day including reference to an early knotter patent of 1921 still being the base of modern baler knotters.
Early self-propelled combines from 1953 were highlighted particularly as a similar one is hidden away in MC's collection. Manufacturer support from Claas to dealers was highlighted and a first pick rate of 97% success was reported allowing high value complex equipment to be kept in service at critical times.
Leaving the presentation room and passing through an immense dealer parts stock this left the group baited to move outside to the workshops where 4 opportunities were offered to groups to study a modern dealer's approach to fault finding and servicing.
Thus intense small groups enthusiastically examined self-propelled foragers, balers, tractors and combines.
As with many engineer groups time was the enemy and planned timings were challenged.
Everyone was impressed with the Claas software allowing the complete equipment range to be called up and drilled down into to indicate the critical position of the laptop computer in the daily life of a service technician. MC's staff had seeded faults within some of the machines to indicate the procedures required and the ability of the system to indicate sensor communication and expected parameters to identify issues.
Common combine harvester faults being reported as most commonly caused by rats – wiring and other faults being on the rodents hit list.
Thanks are due to Norman Duppa MD of Morris Corfield and his son Darren together with their staff, who along with Colin Arnold and Gwion Hughes from Claas stayed very late allowing members to fully enjoy and learn from the visit.

# MEMBERSHIP CHANGES

## ADMISSIONS

**Member**
Graham T J (East Midlands)
Salifu E (Scottish)
Winston B J (Yorkshire)

**Associate Member**
Carnell T (Western)

**STUDENT**
***Cranfield University***
Altharthi T
Ardanza E
Barrientos Diez L
Borchers N
Case E A
Christophe C
Delamare G
Dowdeswell E
Fioratti M
Howe A M
Kelleher Rubio D
Lapuerta Risuerio A
Larios Quintana A
Leboulleux J I M
Lee S
Lopez Cruz J
Lopez Prieto A
Maskova L
Mateos G
Morrison D
Mrzilek J
Nagypal V
Olalla J
Orpez Milan P
Pastre G
Perez Bejar S
Perez Villar R
Peter A
Petit Damico I
Polliand L
Rey Abad P
Romero Bosquet M D
Segura Martinez A
Storr T
Tebbutt C
Tsaousidis C
Vandenweghe J

***Loughborough University***
Stewart J

***Greenmount College***
McPolin O
Murray J

***University of Exeter***
Eslebi O

***University of Warwick***
Bennett J R

***Tralee, Institute of Technology***
Adams A
Bleach V
Booth D
Burke E
Butler J
Clarke P
Clarke S
Creedon P
Cunningham J
Donohoe M
Doyle R M
Duggan P
Dunply E
Fitzgerald C
Foley K
Foran T
Gibbons L
Godley S P
Gorman I
Goss P
Hickey E
Hogan C
Horgon J
Hyland R
Johnson C J
Joughin C J
Kennedy C
Kenny L
Kenny B
Lardner D
Lenihan K
Loughnune B
Marnhan M
McAleenan E
McCann S
McCartney A
Metcalfe T
Moran L
Moroney S
Newell C
O'Brien T
O'Connor I
O'Connor D
O'Driscoll N
O'Gorman B
O'Neill C
O'Reilly A
O'Rourke M
O'Shea L
O'Sullivan E
O'Sullivan S
Power E
Quinn A
Quirke T
Redmond G
Rickard O
Ryan J M R
Sheehan C
Sheehan T
Singleton C
Sweetnam J
Wallace E
Wallace E
Walsh D
Ward K

## READMISSION

**Member**
Nyongo CT - Cameroon

## DEATHS

We have recently learned of the death of the following members and we send our condolences to their family and friends:
**Mr W W McKinlay, IEng, MIAgrE** (Scottish) a member since 1974

**Mr P B F Fru, IEng MIAgrE** (Cameroon) a member since 1964

**Mr M G Williams, MIAgrE** (Yorkshire) a member since 2009

**Dr A Arar, CEng, FIAgrE** (Jordan) a member since 1956

## TRANSFERS

**Associate Member**
Fillingham R (Yorkshire)
Shuldham E (Yorkshire)

**Associate**
Clarke B (Yorkshire)
Evans P (Yorkshire)
Underwood M (SE Midlands)

## ENGINEERING COUNCIL REGISTRATIONS

**CEng**
Cattermole M J
Lopez Rivera Z
Nyongo CT - readmission

## LONG SERVICE CERTIFICATES (1 APRIL – 30 JUNE 2017)

IAgrE extends warm congratulations to the following members on reaching significant milestones.

| *Name* | *Date of Anniversary* |
|---|---|
| **60 Years** | |
| Cedric Lucas Hill MIAgrE | 17-Jun-17 |
| **50 Years** | |
| Ronald Harry Bonner MIAgrE | 06-Apr-17 |
| John Michael Edwards AIAgrE | 06-Apr-17 |
| John William Duff MIAgrE | 06-Apr-17 |
| John Leslie Morris MIAgrE | 06-Apr-17 |
| Graham John Nutt MIAgrE | 06-Apr-17 |
| Robert Austin Davis MIAgrE | 06-Apr-17 |
| Clive Edward Mander MIAgrE | 06-Apr-17 |

| *Name* | *Date of Anniversary* |
|---|---|
| **35 Years** | |
| William Stuart Cragg FIAgrE | 16-Apr-17 |
| Simon Alexander Kenny MIAgrE | 19-May-17 |
| John Woffenden MIAgrE | 17-Jun-17 |
| Charles Benedict Potts AMIAgrE | 17-Jun-17 |
| William Charles Adams MIAgrE | 18-Jun-17 |
| **25 Years** | |
| Stephen Jeremy Gossage MIAgrE | 18-Apr-17 |
| David William Tilbury MIAgrE | 03-Jun-17 |
| James Robert Austen AMIAgrE | 03-Jun-17 |
| Brian Brewer MIAgrE | 04-Jun-17 |
| Robert Grieves Donald MIAgrE | 25-Jun-17 |
| Timothy Paul Roddy AMIAgrE | 25-Jun-17 |

# ACADEMIC AND COMMERCIAL MEMBERS

## ACADEMIC MEMBERS

**Berkshire College of Agriculture**
Hall Place
Burchetts Green
Maidenhead
Berks SL6 6QR

**Bishop Burton College**
York Road
Bishop Burton
Beverley HU17 8QG

**Brooksby Melton College**
Asfordby Road
Melton Mowbray
Leics LE13 0HJ

**Coleg sir Gar**
Gelli Aur Campus
Llandeilo
Carmarthenshire SA32 8NJ

**Cranfield University**
Cranfield
Bedfordshire MK43 0AL

**Duchy College**
Stoke Climsland
Callington
Cornwall
PL17 8PB

**Easton & Otley College**
Easton
Norwich
Norfolk, NR9 5DX

**Greenmount College**
CAFRE
22 Greenmount Road
Antrim,
Northern Ireland BT41 4PU

**Harper Adams University**
Newport
Shropshire TF10 8NB

**Institute of Technology**
Tralee
Clash,
Tralee
Co Kerry, Ireland

**Lincoln Institute of Agri-Food Technology,**
Lincoln University
Lincoln LN6 7TS

**Myerscough College,**
Bilsbarrow
Preston
Lancashire PR3 0RY

**Newcastle University**
King's Gate
Newcastle Upon Tyne NE1 7RU

**Pallaskenry Agricultural College**
Co Limerick
Ireland

**Plumpton College**
Ditchling Road
Lewes
East Sussex, BN7 3AE

**Reaseheath College**
Reaseheath,
Nantwich, Cheshire, CW5 6DF

**Royal Agricultural University**
Cirencester
Gloucester, GL7 6JS

**Sparsholt College**
Sparsholt,
Winchester SO21 2NF

**SRUC – Auchincruive**
Auchincruive Estate
Ayr, KA6 5HW

**Wiltshire College Lackham**
Lacock
Chippenham
Wiltshire SN15 2NY

## COMMERCIAL MEMBERS

**Agricultural Engineers Association (AEA)**
Samuelson House,
62 Forder Way,
Hampton, Peterborough, PE7 8JB

**AGCO Ltd**
Stoneleigh, Abbey Park,
Kenilworth, Warwickshire, CV8 2TQ

**Alvan Blanch Development Co,**
Chelworth,
Malmesbury, Wiltshire SN16 9SG

**Autoguide Equipment Ltd**
Stockley Road , Heddington
Calne, Wiltshire, SN11 0PS

**BAGMA**
Middleton House,
2 Main Road, Middleton Cheney,
Banbury, Oxon, OX17 2TN

**Bomford Turner Limited**
Salford Priors
Evesham, Worcestershire WR11 5SW

**City & Guilds**
1 Giltspur Street
London EC1A 9DD

**City Farm Systems Ltd**
25 Hepplewhite Close
High Wycombe
Bucks HP13 6BZ

**David Ritchie (Implements) Ltd**
Carseview Road, Suttieside,
Forfar, Angus, DD8 3EE

**Douglas Bomford Trust**
The Bullock Building
University Way, Cranfield
Bedford, MK43 0GH

**DSL Systems**
Adbolton Hall, Adbolton Lane
West Bridgford,
Nottingham NG2 5AS

**FEC Services**
Stoneleigh Park
Kenilworth , Warwickshire CV8 2LS

**Fullwood**
Grange Road
Ellesmere , Cheshire SY12 9DF

**HSS Hire**
Head Office
25 Willow Lane,
Mitcham, London CR4 4TS

**John Deere Ltd**
Harby Road, Langar
Nottinghamshire NG13 9HT

**Marks & Clerk LLP**
90 Long Acre
London WC2E 9RA

**Mastenbroek Limited**
83 Swineshead Road
Boston, Lincs, PE21 7JG

**Shelbourne Reynolds**
Shepherds Grove Ind. Est.
Stanton, Bury St Edmunds
Suffolk, IP31 2AR

**SSAB Swedish Steel Ltd**
Narrowboat Way
Hurst Business Park
Brierley Hill
West Midlands DY5 1UF

**TeeJet London Ltd**
Headley House,
Headley Road, Hindhead,
Surrey, GU26 6UK

**Witham Oil and Paint Ltd**
Outer Circle Road
Lincoln LN2 4HL

# FORTHCOMING EVENTS

## IAgrE EVENTS

**7 SEPTEMBER 2017**
**FEG ANNUAL SYMPOSIUM 2017**
**Newton Rigg Campus (TBC)**
The date of the IAgrE Forestry Engineering Group Annual Symposium has been set. The title has yet to be finalised but full details and how to book will be added here as they are known

**11 OCTOBER 2017**
**IAgrE CONFERENCE 2017**
**Decarbonising UK Agriculture**
RoCRE Rothamsted. Harpenden, Herts AL5 2JQ
**Decarbonising!** Across industry and society there has been much progress in introducing innovative solutions to reduce the carbon footprint. Where next? The carbon footprint of agriculture is complex. At one end, tractors and mechanisation systems are big energy users whilst natural resources such as forests and the soil can be managed to capture carbon. Decarbonising UK Agriculture is about finding the symbiosis needed to make this successful.
This conference will explore a broad range of perspectives with a view to helping those responsible for policy and practice choose the right approaches and develop the technologies and practices required if reliance on carbon is to be reduced.
This conference is for engineers, scientists and technologists, farmers, growers, producers, and movers and shakers working in policy and sustainable development.

**19 OCTOBER 2017**
**IAgrE AUTUMN COUNCIL MEETING**
**Lincoln University, Riseholme Park, Lincoln LN2 2LG**
We are delighted to be invited by Simon Pearson, Director of LIAT (Lincoln Institute of Agri-Food) to hold our Autumn Council Meeting at the Riseholme Campus of Lincoln University.

***All enquiries regarding IAgrE Events. Contact Sarah McLeod.***
***Tel: 01234 750876***
***secretary@iagre.org***

## INDUSTRY EVENTS

**12 – 16 JUNE 2017**
**FIELD ROBOT EVENT**
**Harper Adams University, Newport, Shropshire TF10 8NB**
This international event, now in it's 6th Year will be hosted by Harper Adams University. The Field Robot Event is an international competition intended to promote the development of robotic ...

**13 – 15 JUNE 2017**
**IST INTERNATIONAL CONFERENCE ON TIMBER STRUCTURES AND ENGINEERING**
Balmer Lawn Hotel, Brockenhurst, Hampshire
Organised by: Wessex Institute, UK, Technical Centre of Wood Industry, Belgium

**14 -15 JUNE 2017**
**CEREALS 2017**
**Boothby Graffoe, Lincolnshire**
Join over 25,000 farmers, agronomists and industry suppliers in Lincolnshire for the industry's leading technical event.

**16 JUNE 2017**
**CRANFIELD SCIENCE FOR A CIRCULAR ECONOMY**
**HOW TO TACKLE THE WATER, FOOD, ENERGY NEXUS**
**Cranfield University**
What factors will drive growth in the environmental sector over the next years? And what will be the main challenges?

**23 JUNE 2017**
**INTERNATIONAL WOMEN IN ENGINEERING DAY 2017**
www.inwed.org.uk

**27 – 28 JUNE 2017**
**WORKING WITH SOIL**
**BCA College, Maidenhead**
Introduction to soil classification training course. This two day training course offers a unique opportunity to build your confidence and precision in characterising and describing the soil beneath your feet.

**28 – 29 JUNE 2017**
**GROUNDSWELL 2017**
**Lanock Manor Farm, Junction 9 (A1M) Hertfordshire**
Groundswell is a new farming conference, designed by farmers for farmers to educate and inform the industry about no-till techniques and soil regeneration in arable and mixed farming situations.

**11 – 13 JULY 2017**
**N8 AGRIFOOD 2017 INTERNATIONAL CONFERENCE**
**Durham University**
Food Production for the Future
Generating nutritious foods from resilient & sustainable agricultural systems
***www.durhamagrifood2017.com***

**16 – 20 JULY 2017**
**11th EUROPEAN CONFERENCE ON PRECESION AGRICULTURE**
**University of Edinburgh's John McIntyre Conference Centre**
It is 20 years since the first ECPA conference and the UK organisers are pleased to welcome the return of the conference to the UK and to Edinburgh. The conference will continue with a successful format of previous conferences building in strong industry sessions and participation. The theme of 'Innovating through Research' will enable all involved in Precision Agriculture to participate.

**13 – 14 SEPTEMBER 2017**
**UK PRODUCE INDUSTRY FAIR**
**Peterborough Arena**
It's not just a fair exhibiting to the trade for the trade, it's a fair exhibiting a one stop shop for you, your customers and potential new customers.

**14 SEPTEMBER 2017**
**TILLAGE LIVE 2017**
**Wickenby Airfield, Lincoln.**
Organised by the Agricultural Engineers Association (AEA) on behalf of the industry, Tillage-Live will follow the format of a full working demonstration of cultivations equipment including ploughs, cultivators, conventional, strip tillage and direct drills. Alongside this there are working plots with crop sprayers and a full technical trade static exhibition area.

**8 – 9 NOVEMBER 2017**
**FARM BUSINESS INNOVATION SHOW**
**NEC Birmingham**
The diversification & Innovation event for farmers & landowners to make more money from their land. 450 Suppliers 200 Seminars Free to Attend

**10 – 11 NOVEMBER 2017**
**LAND.TECHNIK AG ENG 2017**
**Hanover, Germany**
With over 1,000 participants in 2015, the "International Conference on Agricultural Engineering" Land.Technik AgEng is the most important event for the international community of agricultural engineers

**12 – 19 NOVEMBER 2017**
**AGRITECHNICA 2017**
**Hanover, Germany**
The leading trade fair for agricultural machinery.For seven days, AGRITECHNICA will set the stage for 2,900 exhibitors and will lift the curtain for you on the future of crop production. High-calibre manufacturers and service providers will fascinate an international audience with brand new concepts and spearheading innovations in as many as 23 halls.

**19 – 21 NOVEMBER 2017**
**PAN AFRICAN SOCIETY FOR AGRICULTURAL ENGINEERING CONFERENCE**
**Southern Sun Mayfair Hotel, Nairobi, Kenya**
The Pan African Society for Agricultural Engineers was formed in 2012. The mission of the society is to promote and advance the profession of agricultural engineering in Africa.

**29 – 30 NOVEMBER 2017**
**CROPTEC 2017**
**East of England Showground, Peterborough, PE2 6XE**
CropTec, the essential technical and business event for arable and mixed farmers, their advisers and associated industries, will be packed with innovative features and content.

***For up-to-date information on all events visit www.iagre.org/events***

# 24/7 Out of Hours

**This issue, we introduce a new feature looking at the hobbies and past-times of IAgrE members when not engaged in their day-jobs. CHRIS BIDDLE REPORTS**

## HUGH CRABTREE

**Hugh is a Fellow of IAgrE, joining the Institution in 1997 and is a Council Member. In 1980, he started Farmex, a company based near Reading specialising in ventilation controls and monitoring systems for livestock. Away from agriculture, Hugh is an accomplished musician and in 1993 formed the band, Feast of Fiddles. He plays the melodeon, is a vocalist and comperes the concerts.**

**Hugh, where did your interest in music start?**
I was surrounded by it at home, my mother in a choir, piano lessons, siblings similarly, school choir. I went on to set up a Folk & Blues Club at school (Kingswood School, near Bath).

**Who were your musical influences?**
Initially choral music and then traditional folk music courtesy of an enlightened school master who introduced me to the likes of Shirley Collins, Fairport Convention, The Chieftains.

**What prompted you to form the Feast of Fiddles?**
An available date, Valentines Day, at the Nettlebed Folk Club near Maidenhead with just about sufficient notice to get it together. I'd had the idea of six of the best known UK fiddlers in front of my ceilidh band and the club organiser wanted to try something different. We met up in the car park, went through a suggested set list – and the rest is . . . .

**Has the line-up changed much over the past 24 years?**
The backline has been stable throughout with the recent addition of sax/keyboards man Alan Whetton. The current line-up has been it for the last 10 years. A total of 14 fiddle players have been involved and another 6 musicians beyond the current 11 band members. Most of the fiddle players are or have been members of groups such as Steeleye Span, Jethro Tull, Fairport Convention and Lindisfarne. Drummer Dave Mattacks has a wide experience of playing with the likes of Elton John, Paul McCartney, Chris Rea. I think I only qualify because I drive the van and have a PA system!

**How many concerts do you play each year?**
We play 14 or so tour dates around Easter each year then a handful of festivals. It works out at less than 20 gigs a year.

**What about records?**
Yes we've recorded 5 albums, the latest of which ***Sleight of Elbow*** was released in April this year – and all of which are available on our website *www.feastoffiddles.co.uk*

**Do you play in other bands other than Feast of Fiddles?**
The FoF backline and myself are a pub band rejoicing in the name P.I.G. I also used to run a barn dance band called Whittakers Patent Remedy but I've retired from barn dance calling now so it's just FoF and P.I.G

**How do you juggle your role at Farmex with running and performing with the band?**
It works pretty well really. I have great staff who don't need my input all the time and the music is genuinely recreational in marked contrast to engineering matters porcine.

**Do you perform concerts outside the UK?**
No, not with the band although I'd like to.

**Favourite venue?**
The Apex, Bury St Edmunds; The Roses Theatre, Tewkesbury and The Stables, Wavendon.

**Favourite musical piece in your repertoire?**
Tough call, the Morris music, Mark Knoplfer's Going Home (from the film Local Hero), and perhaps medleys like the Pirates of Caribbean theme merging into a Morrisons jig.

**Most memorable concert?**
At the Cropredy Festival 2009, we were missing the bass player at the start, crowd that wouldn't stop singing a chorus that cost us our last number in the set. Stage time is king!

**Any unfulfilled musical ambitions?**
I'd like to take the band to the States but the company is 15 and visas and work permits for part time musicians are difficult. Some of the pros in the band are sorted of course but not all. It would be good to get FoF to its 25th anniversary in 2019 and celebrate that with a special concert.

***Feast of Fiddles images courtesy of Jacqueline France***

BOOKING NOW OPEN

IAgrE

# 2017 LANDWARDS CONFERENCE

WEDNESDAY 11 OCTOBER 2017

Rothamsted Centre for Research and Enterprise, Harpenden, Hertfordshire

RoCRE Rothamsted Centre for Research & Enterprise

# DECARBONISING UK AGRICULTURE

## *Perspectives and Policy for Change*


**SUMMARY**

The carbon footprint of agriculture is complex. At one end, tractors and machines are big energy users, whilst natural resources such as forests and the soil can be managed to capture carbon.

The conference will address the policies and practices, the correct approach and the technologies required if reliance on carbon is to be reduced.
The event is aimed at engineers, scientists and technologists, farmers, growers, producers and for those working in policy and sustainable development


### OUTLINE PROGRAMME

*Conference opens at 10.00 (Registration from 9.30). Closes 16.00*
**Welcome and Introduction:** Dr Robert Merrall, President IAgrE
**Agriculture and the Low Carbon Economy:** Dr Jonathan Scurlock (National Farmers Union)
**The Energy Independent Farm:** Carlo Lambro (President, New Holland Agriculture)
**Transport Free Supply Chains:** Jonathon Lodge (City Farm Systems)
**Soil! Our Natural Capital:** Professor Jane Rickson (Cranfield University)
**Energy Crops and Carbon Reduction:** Dr Ian Shield (Rothamsted Centre for Research and Enterprise)
**Insight into Work of Rothamsted:** Chris Watts and colleagues from Rothamsted

### FURTHER INFORMATION

**Online: www.iagre.org/conference-2017**
**E-Mail: secretary@iagre.org Telephone: 01234 750876**

### BOOKING AND COST

**Early Bird £100. Delegate £120. Retired £75 Student £40 (all plus VAT)**
**Booking: www.iagre.org/conference-2017**