Landwards

Agriculture • Horticulture • Forestry • Environment • Amenity

Automated agrochemical traceability system

A novel prototype designed and tested

CTF - Tim Chamen explains how Controlled Traffic Farming is finding increasing numbers of converts to the straight and narrow

Health & Safety

What the new agriculture initiative means to you

IAgrE Professional Journal www.iagre.org Volume 64, Number 3 Autumn 2009

Biosystems Engineering

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IAgrE

EurAgEng

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

Biosystems Engineering

Volume 103, Issue 1, May 2009, Pages 78-99

Assessing the ventilation effectiveness of naturally ventilated livestock buildings under wind dominated conditions using computational fluid dynamics

Tomas Norton, Jim Grant, Richard Fallon and Da-Wen Sun

Food Refrigeration and Computerised Food Technology (FRCFT), University College Dublin, Belfield, Dublin 4, Ireland

Teagasc Agricultural Research Centre, Kinsealy, Malahide Road, Dublin 17, Ireland

A computational fluid dynamics (CFD) model was developed to investigate the natural ventilation of a climatic livestock building under different wind incidences for three different inlet opening areas. A ½ scale experimental building was employed to validate, both qualitatively and quantitatively, the CFD predictions of airflow distribution. To improve the applicability of CFD to building design, a thermal comfort index called the "minimum comfort temperature" was used in this study. Results showed that ventilation rates were not at their highest when wind was blowing normal to the building because a considerable quantity of the flow exited the building via short-circuiting. However, the greatest ventilation homogeneity was experienced when the wind was blowing normal to the building, because of the formation of two wind-driven vortices within the building.

Volume 103, Issue 2, June 2009, Pages 137-145

Recognition and classification of external skin damage in citrus fruits using multispectral data and morphological features

J. Blasco, N. Aleixos, J. Gómez-Sanchís and E. Moltó

Centro de Agroingeniería, Instituto Valenciano de Investigaciones Agrarias, Moncada Valencia, Spain

Instituto en Bioingeniería y Tecnología Orientada al Ser Humano,Universidad Politécnica de Valencia, Valencia, Spain

Intelligent Data Analysis Laboratory, IDAL, Electronic Engineering Department, Universidad de Valencia, Valencia, Spain

The computer vision systems currently used for the automatic inspection of citrus fruits are normally based on supervised methods that are capable of detecting defects on the surface of the fruit but are unable to discriminate between different types of defects. Identifying the type of the defect affecting each fruit is very important in order to optimise the marketing profit. A system was developed for the recognition and classification of the most common external defects in citrus. In order to discriminate between 11 types of defects, images of the defects were acquired in five spectral areas, including the study of near infrared reflectance and ultraviolet induced fluorescence. The system combines spectral information about the defects with morphological estimations of them in order to classify the fruits in categories. The fruit-sorting algorithm proposed here was tested by using it to identify the defects in more than 2000 citrus fruits, including mandarins and oranges. The overall success rate reached 86%.

Volume 103, Issue 3, July 2009, Pages 389-394

A screening life cycle assessment of short rotation coppice willow feedstock production system for small-scale electricity generation

Pietro Goglio and Philip M.O. Owende

Landlab, Scuola Superiore Sant'Anna, Piazza Martiri della Libertà 33, 56127 Pisa, Italy

Charles Parsons Energy Research Programme, University College Dublin, Belfield, Dublin 4, Ireland

School of Informatics and Engineering, Institute of Technology, Blanchardstown Road North, Dublin 15, Ireland

Technical viability of two small-scale electricity generation pathways based on willow short rotation coppice biomass was evaluated using a Screening Life Cycle Assessment (LCA) procedure. The system inputs included fuel and oil consumption in machine operations, fertilizer and herbicide production, transportation of willow chips biomass, and biomass-to-energy conversion. The analysis was based on net energy production, energy output-input ratio, and the related CO2 emission. The results showed that key energy efficiency and environmental compatibility factors include: the choice of drying technique; fertiliser type and application technique, and; the type of biomass-to-energy conversion plant, which had up to 36.4% variation in net energy production, and 96.4% reduction in CO2 emission. Willow chips transported up to distances of 38 km did not have significant impact on the net energy production and CO2 emission. Over distances in excess of 38 km there was a 25.9% reduction in energy efficiency which underlines the importance of transportation in the overall system productivity.

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THIS ISSUE

PRODUCTION TEAM

EDITOR: Chris Biddle
Tel: 44 (0) 1722 429570 (direct line)
chris@nelsonpublishing.co.uk

SUB-EDITOR: Steve Gibbs
Tel: 44 (0) 1722 429573
steve@nelsonpublishing.co.uk

ADVERTISING: Nicky Cushing
Tel: 44 (0) 1722 429571
nicky@nelsonpublishing.co.uk

PRINTING: Broglia Press, Poole

Nelson Publishing Ltd
25A New Street, Salisbury, Wilts SP1 2PH
Tel: 44 (0) 1722 424245
Fax: 44 (0) 1722 414245
www.nelsonpublishing.co.uk

EDITORIAL

Keeping the pedal to the metal

ONCE again, schools report record levels of exam passes - and the customary helter-skelter rush of applications for University places.

But at the same time, you sense a change of mood prompted by the sudden downturn in the economy.

Recessionary times create uncertainty. What seemed obvious and cast-iron a few months ago, now appears fragile.

Universities have been lampooned in recent times for putting on 'meaningless' courses, such as golf course design and the like. But tell you what?

Although the golfing market is finding it tough at present, chances are that students on such vocational courses will stand a better chance of finding employment than those with classical degrees in arts, language and humanities (I'm leaving out of this comparison the dreaded Media Studies which has spectacularly failed to produce worthwhile job applicants in my experience).

So it is encouraging that recent research carried out by the Engineering and Technology Board (ETB) has found a 19 per cent increase over the past 12 months in the number of general public who would recommend a career in engineering to their children, family and friends.

That despite the problems in key sectors such as the automotive industry and construction as a result of the recession.

The research also highlighted a substantial increase in those who now regard engineering as a 'desirable' or 'very desirable' career.

It seems this interest in engineering appears later in the young person's life than one would have liked as almost half 7 - 11 year olds consider engineering 'boring' when compared with teaching, medicine - or being a footballer.

Anecdotal evidence suggests that the land-based sector has fared pretty well in the recruitment stakes in recent years - possibly through lack of competition from construction and other badly-hit sectors.

All of which makes it even more essential to keep up the positive work the industry has initiated in recent times to get its house in order, to present a public face and more importantly establish a career path that is credible and achievable for new entrants.

As the economy improves, competition to be heard in the careers market will increase, so as an industry we need to keep the 'pedal to the metal' .

CHRIS BIDDLE
Editor

IAgrE
www.iagre.org

Landwards is published quarterly by:
IAgrE
Barton Road, Silsoe,
Bedford MK45 4FH
Telephone: + 44 (0) 1525 861096
Fax: + 44 (0) 1525 861660
E-mail: secretary@iagre.org

President
Richard E Robinson CEng FIAgrE
Chief Executive and Secretary
Christopher R Whetnall CEnv IEng FIAgrE MemASABE

IAgrE is a founder member of ***EurAgEng,*** *a licensed body of the* ***Engineering Council*** *and a founder constituent of the* ***Society for the Environment***

Benn backs farmers' green offer

A GROUNDBREAKING agreement between the farming industry and Government means farmers will take action to ensure their farms support and protect wildlife and biodiversity, Environment, Food and Rural Affairs Secretary Hilary Benn announced recently.

The new agreement will see the National Farmers Union, the Country Land and Business Association and other industry partners work with Natural England, the Environment Agency and the RSPB to get more farmers into Environmental Stewardship and expand voluntary action to help protect water quality and the farmland birds, plants and animals of the local landscape.

Under the new agreement, farmers will:

- Double the uptake of key agri-environment Entry Level Scheme in-field options, covering 40,000 hectares on top of current levels;
- Increase uncropped land by 20,000 hectares from January 2008 levels. The campaign will also seek to improve the environmental management of at least 60,000 hectares of this land; and
- Introduce voluntary measures on other land covering at least 30,000 hectares and up to 50,000 hectares.

The Campaign for the Farmed Environment will be led by the industry and will give farmers advice and guidance on how to take appropriate action on their land.

Announcing his decision at the Royal Show, Mr Benn said, "I greatly welcome the commitment and trust that the NFU and the CLA have shown in reaching this groundbreaking agreement. In return for that trust, we all expect to see positive results for the environment."

NFU President Peter Kendall said, "The campaign is ambitious and provides a long term method of working collectively on environmental issues with the farming community. We are absolutely determined to make it succeed."

Accreditation of engineering degree programmes to be explored

ECUK organised conference offers unique opportunity

THE Engineering Council UK (ECUK) is hosting a conference entitled '*Accreditation of engineering degree programmes – current requirements and future challenges*', on 14th October 2009 at the Institute of Marine Engineering in London.

The organisers say the conference will provide a unique opportunity for delegates to explore the challenges to current accreditation processes and practices posed by new types of provision.


Professor Bob Cryan

It will also cover the aims of professional accreditation of engineering degrees, the value to various stakeholders, the future challenges and how to ensure that the process remains fit for purpose.

An impressive line up of speakers will cover key topics, including an international perspective provided by Professor Jörg Steinbach from TU-Berlin, and an overview of how another profession goes about accreditation presented by Martin Hart, Assistant Director for Education for the General Medical Council (GMC).

Sarah Butler, Assistant Director of Development and Enhancement Group, QAA will consider how professional body accreditation activity relates to more general quality assurance processes in HE. Other sessions will look at viewpoints of an employer, a Professional Engineering Institution and a university.

Chaired by Professor Bob Cryan, Chairman of the Engineering Accreditation Board, the conference will be of interest to everyone involved in quality assurance aspects of engineering degrees, including engineering academics, staff and volunteer members of engineering professional bodies, Sector Skills Councils for engineering-related industries and employers of engineering graduates.

Accreditation of engineering degree programmes – current requirements and future challenges is free to attend and places will be reserved on a first come, first served basis.

For further details or to book your place, please contact Neela Lubojacky on *NLubojacky@engc.org.uk*, phone 020 3206 0557.

Flood resilience for UK infrastructure

Unprecedented cross-sector collaboration

CIRIA has welcomed two reports into the state of critical infrastructure in the UK, written by the Institution of Civil Engineers (ICE) and the Council for Science and Technology (CST).

The reports recommend the appointment of a lead body to oversee the protection and resilience of national infrastructure, one which would work closely with the newly-formed Natural Hazards Team to deliver a clear and consistent vision for future requirements in particular for building with increased resilience to natural hazards such as flooding.

Following the Pitt Review in 2008 and building on previous work, CIRIA, working with Arup as research contractor, is leading a collaborative project - *Flood resilience and resistance for critical infrastructure (RP913)* -along with the Environment Agency, Network Rail, Highways Agency, and other leading infrastructure asset owners and stakeholders to increase the resilience of the UK's critical infrastructure assets to flood risk.

The project team of CIRIA and Arup engaged in an extensive consultation phase, involving a workshop and online questionnaire survey with input from the UK's leading infrastructure asset owners and operators. The findings of this consultation are currently being reviewed and incorporated with an extensive literature review of both national and international practice to formulate a final project report, due for publication in Autumn 2009.

Interim findings from the CIRIA project were shared with key representatives for the ICE State of the Nation enquiry, which in turn has fed into the CST report. Key findings and recommendations from CIRIA are entitled as follows:

- **Governance, regulation and funding**
- **Control and mitigation of flood risk (definitions and standards)**
- **Flood risk information gaps and assessment methods**
- **Skills and resources**
- **Cross sector collaboration and knowledge sharing**

Details of this report are available from *www.ciria.org*.

CEO VIEW

Promoting Professionalism

FROM time to time it is important to reflect on from whence we (IAgrE) came and to reassess if where we are going is the right direction.

When IAgrE was formed in 1938, it was by a group of engineers and agriculturalists who sought to promote agricultural engineering as a profession in its own right. So, from the outset, IAgrE has always been an inclusive organisation with grades of membership to cover everyone, from those who are interested in our profession to those qualified and experienced in our sector. And by qualified, IAgrE has taken pride in recognising, perhaps earlier than many and certainly earlier than the big three institutions (civils, electricals and mechanicals), the equal importance of vocational qualifications (technicians) as well as those from the more academic end of the spectrum.

Nothing has changed since then and whilst the number of academic institutions offering degree level qualifications is not as great as it was, against all the odds further education is still strong in our sector in seeking to supply the highly practically qualified technicians that UK plc requires.

What has been missing, until recently, has been industry wide acceptance that the promotion of professionalism is equally as important for technicians as it is for graduates. Now, with the Landbased Technician Accreditation scheme (LTA), we have that acceptance.

And so today, IAgrE can offer professional recognition to an extraordinarily wide range of people working in the application of science, engineering and technology to the land, whether it be for food or industrial production, amenity, or environmental stewardship.

From technicians to graduates, if you have the requisite qualifications and experience, access is available to the engineering registers (EngTech, IEng, CEng). For pretty well all of our experienced members, qualified or not, access to the Chartered Environmental (CEnv) register is also possible. And there is no reason why you should not be recognised as both an engineer and an environmentalist.

So to all of you not registered, think seriously about it and remember that we at the Secretariat are here to advise you on what your options are. A simple phone call or email is all that is needed to start the process.

But what about the costs? I hear you say. When times are hard, there are two bodies of opinion about retaining (or obtaining) professional membership and professional registration.

One is that to remain ahead of the competition, we should retain our professional membership (and registration) to maintain an edge over others who have never bothered.

The other is to cut costs and either to resign or not bother to join (or register) in the first place.

Well, to persuade you not to do the latter, let me share with you some research data carried out late last year. (see *www.managers.org.uk/qualspay*).

The report suggests that the estimated lifetime economic benefit associated with holding professional qualifications and membership of a professional institute is approximately £152,000 in today's money terms. Incidentally, this was found to comprise £81,000 from holding professional qualifications, and £71,000 from holding membership of a professional institution.

Balance that against a potential professional lifetime outlay for membership/registration fees, (I will leave you to do the maths) the return on investment is persuasive to say the least.

Further research, this time by the EC(UK) of its registrants, suggests that 70% of registrants see continuing professional development as being an important part of professionalism and registration. Which brings me to my next topic:

Professionalism and Continuing Professional Development (CPD)

IT is necessary from time to time to remind ourselves of the obligations placed on all practising professionals in order that they may exercise the highest standards of professional judgement and competence relevant to the business environment in which they operate.

Continuing (or continuous) professional (or personal) development is "the systematic maintenance, improvement and broadening of knowledge and skill, and the development of personal qualities necessary for the execution of professional and technical duties throughout the individual's working life."

Continued membership of IAgrE implies compliance with IAgrE's CPD requirements and, indeed, payment of your annual fees acknowledges an ongoing commitment to the maintenance of a CPD programme.

It is your responsibility to record your CPD activities, which should contribute to your professional development and enhance your employability. Evidence of CPD will be expected from members who wish to upgrade their IAgrE membership or register with Engineering Council (UK) and/or the Society for the Environment. IAgrE will, from time to time, wish to see a sample of member's CPD records.

You may choose to register with IAgrE's CPD scheme details of which can be found on the IAgrE website. (*http://www.iagre.org/cpd.shtml*) Downloadable guidance notes and recording forms are available to assist in the maintenance of a CPD portfolio.

Of course what constitutes a CPD event will vary from member to member but readership of *Landwards* and attendance at IAgrE Branch and technical meetings/conferences all count towards acceptable events/activities. IAgrE is not prescriptive about exactly how many CPD hours per annum should be undertaken - again, it will vary according to circumstance.

The IAgrE Education and Training Committee (E&T) has the remit to monitor and report on individual member's CPD submissions. Your CPD submissions are welcomed at any time. Feedback and encouragement is given which we hope members find useful.

We look forward to seeing a flurry of activity as members register with the IAgrE CPD scheme and submit their portfolios. We do have one member who has routinely submitted his portfolio in the form of an interactive CDROM! All submissions, in whatever form, are gratefully received by the E&T Committee.

And yes, I do have a CPD portfolio!

Christopher Whetnall

UK's first Green Jobs fair at EBEC

THE European Commission's study on the impact of renewable energy policy on economic growth and employment in the European Union (Employ-RES), indicates that 2.8 million green jobs will be created by 2020 with the biomass industry being one of the most important for job opportunities.

In response to this, Biofuels Media are launching the UK's First Green Jobs Fair at EBEC in Warwickshire on October 8, 9 and 10 2009. The Green Jobs Fair will attract Universities and Colleges offering courses, Companies and recruitment agencies seeking employees and individuals who are looking for jobs or looking to re-skill themselves. Organisers say it will provide a fantastic opportunity for anybody looking to find or offer work in one of the few growth industries in Europe today.

EBEC, the UK's largest dedicated Bioenergy exhibition and conference takes place on the 8, 9 & 10 October 2009 at Stoneleigh Park, Warwickshire. Up to 10,000 visitors are expected over the 3 days that the show is open. This year the Expo will also open on the Saturday, specifically to cater for the public.

The REA will be holding their annual Bioenergy Conference at EBEC this year. The 4 conference streams to be held over two days will cover all aspects of current and future legislation, market opportunities and challenges.

EBEC 2009 will showcase; Biodiesel; Biogas; Wood Energy / Biomass; Fuel from Waste.

There will also be a Green Car Fair at EBEC.

For more information visit the website at *www.ebec.co.uk*.

David Gregory appointed Red Tractor Chairman

ASSURED Food Standards (AFS), the organisation behind the Red Tractor logo, has appointed David Gregory as its new independent Chairman.

He will join the board at the end of September and take on the role of Chairman from December 1st when Colin Smith will step down from the post at the end of his six-year term.

David brings with him a wealth of experience in food production and consumer-facing initiatives having previously worked with Marks & Spencer for over 25 years, most recently as the Director of Technology for the Food Division of M&S until his retirement earlier this year. He has also held several key industry positions during this period, such as a Governor of the Institute of Food Research and a Governor of the British Nutrition Foundation. He has a proven track record of identifying consumer trends, and leading businesses, and their suppliers, through changing attitudes and delivering successful outcomes.

David Gregory said, "I am very much looking forward to the new challenges this role will bring and applying the broad experience I have gained across the whole food supply chain. It is an extremely exciting time for me to come on board as consumer interest in the logo and what it represents continues to gather momentum."

Views sought on Biocide regulations

VIEWS are being sought on European proposals for a revised regime for regulating the placing on the market and use of biocides.

Biocides include disinfectants, preservatives and pest control agents used to control harmful organisations such as bacteria, fungi and rodents.

The Health and Safety Executive (HSE) has launched a 10-week consultation on the European Commission proposal, which will apply directly in the UK and will eventually revise and replace the current Biocidal Products Directive (BPD) 98/8/EC.

The regulation will also result in the repeal of the Biocidal Products Regulations 2001 and the Biocidal Products Regulations (Northern Ireland) 2001, which transpose the current BPD into UK law.

Judith Hackitt, Chair of HSE, said, "This is an important opportunity to improve a Europe-wide regulatory regime and we are consulting widely to ensure that workable regulations are brought forward, which reflect a common sense and proportionate approach to dealing with the risks posed by biocides."

The new draft regulation proposes several important changes to the current approach to dealing with biocides, including:

- **Extending the scope of the regime to cover treated articles and materials containing biocides**
- **Adopting a Community authorisation scheme for certain types of products**
- **Requiring mandatory data-sharing of some animal testing data**
- **Reducing the burden of data collection requirements**
- **Harmonising fee structures across member states**

A workshop exploring the issues raised by the proposed regulation will be hosted by HSE in September 2009. HSE is seeking views to inform the UK's negotiating position on the proposed regulation, which is scheduled to come into effect on 1 January 2013.

HSE is involved in negotiations on behalf of the UK Government with other member states, the European Commission and the European Parliament. These negotiations will result in the development of a new EU law.

Call for industry standards to be defined

EMPLOYERS and representatives from across the UK's agricultural industry are being invited to define the standards for managers and professional occupations in their industry to ensure its future success.

Lantra, the Sector Skills Council for the environmental and land-based industries, is working to develop and update what are known as National Occupational Standards and is now calling for agricultural businesses to take part in an online consultation to ensure the standards accurately reflect the working practices within the industry.

Lantra's Development Manager for Standards and Qualifications, Liz Pridgeon, said, "National Occupational Standards identify the essential building blocks - the detailed knowledge, understanding, ability and experiences somebody needs to carry out their job effectively.

"These standards have many uses including forming the basis of vocational qualifications, so they need to be completely up-to-date to best reflect how the industry currently operates and to ensure they can be easily understood by everyone."

If you would like to take part in the consultation please visit *www.lantra.co.uk/nos* or call Lantra on 0845 707 8007.

NFU joins FWAG anniversary pledge

THE NFU has thrown its weight behind FWAG's 40th anniversary campaign with President Peter Kendall signing up to one of the '*Do one thing for wildlife*' pledges on his farm in Bedfordshire.

The Farming Wildlife Advisory Group has been a regular visitor to Mr Kendall's arable farm in Eyeworth where local representatives have helped develop a long-term conservation strategy for the farm. This has seen many new hedgerows planted as well as pond restoration, and entering ELS and countryside stewardship schemes.


Peter Kendall

To mark the occasion of FWAG's 40th anniversary Mr Kendall and his brother Richard will be restoring another pond as part of their pledge to attract increased biodiversity to the area and provide breeding and feeding areas for more wildlife including bats and birds.

"Here on our farm my brother Richard and I have met several times with our local FWAG adviser to talk about our ongoing conservation plan for the farm," said Mr Kendall. "I am proud of the work we have undertaken so far.

"FWAG performs an invaluable service on thousands of farms across the country. Supporting the organisation with a pledge in its 40th anniversary year will be really beneficial and I would encourage others to come forward and do the same."

Honours

MEREDYDD David, Principal at Reaseheath College received the OBE in the summer Honours list published in June. He is a Fellow of IAgrE.

Meanwhile, Dick Godwin received his FRAgS at the Royal Show.

Ideas to be shared at Land Technik

Hanover event theme is '*Innovations to meet future challenges*'

THE 67th International Conference LAND.TECHNIK - AgEng 2009, which will take place in Hanover on November 6 and 7, 2009, once again invites participants to share their ideas about the latest results from the areas of product development and research in agricultural engineering.

This year's theme will be '*Innovations to meet future challenges*', and the focus will be on providing the growing global population with food and energy derived from biomass.

This international conference on agricultural engineering, which is staged as a prelude to the AGRITECHNICA trade fair for agricultural machinery, is organised by VDI Wissensforum. The conceptual sponsors are the Max Eyth Society for Agricultural Engineering of the VDI (VDI-MEG) and the European Society of Agricultural Engineers (EurAgEng).

The program, which will include 84 presentations by speakers from industry and research, will showcase the latest developments in tractors, mobile power trains, mobile hydraulics, electronics, software engineering and automation technology. Other focuses will cover navigation, tillage, crop protection and harvesting technology, as well as the logistics and engineering aspects of the utilisation of biomass for bioenergy.

The organisers also expect presentations to be made at the plenary session by Carl-Albrecht Bartmer, President of the German Agricultural Society (DLG) Martin Richenhagen, President and CEO of the AGCO Corporation, USA; and Stefan Schulz from the German Federal Ministry of Food, Agriculture and Consumer Protection, Bonn.

The conference language will be English.

Registration and program at *www.vdi.de/landtechnik-ageng*.

Myserscough award Sportsturf students

MYERSCOUGH College held their presentation of awards ceremonies over two days on Thursday 16th July and Friday 17th July.

The ceremonies see many students presented with outstanding achievement awards, rewarding their efforts over the duration of the course. This year saw nine Sportsturf students given awards as the top students on their courses.

From the BSc (Hons) Turfgrass Science Degree, John Dempsey, from Co Kildare, Ireland, won the Martyn Jones First Prize Award and Michael Taylor, from Bexhill-on-sea, East Sussex, won the BSSS Supported Soil Science Award.

From the FdSc Sportsturf Degree, Matthew Byers, from Co Dublin, Ireland, won the Ernest Jones First Prize Award, Terry Wharton, from Warrington, won the Ransomes Jacobson Turfmech Cup and Paul Woodham, from Birmingham, won the Barenburg Turf Award.

From the National Diploma in Sportsturf, Craig Harrison, from Burnley, won the Rufford Top Dress Cup Academic Award and Fabian Towers, from Chorley, Lancashire, won the TORO Turf Machinery Practical Award.

From the National Certificate in Sports and Amenity Turf Maintenance, Adam Rowberry, from Blackpool, won the Institute of Groundsmanship Cup for the Most Improved Student and Paul Fisher, from Bolton, won the Ransomes Jacobsen Turf Machinery Best Student Award.

The awards recognise the exceptional dedication and commitment that they have put into their studies.

John Dempsey will continue to manage the Curragh Golf Course in Co Kildare as well as undertake a Masters Degree in Plant Science. Michael Taylor has recently been offered a job at The Wisley Golf Club in Ripley, Surrey.

Matthew Byers hopes to progress on to a Masters Degree in Golf Course Architecture. Terry Wharton will continue as Head Greenkeeper at Haydock Park Golf Club. Paul Woodham will progress on to the next level of study at Myerscough College while Craig Harrison will work at Loch Lomond Golf Club over the summer before beginning his Foundation Degree at Myerscough in September.

Adam Rowberry and Paul Fisher are both now looking for a job within the Sportsturf Industry, ideally as football groundsmen.

IAgrE appoints Communications Officer

IAgrE has announced the appointment of Marion King as its part-time communications officer, to raise awareness of the Institution.

Marion was a marketing communications manager with Perkins Engines for over 20 years and also promoted Caterpillar's industrial engine range in Europe.

Marion said, "I am really delighted to be working for the IAgrE. I am looking forward to meeting members, understanding the communication needs of the Institution. My main responsibilities will be to create a responsive and active press office, support *Landwards* and help to develop strong communications with the membership, branch and group networks."

If anyone has suggestions of news items or other material that may be of interest please contact Marion. She can be reached via the Secretariat on *secretary@iagre.org* or on *comms@iagre.org*.

Success of Low Carbon Industrial Strategy will depend on engineering talent

ETB emphasise the scale of the challenge

ENGINEERS are ready to rise to the challenges set out in the recent Low Carbon Industrial Strategy, but more will be needed to deliver on this ambition according to The Engineering and Technology Board (ETB).

Responding to Ministerial announcements, which aim to reduce carbon emissions by 34% by 2020 and to increase business growth and employment in green technologies, the ETB welcomed the announcement but emphasised the scale of the challenge and the need for sustainable and consistent policy direction.

The ETB says the Strategy rightly recognises the need for engineering skills to achieve the UK's low carbon future. The ETB's Engineering UK report demonstrates the scale of this challenge and that nuclear power alone will require 11,500 new entrants into the workforce by 2015, rising to 16,500 depending on retirement rates. There is also a significant skills demand in the renewables sector.

Latest figures put the skills demand for Solar energy at 170,419, Photovoltaic power at 84,612 and Combined Heat and Power at 147,913. Many of these jobs will be at engineering technician level and will need to be supplied by Further Education. For the Further Education system to ensure the right level of supply of skilled engineers for these roles there needs to be certainty that the Government's energy priorities are set for the long term, believe the ETB.

They also say business too will require reassurance that any investments made in renewable energy technology and plant, such as those which the Strategy seeks to encourage through Low Carbon Economic Areas and Forward Commitment Procurement, will not be rendered redundant by successive changes in direction in Government energy policy. By ensuring policy consistency the UK Government will encourage more environmental R&D and help develop UK global leadership in these technologies.

The ETB say it is therefore important that, whilst making allowances for the emergence of new technologies, the Government should commit to these plans for the long term.

Paul Jackson, Chief Executive of the ETB said, "It is good to see this continued commitment to the climate change agenda. These announcements include some ambitious figures for reductions in carbon emissions.

"In order to achieve these we will need more skilled engineers with the relevant skills and further investment in green technology. It is important to recognise the need for consistency and stability in this crucial policy area to secure the future of the UK energy supply and to meet the Government's targets."

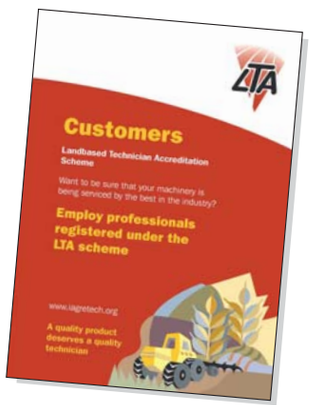
LTA brochure aimed at The Customer

THE Landbased Technician Accreditation scheme (LTA), administered by IAgrE on behalf of the industry, has produced a brochure explaining the benefits of the scheme to The Customer.

The brochure states, "New technology, complex systems, all mean a need for a wider variety of skills and more efficient ways of working - not just for your operators but for the technicians who maintain, repair, and train your staff on the equipment.

"This in turn means you, the customer, need to have confidence in not only the product but in those who are key to the optimal use of one of your major investments - your equipment.

"By ensuring that your kit is being repaired and maintained by highly skilled professionals who have attended specific training related to your equipment, you can be re-assured that you are maximising the return on your investment."



The last Royal Show!

PICTURED above at the final ever Royal Show at Stoneleigh in July are (L-R) IAgrE's Sylvia Harris (*Membership Records & Conference Secretary*), Christopher Whetnall (*Chief Executive and Secretary*), Wendy Hickman (*Membership Secretary*) and Elizabeth Stephens (*Finance Officer and Assistant Secretary*).

AEA organised events taking place in Gloucestershire and Roxburghshire

Innovation & education at Tillage '09

TILLAGE 2009 exhibits this September and October at sites in Gloucestershire and Roxburghshire and organisers say visitors can expect to see the usual high standard of working demonstrations, thanks to a wide range of exhibitors showcasing the very latest in cultivation technology.

The organisers say as the industry's biggest live demonstration site, this event presents a valuable opportunity for growers to find out about new machinery and see it in action.

"Emphasis is on efficiency and controlling the industry's carbon output this year" says AEA services manager Duncan Russell, "so growers will appreciate the wealth of advice on hand from various exhibitors at the event.

"At Tillage, the farmers get to see the machines in action rather than looking at a squeaky clean model on a display stand."

Besides machinery, Tillage offers a range of products and services for arable growers. The timing of the events means that visitors will also benefit from event sponsor De Sangosse's advice and solutions for sustainable and effective slug control, with visitors invited to discuss how to get the best out of their pellet application, with a 'slug control surgery'.

Visitors to the De Sangosse stand can sign up to the National Register of Sprayer Operators, the professional body which offers ongoing training and assessment to members of the agricultural industry. Existing members will be awarded three points for attending the event.

"These Continuing Professional Development (CPD) points are awarded based on performance, content and attendance and this award points to the importance of the Tillage event," said Mr Russell.

The Tillage 2009 event will be held at Down Ampney Airfield, near Cirencester, Gloucestershire on 15th September and at Spylaw, Kelso on 1st October - full details and directions are on the Tillage website at *www.tillage.uk.com.* Entry costs £10/car or £5 single occupancy.

Fellowships awarded at SocEnv AGM Reception

Lord Chris Smith presents Jonathon Porritt with SocEnv Honorary Fellowship

AT the Society for the Environment's (SocEnv) 4th Annual Reception on June 17th, Lord Chris Smith, Chairman of the Environment Agency, presented Jonathon Porritt with an Honorary Fellowship to the Society for the Environment.

The Honorary Fellowship was in recognition of Jonathon's outstanding service to sustainability and also his service to the Society.

Speaking at the event, Jonathon highlighted the strategic importance of Chartered Environmentalists at a time when urgent action is needed to build on the foundations put in place by government to produce a more sustainable society.

"We have a terrible record of leading the world on rhetoric and then failing to deliver in our own backyard;" said Jonathan.

"We are on a long journey to turn an economy from unsustainable economic growth, into genuinely sustainable economic development.

"I'm confident we are moving in the right direction, it's just happening much too slowly."

Jonathon Porritt receiving his HonFSE from Lord Smith

Honorary Fellowship for Colin Challen MP

CHAIRMAN of the All Party Parliamentary Group for Climate Change, Colin Challen MP, was also presented with an Honorary Fellowship at the event.

It was his championing of the concept of Contraction & Convergence, as a framework within which to allocate emissions equitably per capita, which bought him to the attention of the Directors of the Society for the Environment.

By awarding an Honorary Fellowship, SocEnv recognises the valuable contribution that Colin Challen has made to raising awareness of climate change concerns.

Colin Challen MP

Honorary Fellowships for Founder Board Members

ALSO receiving their Honorary Fellowships at the Reception were founder board members of the Society for the Environment: Steve Martin, Robin Welcomme and Jon Prichard.

All three were awarded Honorary Fellowships for their vital contribution to the early development of the Society for the Environment.

Steve Martin, Robin Welcomme & Jon Prichard

New Chairman, John Gregory welcomed

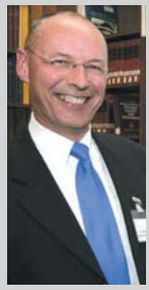
AN exciting new chapter has begun for the Society with the incoming Chairman, John Gregory, formerly Chair of the Registration Authority, Chair of the Management Committee and Vice Chair of SocEnv for the past 2 years. John has worked in fisheries in the UK and overseas for more than thirty years and is currently working for Environment Agency Wales in Cardiff.

Outgoing SocEnv Chairman, Tim Boldero of the Institution of Water Officers, welcomed John into the post saying, "The Board elected John to succeed me as chairman and I know that he will relish the opportunity to continue the journey."

Tim continued, "The Society, in my view, is probably on the threshold of becoming something rather special as we continue to grow and develop an identity which has hardly seen the light of day thus far, but soon will."

Speaking after the Board meeting John said, "SocEnv has a great opportunity to contribute to many environmental problems but none as important as championing efforts to adapt to the changing climate. We can engage with professionals of all disciplines on how we can use our expertise to seek solutions to the problems arising from our unsustainable use of natural resources.

"The Board can bring the expertise of CEnv's to bear on these problems to influence public policy makers in responding to the public's demands that we do more to meet these challenges in a rapidly changing environment. I'm looking forward to turning our attention to these issues whilst at the same time we develop the CEnv qualification into something valued by professionals and employers alike."



John's professional background is in fisheries science and he is a fellow and Vice-President of the Institute of Fisheries Management where he has been instrumental in developing its conferences, communications and CPD scheme.

Education not legislation

IAgrE President, RICHARD ROBINSON argues that product information should be used to encourage safe and sensible machinery operation

FIRSTLY, I have been very pleased to receive responses to some of my previous jottings, they are most welcome, and I really appreciate them.

In our village we have a large mixed, but mainly dairy farm that has to exist with other villagers who have precious little understanding of the pressures on farmers, and modern farmers in particular. Nobody is really interested in what goes on in the field, unless it is smelly or stops them walking their dogs, but use of our narrow roads exposes tractor drivers to public scrutiny.

The move to ever larger tractors with higher top speeds can be very frightening and, whilst we welcome the careful consideration being given to trailer braking, much of this would not be necessary if operators took their civic responsibility more seriously.

We used to supply pick-up hitches for Unimogs and I well remember one farmer who insisted, many years ago, on meeting every possible safety criterion for road use. He was setting a standard many would do well to follow today.

What can we do to educate operators to drive responsibly, work carefully and not upset their neighbours?

I have been run off the road by tractors driving flat out and, even worse, narrowly avoided an accident when the tractor driver was on the phone. From my own experience I recognise that once you are in the cab of a big tractor you think you are king of the road just like, otherwise sensible, people on horseback or, for some unaccountable reason, bike riders.

There is no sense in engineering the finest, safest tractor if it is driven other than safely and with no consideration to other road users.

At the recent and last Royal Show I enquired of Alan Plomb whether the HSE had any information on the numbers of agricultural accidents where mobile phones were involved, and discovered that this information is not available. We have had occasion to stop work on construction sites when machine operators were using phones, much to the chagrin of the contractors who we insisted pay us for the wasted time.

So we have a number of examples where education rather than legislation could solve potential problems - I have no doubt that laws that cannot be enforced are a waste of time and money.

Each year we know that more people will move to the countryside, farms will get bigger and the relationship between farmers and village dwellers will become less harmonious. Farms, thanks mainly to the work of our Institution, are becoming more like industrial operations every day.

Being an engineer does not absolve us from finding ways to educate our customers (even if they only read instruction books when all else fails) and I have been looking for examples of product information which encourage safe, sensible operation.

One of the striking examples was to be found on Bobcat loaders many years ago, the manual was rugged and attached near the driver's seat with a thin wire rope. This meant that you would read it, usually when waiting for the next job and having exhausted the literary challenge of *The Sun* or similar tabloid.

In those days manuals were not so infested with incomprehensible safety warnings and pictograms, so were interesting reading. I also recall manuals supplied with Kidd machines, which were a pleasure to read, and certainly encouraged an active interest in the machine, as well as fostering brand loyalty.

Many manuals today have to be multilingual and are often translated by non users, or succeed in using totally unknown expressions, in every case totally failing in their objective.

We need to find a way of communicating important information in a constructive way. If Apple can somehow deliver an Ipod with hardly any information, yet achieve so much success, surely this isn't an impossible dream?

> "There is no sense in engineering the finest, safest tractor if it is driven other than safely"

CTF: the story so far
on the straight & narrow

TwinTrac CTF beds

Controlled Traffic Farming, which aims to keep field traffic to the least possible amount of permanent traffic lanes, is finding increasing numbers of converts

by
TIM CHAMEN, CEng, CEnv, FIAgrE

ORIGINS

CONTROLLED Traffic Farming is a management technique that aims to keep all field traffic to the least possible area of permanent traffic lanes.

Although it appears to be a new technique, as with most 'new' inventions, it has ancient roots. Anyone growing crops by the fruits of their own labours quickly realises that walking on the soil makes digging more difficult and results in a poor seedbed.

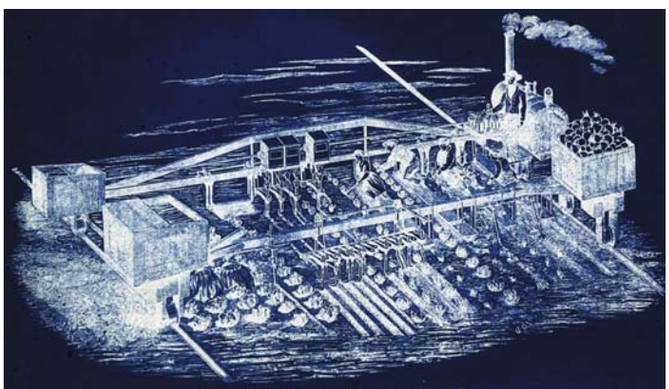
Gardeners therefore have always had a culture of growing in 'non-trafficked' beds. It's only when we don't use our own energy for cultivation that we start to lose touch with the fundamental properties of soils. Even when we were walking on the soil behind horses, we were probably unaware that they too were having a negative impact, as increasingly did the machines now being powered by steam.

Indeed it was in this age of steam that we see the first truly innovative approach to avoiding compaction and improving field access by machines that had become so heavy that they could not be relied upon to traverse the land. Alexander Halkett, in 1858, presented his treatise on '*Guideway Agriculture*' to the Royal Society in London, having built a rail supported gantry on his farm in Kensington, an area now fully enveloped by Greater London.

Winching of implements across fields was also introduced at about this time, again a response to poor traffickability of these heavy machines. Horses however still dominated the agricultural scene until the mid 1930s when the internal combustion engine was introduced to what we would still recognise as the forerunner of today's tractors.

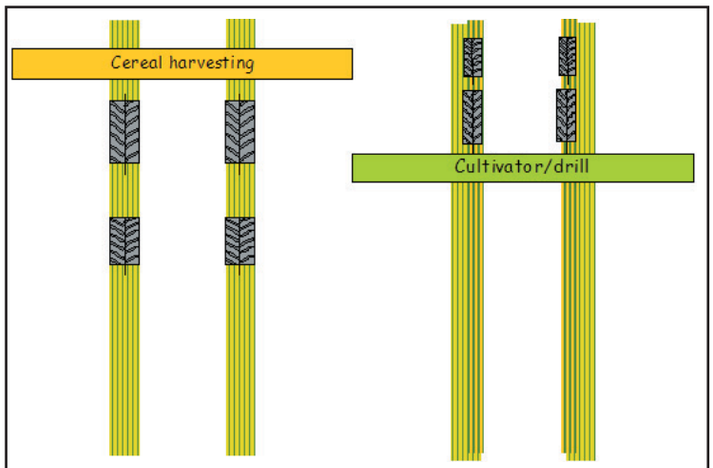
Since then, the story has been one of increasing power and vastly improved running gear. Crucially however this fact has increasingly divorced farmers from an intimate knowledge of the soil and its degradation due to machinery.

I heard a story from a Belgian farm, where the patriarch of the family had listened to his grandsons discussing what tractor they would buy next and what step up in power they would need. The grandfather's astute observation was that the two horses he used for ploughing would be hard pushed to pull a single furrow plough in today's soil conditions, let alone the two furrows that they used to pull in his day!



THE KENSINGTON STEAM CULTIVATOR - Alexander Halkett's steam driven gantry reported in his paper to the Royal Society in 1858. His phrases for accuracy could have been plucked from today's precision farming technologies!

Organic growers have embraced CTF as a way of making life easier and improving profitability



An OutTrac CTF system. The harvester tracks 'outwith' the narrower common track of all other vehicles entering the field. The aim is to maximize the overlap between the two track widths. Other methods can be employed if this is inefficient

PROGRESSION IN THE 21ST CENTURY

REALISATION of the significance of soil damage due to machinery at the end of the 20th century seems to have emanated from Australia, mostly as the result of some enlightened researchers and growers in Queensland.

Farmer uptake of this renewed concern for the soil has been rapid and CTF practices are now used on around 10% of the cropped area of Australia. It is being driven primarily by improvements in soil health that crucially capture more water on this drought prone continent.

It also leads to lower tillage inputs and improved sustainability of no-till systems, which are often thwarted by rutting, particularly when a wet harvest is experienced. A further factor in favour of controlled traffic systems is keeping traffic strictly in the right path with little or no overlap. This has been made infinitely easier by high accuracy, satellite guidance and auto-steer systems that provide repeatable tracking.

With these, Australian farmers also found that overnight their 'paddocks' had mysteriously diminished in size, as indicated by drilled areas!

Field efficiency had suddenly been taken to a new level, reducing fuel consumption, seed, fertilisers and sprays as well as labour inputs.

Australia was also fortunate in that most machinery track widths could be matched to that of the harvester or 'header', because moving wide machines along relatively quiet and wide (including the 'dirt' at the side!) rural roads is not too much of a problem.

Initially, this required farm modifications, but since the late 1990s, tractors with a 3 m track width have increasingly been offered with a full warranty. Tasweld were the first to offer an extended axle on the JCB Fastrac, followed in 2003 by specialist tractors from John Deere and in 2005 by Case.

A MODEL FOR EUROPE

IN Europe, the story is completely different.

In general a 3m track width for all vehicles tends to be impractical, but there are exceptions, mostly in the vegetable industry. In the Netherlands and Denmark, 3.2m track widths are not uncommon, particularly amongst organic growers who have embraced CTF as a way of making life easier and improving the profitability of their businesses.

Although most are still unable to retain permanent tracks from one season to the next, the remaining obstacles of harvesting and ploughing are gradually being eroded, particularly for potatoes and onions. Road travel with these wide machines is tackled variously, some loading tractors on low loaders that allow them to overhang the road edge, while others take a more pragmatic approach, such as the Dutch farmer who said, "I just use the side of the road - both sides"!

Although many of these farmers still suffer bearing and axle problems, others have found dealers who will provide a properly engineered solution that carries full warranty.

But for the majority, extending axles to 3m or more is neither practical nor attractive. For these growers, simple, cost-effective and practical solutions had to be found.

At this point, it is useful to revisit the principles of CTF, which although simple, create some challenges, the greatest of which is adopting a CTF mindset!

For decades, very few grow-

continues over

Example of an OutTrac CTF system operating with an 8m direct drill. The tractor has a track width of 2.2m and the harvester was on 2.7m. This farm confines grain trailers to the headland so matching with these narrower track widths was not required

ers or machinery manufacturers have considered where wheels or tracks should run in terms of soil care. CTF aims to put such thoughts at the forefront, so that loads can be confined to the least possible area of permanent traffic lanes, or put another way - encouraging growers to keep to the straight and narrow!

So, there is nothing set in stone as far as CTF is concerned, growers just make a start with what they have, or put a plan in place to achieve it within normal machinery placement over a number of years. Initially tracked areas might still be quite high, 30-40% for example, but traditional random traffic systems probably track nearly 100% of fields every season and as the topsoil takes at least 3 years to recover, they are in effect, tracking about 300% of the area.

Most European CTF systems (and there are about 15,000ha being converted to CTF in 2009) rely on two track widths, one for grain harvesters and a second narrower one for all other equipment.

Vegetable systems may however have just one narrow track, multiples of which match up with all the other equipment in the system. Here, as with other CTF systems, the key to keeping tracked areas low is to have large diameter, high quality but as narrow tyres as possible.

Some systems have two implement widths, but most run all equipment at a common span, examples of which are 10m, 8m and 5.79m. And yes, 5.79 m is the width of this TwinTrac system: near enough is not good enough - small errors soon mount up with multiple passes across a field and when you have a guidance system capable of keeping vehicles in the same place to within ± 2 cm, year in year out, you have to get it right! And getting it right is becoming relatively easy, but includes choosing the correct guidance system.

This must be based on a 'real time kinematic' (RTK) correction signal which is the only system that automatically keeps vehicles tracking in exactly the same place year after year. This is not the cheapest option, but costs are coming down and the benefits are huge, even if growers aren't considering CTF.

Farmers who check the distance between their chemical application tramlines are sometimes shocked to find they are a whole 5% out (1.8m in 36m).

But, even if they are better than this, will there be labour available to replace existing skilled drill operators in the future? Most are concerned that there will not.

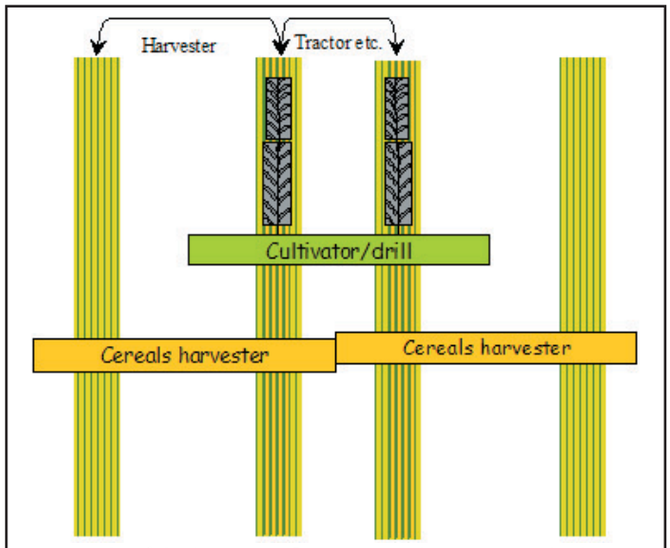
CHALLENGES OF CTF MORE THAN OFFSET BY THE BENEFITS

THERE are undoubtedly challenges associated with CTF, but those who have converted or are converting, anticipate up to 50% saving in fuel and associated labour costs, as well as a significant reduction in machinery investment, including smaller perhaps higher specification tractors rather than larger standard vehicles

Yield benefits are also anticipated with research suggesting a 10-20% increase most years on completely non-trafficked areas and variable returns from cropped tracks depending on management. A CTF system with a tracked area of 25% should provide a net field yield increase of about 9%.

For those wanting to do their bit for the environment (and maybe there will be no choice about this in the future!), CTF also delivers, and in a big way. Aside from the significant fuel saving, the non-trafficked soil develops a healthier and more sustainable structure. This provides greater porosity, improved water infiltration and drainage, and as a result, much reduced potential for soil erosion.

Greater soil porosity has other benefits. Estimates suggest that if the porosity of surrounding soils in Worcestershire, UK had been 10% higher, the flash floods of 2007 (*see Landwards, Summer 2009, p7*) may have been averted. Research has also consistently indicated that in farmed croplands, this extra 10% is quite feasible with CTF.



Principle of the TwinTrac CTF system. The tractor and other vehicles straddle the harvester passes. Implement width is the addition of the two track widths.
(System attributed to L.E. Shaw, farmer member of CTF Europe)

Aeration of the soil is also significant in terms of greenhouse gases. Lack of air in critical conditions together with greater than 60% water filled pore space tends to exacerbate nitrous oxide and methane emissions, both gases being far more damaging to the atmosphere than carbon dioxide.

There are now some who question the validity of carbon sequestration through conservation tillage techniques that do not also address added nitrous oxide emissions (*Smith & Conen, 2004*), mostly associated with soil compaction. Without addressing this issue, the net result might be a negative effect on the environment. Nitrous oxide is a gaseous loss of nitrogen fertiliser, so it is also a direct loss to the farmer.

In summary, CTF is not a new technique but is coming of age, assisted by highly accurate and repeatable vehicle positioning systems and the realisation that soil functions and health are being impaired by repeated passes of heavy machinery.

Customised systems for European and similar infrastructure conditions are being developed and require the minimum amount of re-engineering of equipment and vehicles. Moves are also being made to introduce an element of standardisation that will allow manufacturers to offer solutions that integrate more closely with the relatively modest needs of CTF.

Growers wishing to find out more about CTF can visit **www.ctfeurope.eu** where an annual membership is also offered. This assists farmers in the conversion process and puts them in touch with like-minded people who are also pursuing the 'straight and narrow'!

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. . . non-trafficked soil develops a healthier and more sustainable structure

A pearl of a green idea

Oysters are helping manufacturer bpi.industrial to prevent the emission of volatile organic compounds at its Ardeer factory

BPI.industrial, like all of the divisions that make up BPI (British Polythene Industries) plc, has always had a staunch commitment to minimising its environmental impact.

However, recently the manufacturer's eco-conscious approach has taken a whole new and innovative twist.

The business, which supplies heavy-duty printed packaging to customers in the building and construction, animal feed, horticultural and pharmaceutical markets is now using oysters to eliminate the volatile organic compounds (VOCs) it releases into the atmosphere.

A by-product of the printing process, VOCs react with oxygen to create bad, lower level ozone, which damages vegetation and certain man-made materials, whilst simultaneously contributing to the greenhouse effect.

Some manufacturers control these VOC emissions using a thermal oxidising unit but due to their high energy usage and carbon footprint, bpi.industrial was keen to find an altogether greener alternative. As a result, its Ardeer production site on the west coast of Scotland currently employs a prototype, oyster-based bio-filter.

The principle behind this filter is quite simple. VOCs emitted from bpi.industrial's printing process are pumped into a series of large containers half filled with oysters before being forced through these mollusc beds with the help of a water spray. Harmless bacteria which naturally live on the oyster shells then feed on the VOCs, allowing cleansed air to be exhausted to the atmosphere.

Previously, bpi.industrial had used mussels in the filter. These fulfiled the same function but it was discovered after an extended period of time, that the mussel shells would begin to collapse causing a reduction in performance.

Using oysters has not only overcome this issue, but has also doubled the efficiency of the system due to their much larger surface area and thicker bodies.

Speaking of the innovative eco-benefiting technology, Roy McAdoo, Commercial Director at bpi.industrial, said, "bpi.industrial has always sought new ways to enhance the green credentials of our business and to give our customers the reassurance of using products manufactured with maximum sustainability uppermost in mind.

"The use of the bio-filter at our Ardeer site, complete with mussels and more recently oysters, demonstrates just how far we are willing to go in the pursuit of this important goal."

bpi.industrial's Ardeer production site on the west coast of Scotland

New agriculture health & safety initiative

what does it mean to you?

ALAN PLOM, Head of Safety Section, Agriculture & Food Sector explains

DID you realise that on average, nearly one person is killed each week on a farm and the industry has a fatal incident rate about three times higher than in construction*? (*Incidence rates are based on the number of people working in each industry rather than the number of deaths each year.*)

HSE's new 'Agriculture Revisited' initiative aims to drive down the very high number of fatalities and major injuries in the farming industry.

New methods are being tried to raise awareness and reduce the risk of accidents. You may have seen the various adverts in *Farmers Weekly* or even have received one of the 'Promise Knots' used to promote the '*Make The Promise - Come Home Safe*' campaign earlier in the year? This campaign is based on direct marketing to farmers and their families and following the successful response, is being followed by the next phase, '*Keep the Promise*'.

As part of IAgrE's support for this important initiative the new IAgrE Student Safety Award was announced in the last issue of *Landwards*. This Award has been established to encourage innovation and demonstration of good practice in safe design or operation of equipment by students, as part of their project work. Colleges are encouraged to identify and nominate suitable individuals, through the IAgrE Awards nominations.

HSE also introduced an award for safe design of machinery as part of the RASE Medals scheme. This was presented to Case IH for innovative design features incorporated in the Axial Flow combine.

In presenting the Award to Charles Blessley (Case IH Marketing Director) at the Royal Show, in my role as HSE's Head of Safety for the Agriculture Sector, I pointed out that many serious and fatal injuries are occur during maintenance and clearing blockages in agricultural machines and manufacturers can significantly reduce the risks by designing out hazards.

I was particularly pleased to present the Award on behalf of HSE as it was 30 years ago to the day that I joined HSE as an Agricultural Inspector. It was also ironic that one of the first serious accidents I investigated involved a farmer who lost his arm when he was clearing a blockage in a combine and his son started the machine, not knowing his father was still working on it.

THE Axial Flow's 'Power Plus' transmission has significantly reduced the number of mechanical drive systems and the inherent risk that they create from both routine and in-field maintenance operations and many users cited the benefits of simpler and lower daily maintenance requirements.

The manufacturer has also provided an engineering solution to the problem of clearing blockages in the threshing mechanism. By utilising the hydraulic component of the transmission to the main rotor, the operator is able to 'de-slug' the machine from the cab should a blockage occur, thus removing the risks that can arise from having to gain physical access and clear material manually.

Alan Plom with Case IH's Charles Blessley, together with Mrs Adel MacNicol, RASE President - taken at the RASE Awards ceremony during the Royal Show

HSE is also working closely with the AEA, BAGMA and others to reduce risks and influence farmers through the 'Equipment Supply Chain'. This includes updating and developing guidance for designers, suppliers and users, and will be made freely available via the web. (This might offer a development opportunity for someone?)

HSE are also working with colleges to improve the content of the syllabus and training courses, and ultimately, the competence of new entrants to the industry, in all areas. IAgrE is liaising with HSE to see if the new 'H&S Management' VQs could fit within the structure of the LTA scheme.

These VQ were originally developed for farming and have been accredited at Levels 2, 3 and 4, so cover the range from new entrant/student, through supervisors to senior managers. Alan sees these qualifications as enabling a wide range of land-based companies to demonstrate competence (to assess and manage risks) at all levels within their organisation.

They will also help to raise awareness of key hazards and risks avoidance and promote good practice amongst engineers and technicians. This will in turn help them to protect themselves when working on site as well as enable them to alert farmers to safer practices.

HSE and the various organisations are also looking for more effective ways to promote 'safe machine/safe operator' messages, eg through new exhibits and displays at shows and other events (eg dealer open days).

If you would like further information on this initiative, or would like to discuss any other H&S issue, please contact Alan Plom at *alan.plom@hse.gsi.gov.uk*

Food 2030

DEFRA has set up an online discussion site to collect opinions on how we face up to the challenges facing the global food system

DEFRA has launched a website which allows anyone to join in the discussion on the challenges and other issues affecting the global food system. It is an ideal opportunity for agricultural engineers to lend their voice to the debate, as ultimately, as some believe, it will be down to them to solve the world's food (and climate) problems.

Background

THE Cabinet Office Strategy Unit published '*Food Matters: towards a strategy for the 21st century*' in July 2008, a report on the state of food policy in the UK. The report set four strategic objectives for Government on food, which are to secure:

- Fair prices, choice, access to food and food security through open and competitive markets;
- Continuous improvement in the safety of food;
- The changes needed to deliver a transition to healthier diets; and
- A more environmentally sustainable food chain.

The report also recommended that Government develops an overarching plan to make the food system more economically, environmentally and socially sustainable. It recommended that the plan should be developed openly and collaboratively, through discussions with stakeholders.

This plan is now being developed. Food 2030 is a partnership between Defra, the Food Standards Agency, the Department of Health and stakeholders. Stakeholders are a very important part of this process that will define the understanding of food sustainability by setting goals for the future of the food system.

Get involved

AT the Food 2030 site you will find a range of things to spark debate about the future of food. These are:

- *The Food System of 2030* – describing what the food system should look like in 2030;
- *Discussion topics* on 9 key issues affecting or affected by the way we produce and consume food;
- *Action plan* – DEFRA's early thoughts on how their goal for 2030 can be reached; and
- *Background and context* – more information on this work and how it links with other work Government is doing on food.

Add your voice to the discussion at http://sandbox.defra.gov.uk/food2030/

Each page on the site has questions for you to consider, which can be answered by posting your comments in an adjacent box. DEFRA is encouraging visitors to:

- Pose your own questions;
- Make other comments that are not directly related to the questions; and
- Respond to comments made by other contributors.

CHRISTOPHER Whetnall, IAgrE CEO, believes it's vital that agricultural engineers make themselves heard in this process.

He said, "It needs to be stressed that a lack of funding support for UK based research is key. There is currently an inadequate focus on a strategic view for education. We need to educate for the long term survival of the planet - not to fill too many university places for the sake of it.

"Food, as well as education and health, may well be too important to leave to politicians alone. The direct involvement of well informed professional scientists and engineers is essential from strategic planning through to delivery."

IAgrE made a submission along these lines, to the Parliamentary Inquiry into the UK's Role in Tackling the Challenge of Global Food Security until 2050, in March this year. . .

Agricultural engineering, judiciously applied, makes a critical contribution to optimising food production capacity and security in any situation, irrespective of the political or social environment, through its impact on the underlying resources of soil, water, nutrients and energy along with all the processes involved across the chain.

Whilst agricultural engineering provides the power that has the potential to damage sensitive systems equally it is the means by which production systems are restored, maintained and enhanced.

The correct application of agricultural engineering can:

- Conserve and enhance the basic resources of food production i.e. soil and water
- Improve the efficiency of production
- Minimise waste, pollution and other forms of environmental damage.
- Strengthen the reliability of and confidence in the food chain.

In the decades between 1950 and 1980 the UK had a leading position in the innovation, development and application of agricultural engineering driven by the need for increased self sufficiency in food supplies. Many of the outcomes were transferred to applications across the globe.

As the pressures to achieve food security reduced this capability has declined markedly along with government support. Today agricultural engineering research, innovation, and knowledge transfer is barely visible in the UK and the related manufacturing capacity is much depleted.

We urge the All Party Parliamentary Group to consider the need for some restoration of this capability in a form that is visible, accessible, globally relevant and adequately resourced. This should include the integration of all aspects: education, training, research, application and manufacture.

Specification, design and evaluation of an automated agrochemical traceability system

A novel prototype to identify and weigh agrochemicals as they are loaded into a crop sprayer has been desgined and tested

by

SVEN PEETS

TRACEABILITY through all the stakeholders in food production is an issue of increasing importance, being specifically required by the regulations for food safety and quality (EC 178/2002), and for compliance with environmental protection.

The agricultural market perceives a need for systems and technologies to automate the currently manual process of producing records of agrochemical inputs loaded into a spraying machine.

A novel prototype, Automated Agrochemical Traceability System (AACTS) to identify and weigh agrochemicals as they are loaded into a crop sprayer, has been designed, constructed, fitted to a machine and evaluated with commercial operators. The functional blocks of the system are a 13.56 MHz RFID reader, 1.4 litre self cleaning weighing funnel mounted on a 3 kg load cell, a user interface with a screen and three user command buttons (Yes, No, Back), and a progress bar made of 8 coloured LED's (green, amber, red).

The system is able to trace individual agrochemical containers, associate the product identity with national agrochemical databases, quantify the required amount of product, assist the sprayer operator and control workflow, generate records of sprayer inputs and interoperate with (recommending extensions to) task management standards as set out in ISO 11783-10.

The evaluation of the quantity weighing has demonstrated that with such a system, the principal noise component is in the range of 33-83 Hz, induced by the operating tractor engine. A combined 3 Hz low pass digital filter with a second stage rolling mean of 5 values improves performance to allow a practical resolution of 1 gram (engine switched off) to 3.6 grams (sprayer fully operational) with a response appropriate to suit human reaction time. This is a significant

The prototype Automated Agrochemical Traceability System (AACTS)

improvement over the ±10 grams of the work of Watts (2004).

An experiment with 10 sprayer operators has proved that in the majority of cases (92%) an accuracy equal or better than ±5% is achieved regardless of dispensing speed. The dispensed amounts (100.36% of target) and recorded (100.16%) are in accordance with prescribed values (100%; LSD(5%) 2.166%), where amounts dispensed by manual methods (92.61%) differ significantly from prescribed and recorded value (100%).

The AACTS delivers a statistically similar work rate (211.8 s/task) as manual method (201.3 s/task; Dt = 10.5 s/task; LSD(5%) 28.2 s/task) in combined loading and recording cycle. Considering only the loading time (181.2 s/task) of manual method, the difference is 30.6 s/task (LSD(5%) 30.1 s/task).

In practice this difference is believed to be marginal compared to the time required to load the water, random external events during the spraying session and in time moving, checking and storing paper records.

The integrated weighing funnel concept is another significant improvement over previous work. Using this system, the mean duration of measuring per container for all tasks (34.0 s) is approximately half the time (68.5 s) achieved by Watts (2004). The AACTS was rated to be safer than the manual method regarding operator health and safety and risk of spillage. All operators who evaluated the AACTS were interested in purchasing such a system.

The work confirmed that an RFID system was a robust and reliable method for the automated identification of agrochemical containers. A format has been proposed as a standard for data held on RFID tag applied to agrochemical containers. This uniquely identifies single packs whilst associating the product type with existing national agrochemical databases. The proposed format allows verification of authenticity and current chemical registration, while being operable on-sprayer without live access to an international item level database.


Quantity system

The AACTS follows ISO 11783 task management logic where a job is defined in a prepared electronic task file. It is proposed to extend the ISO 11783-10 task file to integrate the records provided by AACTS by handling the tank loads as individual products resulting from loading task and allocating them to spraying tasks.

It is recommended to produce a production prototype following the design methodology, analysis techniques and performance drivers presented in this work and develop the features of user interface and records of tank content into software for ISO 11783-10 cabin task controller to deliver business benefits to the farming industry. The results with RFID encourage the adoption of RFID labelling of agrochemical containers.

The engineering development of the Automated Agrochemical Traceability System (AACTS) in this work has been carried out in parallel with the PhD study by Gasparin (2009) who focused on the analysis of the factors related to the market requirements and farmer's perception of the AACTS. The research programs were funded by AGCO Corporation, Douglas Bomford Trust and Patchwork Technology Ltd.

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SUPERVISORS

Prof. R. J. Godwin
Dr. D. W. K. Blackburn

The AACTS was rated to be safer than the manual method regarding operator health & safety and risk of spillage

The first stage of treatment is dosing with an Aluminium sulphate coagulant and a Polyelectrolyte flocculant aid to the inflow, plus sulphuric acid to control its pH level, which affects the optimality of flocc formation

Inclined-plate Lamellas increase water treatment efficiency

In order to meet drinking water requirements a treatment plant in Carlise has undertaken upgrades to its sludge settlement methods

by
STEVE MINETT, PhD

CARLISLE, a city of around 70,000 on the north west coast of England, identified a short fall in drinking water supply in 1998.

There followed a six-year period of consultation, environmental studies, planning and design. During this period of preparation, over 100 interest groups were notified and meetings were held with more than 30 organisations, before construction started in 2004.

The scheme involved a £16million upgrading of the existing water treatment plant at Cumwhinton both to increase capacity and to reduce the risk of crytospordium.

The flow for the plant is taken predominately by pumped extraction from the nearby Eden River, supplemented by gravity flow from the Castle Carrock Storage Reservoir. The plant has a designed maximum flow of 27 MLD (mega litres per day), a minimum of 12 MLD and an average flow of 20 MLD.

Matt Allason, Process Controller at the Cumwhinton plant, explains that, "Currently, the proportion of our inflow is 5 parts from the river to one from the reservoir. Of course, the reservoir water has the advantage that there's no cost to pump it. On the other hand, it tends to have higher colour from the peaty soils around the reservoir, so, from a quality point of view, I'd prefer river water only."

At the raw water inlet the flow is monitored for; pH, colour, turbidity and conductivity. The first stage of treatment is dosing with an Aluminium sulphate coagulant and a Polyelectrolyte flocculant aid to the inflow, plus sulphuric acid to control its pH level. Matt comments that, "pH is probably the most critical variable for efficient treatment - it affects the optimality of the flocc formation. The pH of our raw water here varies seasonally from 7 to 9. We dose the sulphuric acid to bring this down to a pH of 6.1 to 6.6; we aim for the higher figure in cooler weather."

LAMELLAS

AN inlet chamber splits the flow into 3 streams. (This is part of the general 'process redundancy' at the plant, which also includes duplication of key items of equipment, such as pumps and monitors.) The three-stream flow moves on to a flocculator stage and then into Johnson Lamella separators, mounted in concrete tanks.

These Lamella's were manufactured by the Swedish company, Nordic Water Products, and operate as follows: the main structure is a series of parallel plates, tilted backwards, at an angle of 55%, from the direction of flow. (This 'inclined' configuration of the plates means that every square meter of tank area can provide 10 square meters of settling area, thus requiring only 10% of land necessary for a traditional settlement tank.)

The units have a patented flow control system, which ensures that the flow is distrib-

uted upward and uniformly across the plate assembly. This works by creating a pressure drop in collection channels above the plates, which ensures that the full area of each plate is covered by the flow. As the water flows upward, the floccs and other solids in the water settle on the inclined plates and slide down into the bottom of the tank.

SLUDGE SCRAPERS IN TANK BOTTOM

THE sludge which accumulates at the bottom of the tanks is removed by Zickert bottom scrapers, also provided by Nordic Water.

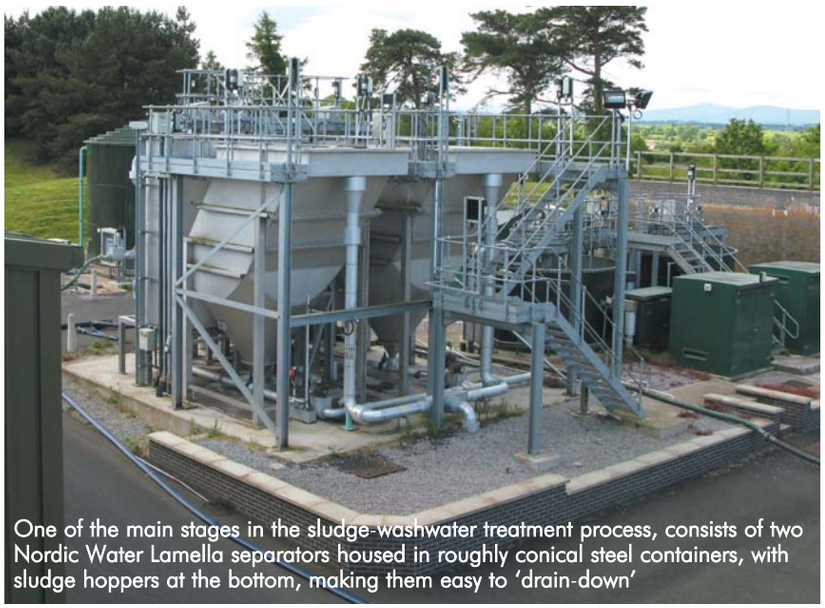
These work via the principle of the forward and return movement of wedge-shaped, concave sections: the concave side of the scraper bars acts like a bulldozer to push the sludge forward in the direction of a sludge pit, during a slow forward movement. The scraper bars are attached to flat steel, 'drawing' bars, which rest on polyethylene slides.

The scraper movement is generated by an electric motor which in turn is connected to the drawing bars via a lever system. On the return movement (which is twice as fast) the wedge-shaped section of the scraper slides under the sludge layer, without disturbing the sedimentation process.

Cleaning out the wash-water Lamellas is a lot easier and less labour-intensive, due to the sludge hoppers at the bottom: it is very quick and easy to hose down the unit and drain out all the waste

From the Lamellas, the clarified water moves onto rapid gravity, dual media sand filters and then to a contact tank where chlorine gas is dosed as a disinfection stage. Sodium Hydroxide is added to raise the final water pH to 7.5.

After final measurements of levels of pH, chlorine and other monitoring to ensure compliance with all legal requirements, the main flow is supplied by gravity to the city of Carlisle and surrounds, while a smaller flow is pumped to the community of Caldbeck.



One of the main stages in the sludge-washwater treatment process, consists of two Nordic Water Lamella separators housed in roughly conical steel containers, with sludge hoppers at the bottom, making them easy to 'drain-down'

SLUDGE TREATMENT

THE sludge removed from the raw water Lamellas (plus the washwater from the rapid gravity filters) is directed to a second, sludge disposal treatment process at the plant.

This is designed to dewater and thicken the sludge to the maximum extent. Water extracted from this process is fed back to the raw water inflow to the plant, while the thickened sludge accumulates in two holding tanks awaiting road transport from the plant to be further de-watered.

One of the main stages in this second, sludge-wash-water treatment process, consists of two additional Nordic Water Lamella separators, though in this case housed in roughly conical steel containers, with sludge hopers at the bottom, and thus having no need for the bottom scrapers required in the rectangular concrete tanks of the raw water Lamellas.

Matt describes these units as, "Superb! The great advantage of the Lamella units is that they are so much easier to operate and maintain than the settlement equipment we had here at Cumwhinton before the upgrade in 2004.

"The main problem was the regular 'drain-down' which we carry out approximately every three months. We take the units out of the process drain them out and wash away accumulated sludge and other debris. If we don't do this the process performance will decline."

EASIER CLEANING & RESTARTING

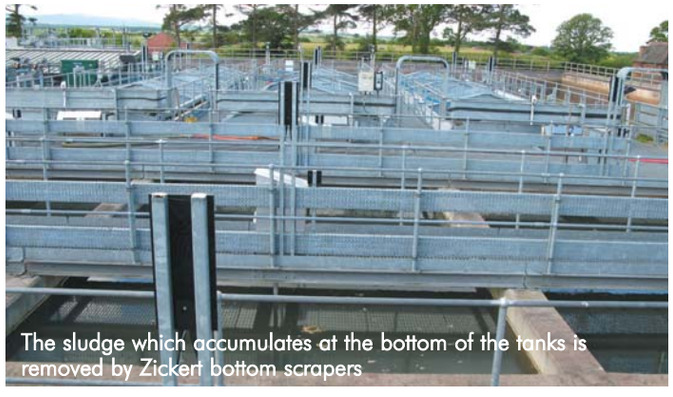
PRIOR to the upgrade, raw water settlement employed a method known as 'Upward-Flow, Flat-Bottom, Flocc-Blanket Clarification'.

Here, following flocculation, the inflow entered a rectangular tank from a series of inlets at the bottom. This upward flow lead to the formation of a flocc blanket suspended below the surface of the water. The blanket moved gradually, over a separating wall, into a sludge pit at the far end of the tank.

"The big problem with this system was restarting it after a drain-down: the sludge had to reform before the system was effective again and this could take a very long time - anything from two days to two months. With the Lamellas, restarting is reliably achieved in, at most, a matter of hours.

"In addition, the actual cleaning out process is a lot easier and less labour-intensive, especially in the wash-water Lamellas, where thanks to the sludge hoppers at the bottom, it's very quick and easy to hose down the unit and drain all the waste out at the bottom."

As to the other advantages of the Lamellas, Matt says, "It's a simpler process, there are fewer moving parts and the Lamellas have improved the settlement performance. Overall we are very happy with the conversion to the lamella process."



The sludge which accumulates at the bottom of the tanks is removed by Zickert bottom scrapers

Direct and to the point

Local farmers were given the opportunity to learn more about agronomy at an event hosted by RECO recently

Easydrill working

AN 'Agronomy Day' was held at Askham Bryan College in July, which was attended by around 30 local farmers and agricultural machinery dealers. They were all there to increase their understanding of agronomy, the relationship with direct drilling and the effects and benefits on soil structure and yield.

Frederic Thomas - a highly regarded French Agronomist and editor of *TCS* (Minimum Tillage magazine published in France) - spoke about his years of experimentation and experience with direct drilling, giving an in-depth look into the benefits that the practice has had on his own farm in the Sologne region of France, but also land on which he has advised farmers about the cultivation system.

The attendees are shown the soil profile by Frederic Thomas

Frederic farms 450 acres of land in the Sologne region of France. A renowned consultant of conservation practices, he is often involved in discussion groups or seminars with farmers interested in changing their cultivation systems. After over 10 years of experience of working with poor quality soils, results of his work with minimum tillage and direct drilling has convinced him that Conservation Agriculture is the future, and the economical figures are upholding his beliefs.

Frederic advised that by converting to a direct drilling system, farmers can benefit from huge fuel savings as direct drilling uses on average 50% less fuel than a plough based system, and 25% less than a minimum-tillage system. In addition to fuel cost savings, farmers can benefit from reduced fertiliser costs as the direct drilling system will result in retention of nitrogen levels in the soil, which in some cases has reduced the level of chemical fertiliser required by up to 50%.

Also presenting during the day was Laurent Martinez. Laurent qualified as an Agronomic Engineer and Oenologist in Toulouse in 1999. He now works as the Export Area Manager for

Agronutrition - a company that specialises in developing and distributing products for crops, vineyards, orchards and vegetables.

The company is interested in conserving the environment and researches new ways for farmers to apply fertiliser whilst avoiding waste. Laurent has travelled all over the world advising agricultural networks and carrying out numerous nutrition field trials and experiments

He informed visitors about how localised fertilisation can increase the agronomical and economical efficiency of fertiliser.

After a buffet lunch, visitors travelled to one of the College farms where Frederic carried out a soil profile analysis and advised farmers of how to carry out similar profiles on their own farms.

The day was wrapped up with a demonstration of the Sulky Easydrill to highlight its versatility in varied environments, where it was used to drill barley into the pasture field in both direct and min-till conditions.

Formed in 1936, Sulky today, employs 160 people and describes itself as an innovating, independent company specialising in the manufacturing of seed drills and fertiliser spreaders. The factory is located in Brittany, France over an area of 13 000 m^2. The company are proud that the set-up of their modern production facility enables efficiency, quality and respect towards the environment.

Reco Sales Director, John Sadler, said "The day was a great success; we received many positive comments about the speakers and also raised a lot of interest in the Easydrill. We hope to hold many more events similar to this in the future around the UK to help inform farmers about relevant topics of interest to them".

All visitors were given an information pack containing a variety of materials including an in-depth min-till guide produced by Sulky.

Copies of this are still available - call RECO on 01480 455151 to request a free copy.

The Easydrill demonstrated its abillity to work in varied environments in both direct and min-till conditions

LAURENT MARTINEZ
Application rates

THE Agronutrition Company has been working closely with Sulky with the new Reco Sulky Fertisem drill which can apply fertiliser, Slug pellets or a second seed type into the soil at a position and depth set and adjusted by the drill operator whilst drilling the main crop.

Using their specialist Nitrogen fertiliser product experience has shown that for maximum benefit the plant roots need to be within 7.5 cms of the fertiliser to be used.

In France the average fertiliser application rate for this product is 18 kg/ha.

An application rate of more than 30 kg/ha would result in waste - 10 kg/ha would give no benefit.

FREDERIC THOMAS
Direct drilling reduces costs

THE main speaker Frederic Thomas, a highly regarded French Agronomist and editor of TCS (Minimum Tillage magazine) published in France, spoke with passion for 3 hours.

He advised that the most common reason for looking to convert to a Direct drilling system was to reduce costs. The most obvious saving being fuel used per hectare. He quoted the following approximate figures for each system:

- **Direct drilling uses approx. 49 litres/ha**
- **Minimum tillage system uses approx.75 litres/ha**
- **Plough based system uses approx. 108 litres/ha**

Other savings may not be quite so obvious but, were just as significant if not more so.

Crops grown in rotation, as combined crops and in conjunction with winter cover crops, if used properly, can eventually result in the amount of Nitrogen fertiliser that needs to be applied being halved from current levels. Cover crops also recycle P and K and other nutrients. In contrast, bare soils left over winter where, particularly in wet winters, high levels of Nitrogen can be leached from the soil.

To benefit fully from direct drilling the soil has to be made to be the top priority. Dependent upon existing soil condition the benefits and advantages of system change will not be achieved over the short term, a full commitment to the system has to be made. You will then be in a position to reap the rewards.

On Frederick's own farm it has taken 10 years of Direct drilling and cropping experiments to see a really big change in the soil's structure.

Today, the amount of organic material in the soil has built up giving an excellent soil quality. Further, over time, the soil structure has changed from being a layered structure (typical of a minimum tillage or plough based system) to a vertical structure that gives good moisture retention and encourages root penetration.

Frederic's experiences have shown that cover crops need to provide a minimum of 4 to 5 tons of dry matter to be effective. Frederic's aim is to achieve 10 tons of cover crop bio mass before Wheat. Cover crops that are drilled direct mean that there is no re-growth of weeds and other seeds.

Moisture retention is also high. Various methods of clearing cover crops were also discussed.


Frederic Thomas

Success through MBA Scholarship

L-R: Mark Hall, John Beckett and Richard Milligan-Manby enjoy graduation day

The MBA Agri-Farm Scholarship has just had its first graduates and are now on the look out for new applicants. KATE-ANNE KELLY explains.

IN today's economic climate, there is no question that the agricultural business environment is becoming increasingly challenging by the day.

More then ever before, agricultural skills are simply not enough for farm businesses to survive in the long term. However, latest reform of the CAP as well as volatile commodity markets are providing opportunities but only for businesses possessing the right business management skills and techniques to take advantage.

Now thanks to a pioneering scholarship scheme, farmers and agricultural professionals are being given the opportunity to learn valuable business skills resulting in an MBA from the Cranfield School of Management, one of the world's leading business schools.

The driving force behind the MBA Agri-farm scholarship is John Beckett, former Chairman of Genus and founder of Belton Cheese whose experience as a farmer and business man convinced him that the agricultural industry needs strong business leaders with the right skills and expertise.

According to Mr.Beckett "Although the principal of British farming is excellent, there is a lack of business acumen, the aim of this MBA is to give people that knowledge."

With this objective in mind, the MBA Agrifarm Charitable Fund was set up four years ago by Genus and John Beckett to demonstrate the importance of agriculture adopting the very best business management practices. The goal is for members of the industry to be equipped with the correct skills required to deal efficiently with food chain suppliers and customers, as well as having the vision and capability to discover and exploit new business opportunities.

The thinking behind the scheme is that by creating the opportunity to study for a Masters in Business Administration degree at a leading UK business school, it expresses serious intent for business management excellence in agriculture.

The scholarship provides recipients with a substantial contribution toward the cost of studying. To date three students have taken part in the scholarship and in June two of these formally graduated and were presented with their MBA and the third will graduate early next year.

One of those MBA students is Mark Hall, 36 who decided to study on a full time basis when he started the course in October 2007. Farming with his father in Bedfordshire, Mark was working for a leading agricultural consultancy and previously had a degree in agriculture and land management from the Royal Agricultural College.

"One of my main concerns before undertaking the course was the cost, however through the scholarship fund the financial burden was greatly reduced," said Mark.

"I applied for the MBA scholarship scheme because I wanted to enhance my skill set and learn all about strategic business planning at one of the world's leading business schools. It also provided an opportunity to gain expertise from individuals working within a variety of industries.

"In addition, I felt I had hit a career ceiling and as an ambitious person saw this as an excellent opportunity to strengthen my CV" THE MBA which covers a wide range of subjects such as finance and accounting, micro and macro economics, supply chain and operations and marketing, is in no doubt hard work but also comes with great benefits which Mark is testament to.

"Completing the MBA meant working within a pressured environment to meet tight deadlines and consistently producing a good standard of work. It also allowed me to make plenty of new friends. There were 138 students on my course coming from 32 different countries.

"My career path has taken a new course, I now work as a business analyst for Syngenta, looking at the performance of the UK business and challenging specific areas of business strategy within the UK and Europe, a job I would never have secured without the MBA."

The MBA Agri-Farm Scholarship can be completed on a fulltime intensive one-year basis or part time spread over two years where students attend four residential week periods and fourteen weekends (all day Friday and Saturday) on alternate weekends during term time.

Dan Powell, 43 from the Cotswolds is currently doing the MBA on a part-time basis. "I saw the scholarship as a tremendous opportunity to find out what is going on in the business world outside agriculture. It is all too easy to get very introspective in farming, and I felt that it would be very useful to have a better understanding of business in the outside world, both to help me with my own business, in my role as a representative of farmer members of Openfield Co-op and member of the Farmers Club, and possibly with any future opportunities or roles.

"Once I graduate, early next year, I plan to improve my own business and look for opportunities to collaborate with other farmers and consumers to change our industry's focus from price sensitivity to security and quality of supply."

Applications are now being sought with a closing date of November so if you are interested or would like to find out more information about the scholarship scheme then please visit *www.som.cranfield.ac.uk* or call 01234 754812.

In addition, companies who would like to lend their backing and provide sponsorship to the charity would mean that more individuals within the industry could gain the business skills provided through the MBA.

To pledge your support, please contact John Beckett at *johnbeckett@beltoncheese.co.uk*

sitting COMFOR-tably?

The COMFOR project is solving common problems of occupational health and performance in European forest operations - JIM CHRISTIE explains

THE COMFOR project was funded by the EU Commission with the objective of transforming the latest scientific, engineering, and medical advances in sit on forest machine operation into ergonomic practice.

By researching and developing working systems that take full advantage of these advances, Small and Medium Enterprises (SMEs) i.e. forestry contractors, will be able to measure, identify and reduce the costs associated with illnesses, accidents and early retirements on medical grounds.

The working system they have devised takes the form of a 'Tool-kit'. To ensure its practicality the project group members were not only drawn from the scientific disciplines but also from the 'sharp end' and included forest machine owners, operators and contractors from across Europe including, Germany, Finland, Sweden, Netherlands, Poland, Romania, Bulgaria, Ireland and the United Kingdom.

To further ensure its practicality the Tool-kit was designed to allow the required changes to be introduced progressively as opportunity allows. The adoption of each Tool in the kit will bring its own benefits to both the operators and the SME, but to obtain maximum benefit it is advised that all the tools should be implemented.

Having thoroughly tested the efficacy of these tools the COMFOR project team held a series of workshops throughout the Community teaching trainers so that SMEs can adopt the improved working methods.

COMFOR'S TOOL-KIT

THE Tools are essentially Microsoft Office Excel spread sheets into which can be inserted the SME's pertinent values in place of the default figures given.

The Tools also contain the forms necessary for the collection of the data and advice on how they should be used.

The first 'Tool' logs the existing state of the operators health and performance. This information is then used in the second tool that calculates the possible cost-benefits that can be generated by adopting the COMFOR system.

Tool three, also known as the WORX Tool helps to monitor any concerns that may arise within the workplace as a result of the changes in work methods and conditions. This tool must be handled with due sensitivity for reasons of confidentiality and guidelines are given as how best this can be done. Suggestions are also offered as how best to remedy any problems that are identified.

Tools four and five help to assess the skill level of the contractor and operators respectively and identify any aspect of their performance that may require training.

Tools six and seven both deal with the ergonomics of the machines but exclusively deal with adjustments made by the operator without the use of tools. It also suggests simple exercise regimes that can be carried out without any real disruption to productivity.

The tool kit can be downloaded from *http://www.enfe.net/comforopen/comfor.htm*

COMFOR website at www.enfe.net/comforopen/comfor.htm

WHY NOW IS A GOOD TIME TO ADOPT COMFOR

THE timber industry must survive this financial recession so that it can be available to offer a cost-effective supply chain for the construction and manufacturing industries who, we are told by the politicians and financial experts, will be in the vanguard of the recovery.

When that begins, the concrete and steel industries will sweep back into action, and so must the timber industry. To do this we need to take a long hard look at where our industry was immediately prior to the recession and use this slack time to address what was one of our biggest problems, namely the shortage of machine operators.

But the timber Industry must also change its problem solving methods from 'fire fighting' to 'fire prevention' and accept that training new operators must be supplemented with ensuring that the new operators have a secure and rewarding career that allows for a normal social and family life, as well as a safer working life, through to the normal retirement age.

Was it a dry summer?

GEOFFREY WAKEHAM considers how urban areas can have sufficient supplies of water and the rural landscapes are not deprived of such a fundamental resource

"ALMOST half of the population of England and Wales live in areas of water stress where supply might not keep up with demand . . . many rivers, estuaries and aquifers are being drained to such a low level that there is a danger to wild life" - *Sunday Telegraph 8-12-2008*.

IT seems unfair that the urban masses, some 72% of the population, should receive less than 14% of the annual rainfall in England and as individuals only have a twentieth of the land area to spread their sewage.

In the past, they obtained their water from local streams and rivers or else wells in their locality. The sewage went into the streets and eventually back into the rivers or ground water with the hope that by the time they needed the water it had been cleaned in the process of flowing down stream or back into their well.

At some stage in recent history, they noted that the water in the headwaters of streams and that collected by the rural landowners under their land was less polluted than their current supply system. Reservoirs were built in Wales for Birmingham. Water was pumped out of the chalk in Kent and rivers were diverted and diminished round the country.

They also found ways of disposing of their sewage by running it out to sea or by processing it and returning clean water to the river systems. Any remaining solids were spread on agricultural land. The cesspit and night soil collection services were replaced by piped sewage systems and the rivers were cleaned up along their lower reaches.

No longer is raw sewage pumped into the sea but ever-increasing quantities of sludge, with many contaminants, now have to be disposed of on rural land.

It also seems unfair that the remaining rural population should have so much space and so much water. In the past, rural water supply and sewage disposal depended largely on digging a hole or spreading the sewage on the vegetable patch.

However, times have changed, with sewage joining that of our urban cousins and our water being drained off to satisfy the needs of industry, commerce and town dwellers. The ever-increasing demand for water has led to the drowning of valleys, the lowering of water tables beyond the reach of summer crops and the loss of streams and ponds.

Farming systems have been compromised by the need to keep nitrogen out of ground water and rivers. Spraying systems and materials are being banned and withdrawn. Dropping a chemical container cap on the ground in Little Snodgrass makes a routine visit to a hospital in Ashford, Birmingham or Carlisle even more dangerous than it already is.

SO what can be done?

How can we ensure that the towns and industries have sufficient supplies of water and the rural landscapes are not deprived of such a fundamental resource for the production of food and raw materials?

It has been proposed that the development of a water grid would help in the redistribution of water supplies from areas of plenty to those of shortage. The distances and cost involved continues to make this an unlikely answer until the water deficit becomes life threatening.

Wastage within the existing distribution system is estimated to be 1,300 billion litres per annum, approx 33% of all the water used. While water is free for the taking and the cost of maintaining the distribution system is high there will be less than maximum effort put into reducing losses.

Reducing consumption in areas of high demand but low supply is a regularly used option. When supplies become critical then mandatory restrictions on water use come into play. This is an unsatisfactory form of discrimination because of one's postcode.

Meters can reduce consumption but because water is free at source, one feels many water suppliers only fit meters to increase their income.

Maybe we need to go back to roman times where many houses had impluviums and cisterns to catch and store rainwater. A

> “. . wastage with the existing system is estimated to be 1,300bn litres per annum”

modern equivalent would cost some £6,000 to £8,000 to install and could supply half the home’s water where drinking quality is not required as well as reducing the wastewater entering the drains by a significant amount.

Currently, unless the water companies reduced one’s water/drainage charges by one quarter, a reasonable amount under the circumstances, this is not a viable option. People in the South East however, may see having access to all the water they need, throughout the year, worth paying extra for.

The final option is to make the water falling onto or flowing through any area the property of the landowner, give the owner rights similar to mineral rights.

The value of that water would be made up of the quality of the water and loss of income to the owners due to the extraction of that water. If the companies can detect minute quantities of agricultural chemicals in drinking water, I am sure they can fingerprint the water back to its source. This way, water companies would ensure efficient use of water and landowners could afford to minimise contamination of that water by their farming practices.

IN the longer term, there is in fact no shortage of water.

There is no shortage of water in the Namibian Desert or the Australian Outback. Any more water would put at risk the ecosystems long established in these areas. Increased water leads to the encroachment on to the land by animals and plants that displace the current inhabitants.

Natural selection due to culling of unsuitable life by the worst drought years has developed a landscape that functions and thrives. Mankind has a problem because there are too many people concentrated into too small a landmass unwilling to adapt to the available resources as individuals or as societies.

There is a need to adapt the way we live and, as throughout human history, for engineering systems to be developed that allow us to live the sophisticated life style we have become accustomed too within the resources available.

GM production no answer to climate change

The dire Met Office forecast of Britain’s future climate highlights the glaring weaknesses in Britain’s food supply, claims GrassRoots, a group campaigning for agricultural reform

THE new Met Office report on Climate Projections has forecast that Britain is in for blisteringly hot summers and more flash flooding. But recent changes to UK farming look set to make the results far worse than they would have been under traditional mixed farming policies.

Thanks mainly to EU farm subsidies the UK food supply is now mainly based on grain crops, half of which are then fed to animals. Under Britain’s former farming system most of those animals would have been grazed on pasture rather than fed on grain.

Because land under pasture absorbs large amounts of moisture it protects communities from flood damage while safeguarding food supplies in times of drought. Land converted to crop growing increases the risk of food shortages and catastrophic flood damage.

Like the international banking system, Britain’s food production is now vulnerable to catastrophic collapse, particularly as severe weather events become more frequent.

Grassroots is urging the Government to commission more research on the role of pasture farming in protecting Britain’s environment and countryside from the results of climate change. Too many resources are currently being devoted to the development of GM crops to mitigate the effects of climate change, says the group. Yet a report last year involving more than 400 scientists concluded that GM crops were unlikely to play a major role in meeting the world’s increased demand for food.

“Pasture farming is an established technology - no new breakthroughs are needed,” said food and farming campaigner Graham Harvey, a co-founder of GrassRoots.

“Animals grazing pasture can produce copious amounts of food without chemical fertilizers, sprays or fossil fuels. At the same time they increase the level of carbon and organic material stored in the soil. As well as reducing the greenhouse gas load on the atmosphere, this carbon-rich soil holds moisture.

“We don’t need GM crops to protect us against the effects of climate change. Our grasslands will do it today if we start to manage them properly. And as a bonus they’ll give us foods that are a lot more healthy than the meat and dairy foods we now eat, produced as they are from animals fed on grain.”

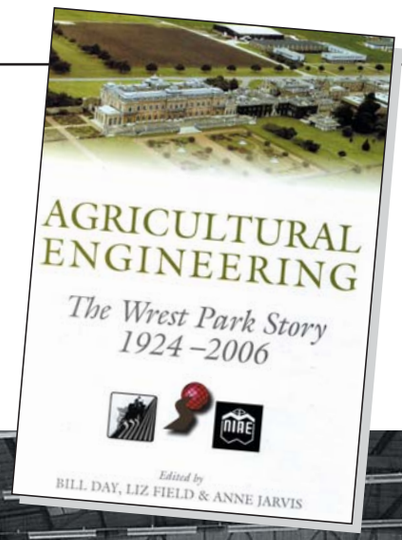
Grassroots views the current media obsession with the methane emissions of grazing animals as a ‘distraction’. Their role in hastening climate change has almost certainly been exaggerated. But the media preoccupation with them obscures the real benefits grassland and grazing animals can bring to our food supply and environment.

Book review

Agricultural Engineering - The Wrest Park Story 1924 - 2006

Edited by Bill Day, Liz Field & Anne Jarvis

Reviewed by DONALD BOWLER, AMIAgrE



WHILST Wrest Park or just the term Silsoe will be familiar to most readers of *Landwards*, it was, during the heyday of the NIAE, and still is, within the farming community, synonymous with innovation in agricultural engineering and mechanisation.

The NIAE was the National Institute of Agricultural Engineering and for 82 years it was at the forefront of developing agricultural mechanisation in the UK and much of the developing world. It was famous for its development of tractor rollover protection, with early tests being carried out on the Dunstable Downs, just to see what actually happens when a tractor starts to roll over.

Life started out in Oxford as the Institute of Agricultural Engineering (IAE) and it moved to Askham Bryan in 1942 in recognition of the importance of its work to the war effort, becoming the NIAE.

After the war Askham Bryan was needed for its original purpose of agricultural education as the Yorkshire Institute of Agriculture and so the NIAE went to its final home - the beautiful parkland of Wrest Park in Silsoe, Bedfordshire. It was here that the NIAE flourished along with the increase in post war mechanisation and UK production of tractors and agricultural machinery.

All manner of equipment was developed at Silsoe and testing of manufacturers' machinery was also carried out to give an independent assessment to potential purchasers.

It wasn't just big machines that were tested, there was a lot of work done on housing and transport of livestock to ensure minimum stress levels and agronomy was an important aspect of the work as well. Many will remember the mobile tractor test equipment that was used for performance testing of tractors, and the single wheel testers for measuring tyre performance, the final incarnation being based on a County Forward-Control tractor.

The down turn in the UK agricultural machinery manufacturing meant that the NIAE had to reassess its priorities to matters such as more effective application of pesticides and odour assessment. Much work was also done on helping the food industry to better understand how things like baked beans and peas flowed.

Lack of Government investment meant that Silsoe had to fund more of its work from external sources, which in itself is no bad thing; unfortunately Government did not see fit to provide the additional funding that would enable Silsoe to continue its work in some of its more fundamental research.

The NIAE helped the UK feed itself during and after the war, but then Governments became disinterested in any degree of UK home self sufficiency in food production and slowly strangled Silsoe Research Institute (SRI), as the NIAE had become in 1991. That though is now all history, but for a fascinating glimpse into the world of Agricultural Engineering research and inventions over more than 80 years this book is a must.

If you want to see where the NIAE was based then you can look round the grounds and the Grade 1 listed house which are now maintained by English Heritage. Happily there is still some Agricultural and Food related research taking place at the park, so all is not lost.

Prototype Poultry Harvester, which was reported in the *Wall Street Journal*

1950s Single Wheel tester - the 1980s County based one used a similar crawler trach arrangement for measuring actual distance travelled

Agricultural Engineering - The Wrest Park Story 1924 - 2006
Edited by Bill Day, Liz Field & Anne Jarvis
160 Pages, hard-back, copiously illustrated with period B&W and Colour photos.
Published by Elsevier on behalf of IAgrE.
Available from Institution of Agricultural Engineers, Price £20 plus P&P of £5 in UK, £8 EU and £10 ROW.
See *http://www.iagre.org/wrestparkbook.shtml*
Or contact the Secretariat on +44 (0) 1525 861096

MEMBERSHIP ENQUIRIES
IAgrE
Barton Road
Silsoe, Bedford MK45 4FH
Telephone 44 (0) 1525 861096
Fax: 44 (0) 1525 861660
e-mail: secretary@iagre.org
www.iagre.org

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MEMBERSHIP MATTERS

BRANCH REPORTS

SOUTHERN BRANCH

Visit to Sparsholt College

WALL to wall sunshine and scorching heat greeted members in the South when they had a interesting and enjoyable July day out taking in Sparsholt College in the morning and the Army Air Museum at Middle Wallop in the afternoon.

Some of the group were visiting Sparsholt for the first time in fifty years and were hugely impressed by how it had evolved from a farm institute covering solely agricultural subjects to a major establishment providing training in large range of subjects across the land based area.

We were driven in two buses to the various college venues and given a full explanation by college lecturer Nigel McPherson and colleagues. Among the wide variety of courses available are Engineering Maintenance, Animal Management and Veterinary Nursing, Arboriculture, Forestry and Woodland Management, Equine Studies, Horticultural and Fisheries Studies.

Group photo of the Southern Branch's visit to Sparsholt College on 1st July

We were impressed by the award winning pig unit and the Equine Centre which is to be used for acclimatisation and training by one of the visiting Olympic Equine teams during the 2012 Olympics. The engineering unit boast a Jaguar car presented for training purposes by the manufacturer. We ended the morning by visiting the horticultural unit site of BBC Radio 4 *Gardeners' Question Time* broadcast

After lunch at the college we went to the Army Air Museum where the Chief Executive gave a presentation about the work of the museum before we viewed the exhibits mostly from 1914-18 and 1939-45 war era. A good day had by all and suggestions made about the venue for next year's visit.

Denis Welstead

NORTHERN IRELAND BRANCH - AGM

Diversification exploits of an agricultural engineer

OUR Vice President, Andrew Newbold, was guest speaker at the 2009 AGM and technical meeting in Cookstown, Co Tyrone of the Northern Ireland Branch.

As the basis for his career aspirations he described growing up on his parents' livestock farm in Cumbria before studying to obtain his honours degree in agricultural engineering at Harper Adams University College. As a student he worked during the summers for an agricultural contractor and after College set up his own contract operation.

After 3 years he decided to change direction and obtained a health and safety qualification from Aston University. He used this in conjunction with his existing training, skills and practical experience to offer a service in assisting machinery importers from outside the EU to comply with local health and safety requirements.

These tended to be importers of specialist equipment, such as grain driers, who were not familiar with the detailed regulations in the UK. He guided them through the formal processes within the framework of the Essential Health and Safety Requirements (EHSRs) which need to be satisfied before the machine in question can carry the CE mark.

He also works in support of crop sprayer manufacturers and operators around the standards of the National Register of Sprayer Operators and the National Sprayer Testing Scheme including the production of a magazine on the subject.

In conjunction with a civil engineer colleague, he set up Newmac health and safety consultancy assisting employers to comply with their statutory obligations in workplaces. A major part of this work involves the Construction Design and Management (CDM) Regulations which impose risk assessment, training and other technical standards on those carrying out construction projects. Andrew is also using his technical knowledge and experience when acting as an expert witness in formal Court proceedings.

He is also managing director of Fusion Events, organising specialist shows and demonstrations such as the recent Precision Farming Event 2009 at Peterborough. This brought together the growing range of satellite GPS guidance systems for machine control and field / yield mapping. Other events include the Agricultural Buildings Show at Preston as well as the forthcoming separate autumn UK Grain and Farm Energy Events at Newark.

A further related recent business venture is the hiring of mobile marquees for both exhibition and private functions.

For our Branch, this all demonstrated the ingenuity and versatility of an agricultural engineer in the seeking out and implementation of technical and business opportunities in a changing world.

The stimulating talk was followed by an enjoyable and interesting question / answer session.

The Northern Ireland Branch is well established with active members meeting regularly. A further programme of technical meetings is being arranged for 2009-10. Gary Connolly is our new chairman and he can be contacted at *Gary.Connolly@esbi.ie*

Terence Chambers

WEST MIDLANDS BRANCH

Summer Visit to Combe Mill

NO tractors this time but an old steam-powered sawmill actually in steam!

A number of Pioneering Technology enthusiasts took advantage of the opportunity to visit Combe Mill on one of its rare days in steam.

Combe Mill is on the Blenheim Palace Estate and is the original power house for the sawmill. The Combe Mill Society is a wonderful example of what a group of enthusiasts can achieve when an historical piece of machinery is discovered.

There had been many years of neglect as the original water wheel was superseded first by steam power and then by electricity. The original beam engine dating from 1852 ceased working in 1912 but, after its discovery, it was brought back to working order in 1972. Steam is currently being produced by a conventional oil-fired boiler, the original coal-fired boiler being in need of repair.

The engine drives a line shaft which feeds power to a range of metal working

machines and also to the pattern making floor above. There were several other small engines in steam and the photograph shows David Clare, who is also a Branch Member, explaining how the engine works, to William Waddilove and a group of visitors.

This particular engine was built by Sissons in 1956 for the teaching of steam engine theory and practice for use in the engineering department at Oxford University. David Clare is one of the Society members who specialises in these small steam engines.

The visit was arranged by the West Midlands Branch Committee after a recommendation by David Clare. Approximately 12 members and friends attended, despite the heavy rain showers, and visitors were able to purchase souvenirs produced in the blacksmith's shop or by the wood turning group.

Excellent home-made cakes were available in the café and, after being suitably refreshed, members split up to visit other various local museums, including the Oxford Bus Museum, Cogges Farm Museum, the Oxfordshire Museum in Witney and the Bygones Museum at Claydon, near Banbury.

- **Combe Mill**
  www.combemill.org
- **Oxford Bus Museum**
  www.oxfordbusmuseum.org.uk
- **Cogges Farm Museum**
  www.cogges.org
- **Oxfordshire Museum**
  www.tomocc.org.uk

William Waddilove

HETG

Visit to the RHS Glasshouse

IN 2004 the Royal Horticultural Society, having long established a worldwide reputation as a body promoting the science and practice of Horticulture, celebrated its Bicentenary.

At the centre of this celebration has been its forward-looking initiative of building their new Glasshouse at the Society's 'flagship' garden, formally opened by Her Majesty the Queen in June 2007.

Nick Morgan, Superintendent of Glass at Wisley, who has been closely associated with the Glasshouse project since its inception, was our guide for the visit. He pointed out that the previous glasshouse used for the Wisley exotics display had been in need of updating and this project provided a prime opportunity to build a new state-of-the-art greenhouse which would also serve as a major architectural feature and focal point for the gardens.

The Glasshouse is located on a 3.15ha landscaped site which includes a reservoir lake with a maximum capacity of approximately 5.9M litres. Adjoining the Glasshouse is a further extensive suite of standard commercial-type glasshouses providing a reserve of plant material, a teaching garden and other educational accommodation. The budget for the complete project was of the order of £7.5M while site preparation, construction, landscaping and planting took place over a period of 6 years.

Specialists in unique and non-standard glasshouses, Smiemans Projecten b.v., were the manufacturers of the Glasshouse. They were also the main contractors to the RHS responsible for its erection together with the installation and commissioning of all its services (environmental computer, heating, ventilation, shading, fogging and irrigation systems).

The RHS Glasshouse

The principal features of this curvilinear roofed Glasshouse are summarised as follows.

- **Dimensions:**
  Area covered - 3098m2; height (highest point) - 12.65m; lowest gutter - 3.34m.
- **Glass:**
  Main roofing panes (3.65m x 2.00m) made of tempered, 'heat-soaked', 4mm glass; approximate total weight of glass in the structure - 85 tonnes.
- **Frame:**
  Main supporting members - galvanised, powder-coated steel; roof frame - aluminum.
- **Construction:**
  Prefabricated modular sections.

OF particular note are the glass roofing panes which were all curved on-site in the glazing process. The use of these extra-large glass panes reduces the number of glazing bars maximising daylight penetration ensuring not less than 80 percent transmission.

The Glasshouse is home to approximately 5000 plant species, cultivars and hybrids displayed in three climatic zones (moist temperate, dry temperate and tropical) landscaped to contain a number of niche habitats ranging from swamp to cliff-face, which has opened up the opportunity for displaying many of the more highly adapted species.

These climatic zones are grouped around a central rock feature made of fiberglass reinforced concrete formed in moulds made from natural rock profiles. This imposing and highly realistic feature houses a cavern display demonstrating the principal ways in

which root-zone function supports plant life and also sports an imposing water cascade together with an elevated walkway which provides an excellent viewing platform - particularly effective in the tropical zone.

Central to the three climatic zones is the Glasshouse environmental computer, linked to an on-site weather station and a series of wet-and-dry bulb aspirated screen sensors monitoring the climatic conditions within the zones. Running a series of programs maintaining each zone at its specific optimal climatic regime, the computer has a further key role of maximising the whole system's energy efficiency performance. All this is achieved by the interplay between the heating system, roof vents, shading/thermal screens and fogging (in the tropical zone).

Heating is provided by two gas-fired, 1.12 Mw hot water boilers which also supply heating for the other adjoining buildings. In the Glasshouse, heat is transferred partly via a high-speed hot water pipeline system running peripherally at low level and partly by a series of fan-operated radial heaters mounted high in the curved ridges. The primary advantage of this combined system lies in its ability to minimise energy wasting vertical temperature stratification. Additionally, these downdraft fans can create useful internal air movement when the ridge ventilators are closed.

For ventilation under higher ambient temperature conditions the rack-and-pinion operated roof vents, provide an opening of up to 33 percent of the roof area. The Glasshouse roofing is also provided with retractable roller shading-screens which are drawn automatically under high solar radiation conditions.

These fit in immediately below the glass, conveniently following the framework curvature, and when not in use are rolled away under the roof-supporting members minimising daylight interference. Overnight they also serve as energy saving thermal screens, being drawn automatically, when ambient temperatures fall.

The tropical zone fogging system is of the high pressure type producing 'atomised' water from nozzles set in pipelines high in the roof space. It incorporates a reverse osmosis filter to remove mineral salts in its water supply together with an in-line UV sterilisation system; the latter to comply with anti-legionnella legislation. Lighting throughout the Glasshouse is provided by energy efficient metal halide lamps housed in sealed, high-bay luminairs which also possess good colour rendering characteristics.

Apart from its drive for energy efficiency the RHS also has a strong mandate for water conservation which has led to a rainwater harvesting scheme for collecting water from the roofing of the Glasshouse and its adjoining buildings (a total area of approximately 7000m^2) and stored separately. Being free of dissolved mineral salts, this rainwater is ideal for watering the Glasshouse plants: a task which is exclusively in the hands of the RHS students as a part of their training programme.

The reservoir lake, providing irrigation water for the adjoining landscaped area, is supplied mainly

Nick Morgan points out a feature in the dry, temperate zone

by abstraction from the nearby River Wey but also occasionally from the Wisley borehole source. The only significant use of mains water supply is in the fogging system.

For the RHS a key consideration regarding any major capital investment in a project such as the Glasshouse is what they would consider its useful life will be. So far as the basic structure is concerned, Nick Morgan said he would expect a period of at least 50 years to lapse before any extensive refurbishment might be required. Its potential useful life-span, however, should be much longer than this and we have several good examples around Britain to support this.

A further limiting factor will be that of its inherent capability of accommodating advances in environmental technology but, leaving technological and architectural aspects aside, we were convinced that both for the public in general and RHS students in particular, on its value purely as an educational investment it has every reason to be amply justified

John Weir

Contacts for further information

The Glasshouse
Smiemans Projecten b.v., Bovendijk 29, 2295 RV Kwintsheul, The Netherlands.
Tel: +31 (0) 174-63800
E-mail: info@smiemansprojecten.com

The environmental computer system
Hortimax Ltd., 42 Stockbridge Rd., Elloughton, Brough, N. Humberside HU15 1HN.
Tel: 01482 668676
Web: www.hortimax.com

The fan heat exchangers
Nivola b.v., Postbus 552,2160 AN Lisse, Heereweg 23a, 2161 AC Lisse, The Netherlands.
Tel: +31 (0) 0252 466 400
E-mail: nivola@nivola.nl

The fogging system
Reldair b.v., Edisonstraat 37, 6604 BT Wijchen, The Netherlands.
Tel: +31 (0) 24 645 67 00
E-mail: info@reldair.com

OBITUARY

Rodney Pragnell, MIAgrE

1937 - 2009

EAST Midland Branch members regret the passing of Rodney, a past stalwart of the Branch for many years.

Many would not realise that Rodney was born in Bow, therefore he was actually a Cockney. Early in his life he moved to West London where he learned about farming and joined the Young Farmers Club, Yes that is what West London could do then!

He then attended Shutleworth Agricultural College in Bedfordshire and joined MAFF in Truro in 1964. At that time MAFF were responsible for Farm Safety and he served in that role moving to Kings Lynn. HSE was created and Rodney moved to Nottingham in 1979 where he became a Senior Inspector and then a Principal Inspector. He managed the Agricultural team of Inspectors there.

In the East Midlands he served quietly but professionally as Branch Secretary and Chairman. He retired from HSE in 1997 and never lost his interest in Agriculture.

In his retirement he enjoyed his grandchildren and followed his interests of local stories and phrases.

He was Chairman of his local Gardening Club and was active as a Probus member becoming Chairman there for a period.

W D Basford, FIAgrE

Membership changes

Admissions

A warm welcome to the following new members:

Fellow

Llewellyn D (Shropshire)

Member

Kynaston D (Cheshire)

Associate Member

Ansley L M (Scotland)
Birkinshaw M R (Yorkshire)
Brownless S (Gloucestershire)
Chambers D (Lincolnshire)
Coupland J D (North Lincolnshire)
Davey S M (Devon)
Day P F (Hampshire)
Gardner J (Suffolk)
Gill N R (Cornwall)
Gillett S J (Lincolnshire)
Griffiths R (Cheshire)
Hannah P (Bedfordshire)
Hogg A J (Scotland)
Jones R (Northamptonshire)
Knight C N L (Yorkshire)
Little M A (Scotland)
Maynard-Griffin G A (Somerset)
Martin A J (Devon)
Montgomerie G N (Scotland)
Murr A (Bedfordshire)
Norris M J (Somerset)
Northcott J (Devon)
Oldroyd J W (Wiltshire)
Probert G (Gloucestershire)
Read J O (IoW)
Roberts D (Flintshire)
Robinson J (Suffolk)
Robinson J W (North Yorkshire)
Saunders G J Scotland)
Simpson D (Scotland)
Terry D J (West Sussex)
Tremlett T J (West Sussex)
Welham D (Suffolk)
Wright M D (East Yorkshire)

Associate

Pratt M J (Lincs)
Bird D (North Yorkshire)

Student

Askham Bryan

Bake S J
Bedford E C W
Dixon R
Edwards B
Ellis R
Glover R D
Hastie T R
Houseman B
Jones R
Lofthouse I
Medforth W R
Miller A O L
Mitchell C F W
Parker B T
Quinn J
Richens I
Smith W
Vickers S

Barony College

Adamson G R
Bell M S
Benoit C M
Bigham J
Brown J W
Carruthers A
Cartner B
Coulthard J
Dickson C J
Dunlop J J
Ellis A J
Fisher R
Gray S
Hardy P
Henderson J
Little J
Longstaff C
Lyon R
MacTaggart C J
Manderson CJ
McIntyre C
McKechnie R
McSherry A B
Patterson S
Patterson S
Rankine C
Reid S C
Ritchie J A
Shennan J
Sloan D J
Stranach M G A
Walby E M
Warwick J
Whincup M D C
Wilson A
Wright J S
Young J I

Brooksby Melton College

Almey S
Barmby M
Birkle S A
Brown L A
Crone P
Haddon M
Harvey H L
Inchley M
Isherwood S S
Lattimore P
McBurney D J A
Meek A J
Packford M
Peirson D
Spratling E
Stanford B
Winfieldale P

Cranfield University

Hunter H E F

Omagh College

Bayne D
Conn J
Gormley D
Hopper K
McCarroll R
McGuire C
Mulholland C
Scott G
Sloane D

Riseholm College

Geeson J
Grover S
Harley L
Holdich J
Howsam T
Martin M
Irons B
Newton J
Robson B E
Simons A
Wilmot C M

Tralee Institute of Technology

Brennan D
Crawley B
Dolan B
Halvey D
Long R
Morrow R
Murphy J
Murphy M
O'Brien C J
O'Callaghan J
O'Connor A J
O'Connor B
O'Connor C
O'Shea G
O'Sullivan J
Shanahan M
Smyth C
Whiteford R

Re-admissions

Craven RJ (Derbyshire)

Deaths

Pragnell R E

Transfers

Associate Member

Adams F (Shropshire)

Associate

Mullins A D (Ireland)

Engineering Council

Congratulations to the following members who have qualified as Chartered Engineer, and Engineering Technician, entitling them to use the designatory letters CEng and EngTech after their names.

Registrations

CEng

Queen G T

EngTech

Ansley L M
Birkinshaw M R
Brownless S
Chambers D
Coupland J D
Davey S M
Day P F
Gardner J D
Gill N R
Gillett S J
Hogg A J
Jones R
Knight C N L
Little M A
Martin A J
Maynard-Griffin G A
Montgomerie G N
Norris M J
Northcott J
Oldroyd J W
Probert G
Robinson J
Robinson J W
Saunders G J
Simpson D
Terry D J
Tremlett T J
Welham D
Wright M D

Academic members

Askham Bryan College
Askham Bryan
York
YO23 3FR

Barony College
Parkgate
Dumfries
DG1 3NE

Bicton College
East Budleigh
Budleigh Salterton
Devon
EX9 7BY

Cranfield University
Cranfield
Bedfordshire
MK43 0AL

Greenmount Campus
CAFRE
22 Greenmount Road
Antrim
Northern Ireland
BT41 4PU

Harper Adams University College
Newport
Shropshire
TF10 8NB

Institute of Technology Tralee
Clash
Tralee
Co Kerry
Ireland

Long service certificates

Name	*Grade*	*Date of anniversay*
50 years		
Kenneth Charles **Baxter**	MIAgrE	18 Aug 2009
Lewis Gerald **Campbell**	CEng, FIAgrE	18 Aug 2009
Desmond Armstrong **Telford**	MIAgrE	18 Aug 2009
Ronald James **Roberts**	IEng, MIAgrE	15 Sept 2009
35 years		
John Joseph **Madigan**	IEng, MIAgrE	1 Aug 2009
Peter Ian **Ross**	IEng, MIAgrE	1 Aug 2009
John Llewelyn **McIver**	MIAgrE	2 Aug 2009
Timothy John Ross **Havard**	EngTech, MIAgrE	2 Aug 2009
John Maurice **Bradfield**	CEng, MIAgrE	6 Sept 2009
Michael John **Copeland**	CEng, FIAgrE	9 Sept 2009
25 years		
Robert Paul **Burtonshaw**	CEng, MIAgrE	2 Jul 2009
Jill Foster **Browning**	IEng MIAgrE	10 Jul 2009
Carlton **Boswell**	CEng, FIAgrE	12 Jul 2009
John William Garne **Young**	FIAgrE	12 Jul 2009
Michael John **LeFlufy**	CEng, MIAgrE	12 Jul 2009
Richard James **Dain**	FREng, FIAgrE	12 Jul 2009
George Howard **Jackson**	FIAgrE	12 Jul 2009
Luis Ferdinand **Waldmueller**	AMIAgrE	13 Jul 2009
Trevor Roy **Cumby**	MIAgrE	24 Jul 2009
Melvyn George **Kay**	CEng, FIAgrE	28 Jul 2009
John Christopher **Jeffery**	CEng, FIAgrE	30 Aug 2009
Nigel Pemberton **Donkin**	AMIAgrE	30 Aug 2009

Academic members continued

Myerscough College
Myerscough Hall
Bilsborrow
Preston
Lancashire PR7 0RY

Oatridge Agricultural College
Ecclesmachan
Broxburn
West Lothian
EH52 6NH

Pallaskenry Agricultural College
Co Limerick
Ireland

Plumpton College
Ditchling Road
Lewes
East Sussex
BN7 3AE

Reaseheath College
Reaseheath
Nantwich
Cheshire
CW5 6DF

Royal Agricultural College
Cirencester
Gloucester
GL7 6JS

Scottish Agricultural College
SAC Ayr Campus
Auchincruive Estate
Ayr
KA6 5HW

Sparsholt College
Sparsholt
Winchester
Hampshire
SO21 2NF

Willowdene Training Ltd
Chorley
Bridgnorth
Shropshire
WV16 6PP

Wiltshire College - Lackham
Lacock
Chippenham
Wiltshire
SN15 2NY

Commercial members

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

British Agricultural & Garden Machinery Association (BAGMA)
Entrance B, Level B
Salamander Quay West,
Park Lane, Harefield
Middlesex, UB9 6NZ

Alvan Blanch Development Co Ltd
Chelworth
Malmesbury
Wiltshire SN16 9SG

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

Bomford Turner Limited
Salford Priors
Evesham
Worcestershire WR11 5SW

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

Douglas Bomford Trust
Barton Road
Silsoe, Bedford
MK45 4FH

FEC Services
Stoneleigh Park
Kenilworth Warwickshire
CV8 2LS

Huntaway Consulting
Ivy Cottage
Torlundy
Fort William
Inverness-shire
PH33 6SW

John Deere Ltd
Harby Road
Langar
Nottinghamshire NG13 9HT

Law-Denis Engineering Ltd
Millstream Works
Station Road
Wickwar
Wotton-under-Edge
Gloucestershire GL12 8NB

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

SSAB Swedish Steel Ltd
De Salis Court
De Salis Drive
Hampton Lovett
Droitwich
Worcestershire
WR9 0QE

White Horse Contractors Ltd
Lodge Hill
Abingdon
Oxfordshire
OX14 2JD

NEWS FOR MEMBERS

Vacancies

University of Colombia

THE University of Colombia has launched a Faculty Positions Call in different areas. They are seeking to fill 222 full and part-time Faculty Positions all areas of knowledge, at its Bogotá, Manizales, Medellín, Orinoquía and Palmira campuses

Among these is a call for a Precision Farming Professor.

Further information can be found at:

http://www.concursoexcelencia.unal.edu.co/changeLocale.do?locale=en

EVENTS

IAgrE Branch Meetings and Events

West Midlands Branch
Tuesday 29 September 09 starting 1900
VISIT TO JAGUAR LAND ROVER ACADEMY, NEW WARWICK FACILITY
Venue: Jaguar Landrover Academy, 1 Bird Road, off Heathcote Lane, Warwick CV34 6TB.
A good opportunity to visit this newly opened site on the edge of Leamington Spa/Warwick. It is anticipated the visit will include: i) the building - its environmental features and considerations; ii) the role of service training facility in the Jaguar Land Rover Group; iii) the technology used in products and the approach to servicing of it in the dealer network. Please see JLR website for directions.
Branch Secretary: Michael Sheldon
Tel: 01926 498900 Email: michaelcsheldon@yahoo.com

Wrekin Branch
Monday 05 October 09 starting 1930
VISIT TO THE NEW DAIRY UNIT AT HARPER ADAMS UNIVERSITY COLLEGE
Speaker: David Cooper
Venue: Harper Adams University College, TF10 8NB
There will also be a presentation by the installation engineers.
Branch Secretary: Graham Higginson.
Tel: 01242 870458 E-mail: wrekin@iagre.biz

West Midlands Branch
Tuesday 06 October 09 starting 1930
ARM REEDBED SPECIALIST, RUGELEY
Speaker: David Cooper
Venue: Friends Meeting House, Maidenhead Road, Stratford upon Avon CV37 6XT
A specialist company dealing in water conservation and recycling of water. This event is open to members of the Institute of Horticulture.
Branch Secretary: Michael Sheldon
Tel: 01926 498900 E-mail: michaelcsheldon@yahoo.com

South East Midlands Branch
Tuesday 13 October 09 starting 1900
FENDT - AGCO'S TECHNOLOGICAL BRAND - INTRODUCING THE TRISIX CONCEPT (JOINT MEETING WITH IME)
Speaker: Ben Agar, AGCO
Venue: Mitchell Hall, Cranfield University, Cranfield,Beds
Ben will provide an overview of Fendt within the AGCO brand and touch on key existing and future products before moving on to the Trisix, which is still a developmental concept vehicle.
Branch Secretary: John Stafford
Tel: 01525 402229 E-mail:john.stafford@silsoe-solutions.co.uk

Yorkshire Branch
Wednesday 14 October 09
AIR BRAKING USED IN AGRICULTURE
Venue: Tractair
Details tbc
Tel: 01937 843891 E-mail: gordon.williamson@ntlworld.com

Northern Ireland Branch
Tuesday 20 October 09 starting 1630
RENEWABLE ENERGY AND ITS POTENTIAL
Speaker: Dr Andrew McCrea, AECOM Ltd
Venue: AFBI – Hillsborough, Large Park, Hillsborough
Tour of Renewable Energy Technology Centre at Hillsborough. Meal. Presentation by Dr McCrea on renewable energies and their application in rural housing, communities and businesses. Branch Secretary: Ian Duff
Tel: 028 8673 6977 Email: duffi@iagre.biz

Wrekin Branch
Monday 02 November 09 starting 1930
ISOBUS TECHNOLOGIES: GET YOUR TRACTOR TALKING TO YOUR IMPLEMENTS
Venue: Lecture Theatre, Reaseheath College CW5 6DF
Branch Secretary: Graham Higginson
For further details contact Branch Secretary: Michael Sheldon.
Tel: 01242 870458 E-mail: wrekin@iagre.biz

West Midlands Branch
Tuesday 03 November 09 starting 1915
GREENMECH CHIPPERS ENGINEERING FOR A GREENER ENVIRONMENT
Speaker: Tony and Jonathan Turner
Venue: GreenMech Ltd, Kings Coughton, Alcester
Greenmech have been very successful in recent years and have been increasing their product sales. Tony and Jonathon Turner will give us a presentation and show us around the factory. For further details please contact Branch Secretary: Michael Sheldon
Tel: 01926 498900 E-mail: michaelcsheldon@yahoo.com

South East Midlands Branch
Monday 9 November 09 starting 1930
BIO-LUBES: A BIO OIL IS NOT ALL IT SEEMS
Speaker: Steve Brown, Lubron
Venue: Maulden Village Hall, Maulden, Beds
Bio oil started life as vegetable based product but now there are synthetic bio oils. What does this mean to the user? Steve Brown is the owner of Lubron Advanced Oils and has a wealth of experience in all forms of oil for specialist applications.
Branch Secretary: John Stafford
Tel: 01525 402229 E-mail: john.stafford@silsoe-solutions.co.uk

Yorkshire Branch
Wednesday 11 November 09
LATEST DEVELOPMENTS IN SISU ENGINES
Venue: Agco
Details tbc
Branch Secretary: Gordon Williamson
Tel: 01937 843891 E-mail: gordon.williamson@ntlworld.com

Wrekin Branch
Tuesday 17 November 09 starting 1930
YOUNG ENGINEERS CHALLENGE
Venue: Small Student Bar, Harper Adams University College, TF10 8NB
Competition for Young Engineers in the style of a Pub Quiz. Team Entries of up to four in a team to Graham Higginson.
Branch Secretary: Graham Higginson
Tel: 01242 870458 E-mail: wrekin@iagre.biz

Northern Ireland Branch
Tuesday 17 November 09
NEW HOLLAND TRACTORS PAST, PRESENT AND FUTURE
Speaker: Brian Magee, New Holland Regional Manager for Ireland
Venue: Banville House Hotel, Lurgan Road, Banbridge
Branch Secretary: Ian Duff
Tel: 028 8673 6977 Email: duffi@iagre.biz

West Midlands Branch
Tuesday 01 December 09 starting 1915
VEHICLE DYNAMICS, TRACTION
Speaker: David Clare
Venue: Friends Meeting House, Maidenhead Road, Stratford upon Avon CV37 6XT
David Clare from Jaguar Land Rover will give a presentation on this specialist topic and will cover Land Rover's Terrain Response System: a) improving performance through the integration of systems; b) the initial concept, developments, testing and benefits to both customer and the Land Rover business. For further details please contact Branch Secretary: Michael Sheldon
Tel: 01926 498900 E-mail: michaelcsheldon@yahoo.com

South East Midlands Branch
Monday 07 December 09 starting 1930
FUTURE WATER: HOW CRANFIELD UNIVERSITY RESEARCH IS MEETING THE CHALLENGES
Speaker: Simon Parsons, Cranfield University
Venue: Maulden Village Hall, Maulden, Beds
Prof Parsons, Head of Centre for Water Sciences, will give an overview of how research in the Centre is meeting many of the challenges facing water utilities and water users.
Branch Secretary: John Stafford
Tel: 01525 402229 E-mail: john.stafford@silsoe-solutions.co.uk

Wrekin Branch
Monday 07 December 09 starting 1930
PRESENTATIONS BY HARPERS PHD STUDENTS
Venue: Lecture Theatre, Harper Adams University College, TF10 8NB
Branch Secretary: Graham Higginson
Tel: 01242 870458 E-mail: wrekin@iagre.biz

Other Events:

Saturday 12 September 09 starting 10am
FWAG
Farming with Nature on a Small Scale
Venue: Old Sleningford Farm, North Stainley, Ripon HG4 3JB
A tour of tastings for anyone interested in producing good food and using wood sustainablly. Old Sleningford Farm is a 17 acre small holding dedicated to having a good time whilst demonstrating a low impact way of life and inspiring self reliance by sharing ideas and resources. The farm has recently been announced as the winner of the Nidderdale AONB Conservation Awards 2009. Farm produce will be used to provide a delicious and truly local lunch! The cost of the day is £28+VAT (£32.20) per head for FWAG members and £30+VAT (£34.50) for non-members, including lunch. To book please send a cheque (payable to FWAG) to FWAG, South Parade, Northallerton, DL7 8SL .
Tel: 01609 783632 Email: northyorks@fwag.org.uk
Web: www.fwag.org.uk/northyorks

Tuesday 15 September 09
AEA
TILLAGE 2009
Venue: The Old Airfield, Down Ampney, Cirencester, Gloucestershire GL7 7JF
A wide range of exhibitors showcasing the latest in cultivation technology. An opportunity for growers to find out about new machinery and see it in action. Also at Spylaw, Kelso on 1 October 2009. One-day event - 0800-1500hrs. Entry costs £10/car or £5 single occupancy. For further information cotnact: Duncan Russell, AEA Services Manager.
Tel: 08456 488748 Email: services@aea.uk.com Web: www.tillage.uk.com

16 - 17 September 09
Joint IEEM FBA
JOINT INSTITUTE OF ECOLOGY AND ENVIRONMENTAL MANAGEMENT (IEEM) AND FRESHWATER BIOLOGICAL ASSOCIATION (FBA) FRESHWATER CONFERENCE - THE FUTURE OF FRESHWATERS.
Venue: Warwick University, Coventry CV4 7AL
The IEEM and FBA are joining forces to promote the fusion of good science with best management practice through this joint conference. Sessions will examine threats to freshwaters, the evolving policy context and the need to maintain future science capacity. The conference is aimed at those involved in the assessment and management of freshwater environment, particularly through the Water Framework Directive, the Habitats Directive, Water Resources Planning, River Basin Management Plans and Climate Change adaptation strategies. For further information visit website
Web: www.ieem.net/ieemfbafreswaterconference2009.asp

17-18 September 09
Innoviandes
1ST EUROPEAN MEAT AND MEAT PRODUCTS INNOVATION CONFERENCE
Venue: Clermont-Ferrand, France
Objective: to create competitiveness for European meat and meat product companies by bringing together the relevant partners to identify the innovation challenge and to develop the necessary european research programs. Plenary discussions on image, hygiene and sanitary safety, process innovation, nutrition and health and sustainable development. 2nd day: 4 parallel workshops on strategic themes. For further information contact: Sari Chabrol, Innoviandes
Tel: +33 4 73 98 53 81 Web: www.innoviandes.org

23-24 September 09
AgChem Forum
HUMAN RISK: TOXICOLOGY AND EXPOSURE / REGULATIONS / ENVIRONMENTAL RISK: ECOTOX AND FATE
Venue: ThinkTank, Birmingham, UK
Venue: Hotel Fira Palace, Barcelona, Spain
Over 50 sessions to choose from - make your own agenda. Day 1 Opening Plenary discussion: Food Security and the Importance of Crop Protection. 2 x Pre-Conference Workshops, 1 x Post-Conference Workshop. Book Online.
Tel: +4(0)20 7017 7481 Email: registrations@informa-ls.com
Web: www.agchemforum.com

Wednesday 30 September 09 starting 09.00
IIMechE
21ST CENTURY CLEANROOMS
Venue: IMechE, 1 Birdcage Walk, London SW1H 9JJ
This seminar will examine the latest developments in the cleanroom industry; from energy consumption and 'greener' cleanrooms, to the latest filtration standards and regulatory approval guidelines. With presentations from leading figures in the cleanroom industry, as well as a roundtable discussion forum and networking lunch, this event aims to be a comprehensive guide to the latest developmetns in the industry. NOTE: IAgrE are co sponsors so members can attend at the IMechE members rate. Visit website to register on-line or contact Tina Churcher at IMechE.
Tel: 020 7973 1258 Email: t_churcher@imeche.org
Web: www.imeche.org/events/s1453

Thursday 01 October 09
AEA
TILLAGE 2009
Venue: Spylaw, Nr Kelso, Roxburghshire, TD5 8DY
One-day event - 0800-1500hrs. Entry costs £10/car or £5 single occupancy. For further information cotnact: Duncan Russell, AEA Services Manager.
Tel: 08456 488748 Email: services@aea.uk.com Web: www.tillage.uk.com

08 October 09
IEEM
SPECIES REINTRODUCTIONS: PHILOSOPHY, ISSUES AND IMPLICATIONS
Venue: Cairnbaan Hotel, Near Lochgilphead, Argyll PA31 8SJ
One-day seminar exploring the ecological and socio-economic implications of the reintroduction of iconic species to Scotland. Day includes a visit to the Knapdale Forest where the 5-year trial reintroduction of the European beaver is currently taking place. Seminar aimed at advisors, practitioners and anyone with a wider interest in bringing backlost species
Web: http://www.ieem.net/ieem_scottish_conference_2009.asp

21 October 09
Inter-Disciplinary Ethics Applied
PROFESSIONAL ETHICS FOR PROFESSIONAL ENGINEERS - DECISION-MAKING SKILLS FOR A COMPLEX WORLD.
Venue: London
This one day training course will help you: make confident judgements about ethical questions; justify your judgements to colleagues, superiors and regulators; balance competing obligations. It will help you address ethical issues that arise in professional engineering. Same one day course being held on 11/6 and 25/11. Prices start at £195. for more information and to book your place please visit website or contact Alex Buckley
Tel: 0113 343 8230 Email: a.j.buckley@leeds.ac.uk
Web: www.idea.leeds.ac.uk/proeng

25 October 09 to 01 November 09
FWAG Branch
BULGARIA RURAL TOUR
Venue: Bulgaria
The programme for this tour is not yet finalised. Previous tours can be viewed on www.freewebs.com/ruraltoursbulgria and www.freewebs.com/ruraltoursbulgaria/recommendations.htm. The programme will be tailored to suit the delegates. Cost for each week- long trip is c£350pp. For further information:
Contact: Phil Lyth Tel: 0771 3333 170 Email: phil.lyth@fwag.org.uk
Web: www.fwag.org.uk

06-07 November 09
EurAgEng
67TH INTERNATIONAL CONFERENCE 'LAND.TECHNIK - AGENG 2009'
Venue: Hanover, Germany
This year's theme will be "Innovations to meet future challenges" and the focus will be on providing the growing global population with food and energy derived from biomass. This leading international conference on agricultural engineering is staged as a prelude to the AGRITECHNICA trade fair for agricultural machinery. Register on-line. Organisers: VDI Wissensforum Kundenzentrum
Tel: +49 (0) 211 62 14 201 Fax: +49 (0) 211 62 14 154
Email: wissensforum@vdi.de Web: www.vdi.de/landtechnik-ageng

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