

Landwards

Agriculture • Horticulture • Forestry • Environment • Amenity



Combatting climate change

Funded by the Douglas Bomford Trust, Lisa Bunclark spent this summer in a small Himalayan village



Importance of CPD

Led by Michael Woodhouse. IAgRE Council debates whether CPD events are fit for purpose

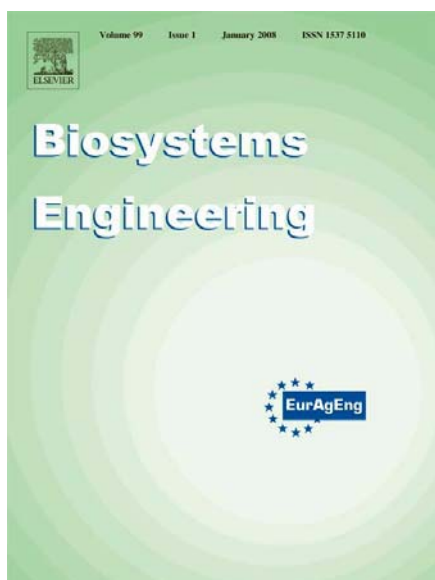


INSIDE: LTA Update

with feature articles on CVT developments and ISO couplings

Biosystems Engineering

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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 4, August 2009, Pages 397-408

Modelling of material handling operations using controlled traffic

D.D. Bochtis, C.G. Sørensen, R.N. Jørgensen, O. Green

University of Aarhus, Department of Agricultural Engineering, Tjele, Denmark

University of Southern Denmark, Biotechnology and Environmental Technology, Odense M, Denmark

The development of a discrete-event model for the prediction of travelled distances of a machine operating in material handling operations using the concept of CTF is presented. The model is based on the mathematical formulation of the discrete events regarding the motion of the machine when performing the fieldwork pattern. To evaluate the model two slurry application experiments were designed. The experiments involved registering the position and monitoring the application status of the slurry applicator. Validation showed that the model could adequately predict the motion pattern of machinery operating in CTF. Prediction errors of total distance travelled, were 0.24% and 1.41% for the 2 experimental setups. The current model structure captures the interrelationships between the mutual influencing parameters of motion sequence and configurations of the CTF layout. This model has the potential to be used for autonomous vehicles.

Volume 104, Issue 1, September 2009, Pages 152-160

Durability of timber structures in agricultural and livestock buildings

R.A. Mariño, X.C. Carreira, M.E. Fernández and C. Fernandez-Rodriguez

Department of Agroforestry Engineering, University of Santiago de Compostela,

Escuela Politécnica Superior, Campus Universitario, s/n. 27002 Lugo, Spain
A sample of 133 agricultural and livestock buildings was selected, including barns for housing different livestock species and other agricultural buildings such as storage buildings or hay barns. Timber durability was assessed based on the structural condition of the buildings, and the influence of the other variables on the condition of the structure was analysed. Data analysis revealed that the structural condition of the buildings studied was not affected by age or species. The factors with the strongest influence on the structural condition of the buildings were wood treatment, ventilation and the proper design of joints between timber members. Therefore, the durability of timber structures in the buildings studied was dependent on the construction practice, including the previous treatment of wood and the proper maintenance of the structure (ventilation, cleaning).

Volume 104, Issue 2, October 2009, Pages 191-198

Modelling of pneumatic tractor tyre interaction with multi-layered soil

Ahmad Mohsenimanesh, Shane M. Ward, Philip O.M. Owende and Arzhang Javadi

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Agricultural Engineering Research Institute, Ministry of Agriculture, Karaj, Iran
School of Informatics and Engineering, Institute of Technology Blanchardstown, Dublin 15, Ireland

A non-linear finite element (FE) model of the interaction of a tractor tyre with soil surface was developed as a procedure for analysing the contact pressure distribution for varying wheel loads and tyre inflation pressures. The tyre model considered the geometry and orientations of the tyre cords in each ply, the near-incompressible property of the tread rubber block, and the high and non-linear deformation of the carcass under the tread. The soil model was simulated with a linear model and considered a realistic soil cross-sectional area of influence with layers separation, including three soil surface layers and a hardpan layer. The three surface layers were within normal tillage depth (soil surface to 250 mm depth), with 250-300 mm hardpan substratum. Results from the simulation were compared with the measured data to verify the validity of the model for soft soil conditions. The comparison showed reasonably good agreement between the computed and measured general pattern of the pressure distribution at the tyre-soil interface under different loads and inflation pressures.



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Too many cooks . . ?

AS life gets more complicated and the pressures to support the world's population in a sustainable way increase, so the world appears to have become a massive talking shop.

As ever, it's a question of balance.

Important issues - issues that will play a vital role in ensuring the well-being of generations to come - simply cannot be considered in isolation.

Food production, the environment, housing, leisure and recreation, transport, water supply all have to be considered in context.

From time to time, these strands are pulled together as with the recent industry-led Campaign for Farmed Environment set up to retain the environmental benefits formerly provided by set-aside.

However, often groups will career off on a tangent and ignore the bigger picture.

Recently, the NFU has been scathing about a report published by *The Lancet* which appears to have the backing of senior Government Ministers which called for a 30 per cent reduction in livestock numbers in the highest producing countries in order to combat climate change.

The report had seemingly been put together without any involvement or consultation with Defra, the one Government department that deals with food policy - and which should understand the issues.

The result - the Government now

appears to be backing a policy of a massive reduction in livestock.

Leaving aside concerns about the validity of the climate change lobby's claims, this demonstrates muddled thinking at best.

Again, this issue of *Landwards* contains criticism from the agricultural engineering sector about the complete lack of reference in the recent Royal Society report about alleviating global food security to the part that engineering and technology can play in translating science into action.

None of the £2bn research funding called for by the Royal Society is directed at the engineering sector.

Yet many would argue that greater efficiency flows from ever more sophisticated machinery and equipment.

You have to wonder whether, in this age of opinion formers and spin, our industry is really getting its voice heard - or whether we are just too insular in our approach?

Finally, I wish everyone in the IAgRE community a very Happy and Peaceful Christmas and New Year.



CHRIS BIDDLE
Editor



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Engineering Council rebrand to reflect global standing

REFLECTING its growing international reach and influence, the Engineering Council has now dropped the 'UK' from its name.



The Council says one of the key deciding factors is that the professional qualifications awarded by themselves - Chartered Engineer, Incorporated Engineer and Engineering Technician - are fast becoming internationally recognised standards of competence. In an increasingly globalised economy this recognition is vitally important to employers.

Andrew Ramsay, Chief Executive Officer of the Engineering Council said, "A major benefit for engineers on our register and holders of Engineering Council accredited academic qualifications is that the rigor of the Engineering Council's UK-SPEC assessment of competence is widely recognised by the rest of the world. In fact, the title Chartered Engineer is now one of the most recognisable international engineering qualifications."

A significant 25% of engineers on the Engineering Council's register now work outside the UK, and a further 10-15% of registrants are non-UK citizens. Individuals holding Engineering Council titles are present in 45 countries.

The Engineering Council has also been granted a licence to award EUR-ACE labels to UK accredited degrees by the European Network for Accreditation of Engineering Education (ENAAE).

To help incorporate understanding of global issues such as sustainability, climate change and poverty into the teaching of engineering, the Engineering Council has joined forces with UK based Higher Education institutions and other relevant bodies, in a project being implemented by independent NGO Engineers Against Poverty (EAP) and funded by a grant from the Department for International Development.

FWAG celebrate 40 years

New Farm Conservation Guide published

IN 1988 FWAG published the first edition of its widely acclaimed 'Farm Conservation Guide'.

This pocket book provided practical advice and information for farmers and land managers about the management of wildlife habitats in a common sense, straightforward and easily understood format. Many of the actions could be undertaken as part of the daily farming routine within the context of a planning management regime.

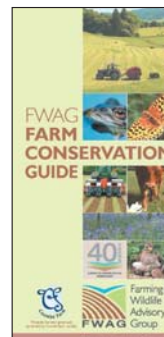
The Guide helped farmers identify important wildlife habitats and indicated how they should be managed, whilst encouraging a whole farm

approach to conservation. The Guide was broken down into separate chapters for different aspects of farm conservation: watercourses and wetlands, trees and shrubs, field margins and grassland to name a few. Such was the popularity of the Guide that a re-print was commissioned in 1995.

To mark FWAG's 40th anniversary year a third, updated edition of the FWAG Farm Conservation Guide has been published. Sponsorship has been received from Coombe Farm Organic and HRH The Princess Royal has written the foreword.

The 2009 edition of the

Guide includes for the first time case studies of farms that have received F W A G advice and will also cover current resource protection issues. To order a copy of the *Farm Conservation Guide* (£7.99) download the order form on the FWAG website www.fwag.org.uk or contact: Sue Higgins sue.higgins@fwag.org.uk - Tel: 02476 698744



Voluntary Initiative continues to meet targets

Farmers well placed to meet Sustainable Use Directive

THE Voluntary Initiative (VI) is continuing to meet its targets and will help ensure UK farmers are well placed to meet the requirements of the Sustainable Use Directive, the initiative's annual report has revealed.

Although the 1.6 million hectares now covered by Crop Protection Management Plans (CPMPs) was just short of target, the number of plans received by the NFU has continued to increase despite their removal as an option for new entrants to Entry Level Stewardship.

Membership of the National Register of Sprayer Operators (NRoSO) has marginally increased to more than 20,000, despite an expected decline as businesses rationalised spraying operations. The National Sprayer Testing Scheme (NSTS) now covers 84.3 per cent of the sprayed area and the number of tests increased to more than 13,500. The shortfall from the 85 per cent target was a consequence of a change to the way the sprayed area is calculated.

Professor Barry Dent,

chairman of the VI Steering Group, said, "After eight years of hard work I am pleased that farmers and the crop protection industry remain as committed as ever to the Voluntary Initiative."

"The industry faces new challenges with the implementation of both the Water Framework and the Sustainable Use Directives.

However, the UK is well placed to meet these challenges and I hope, as a result of the VI's work, the cost burden and extra red tape for farmers will be minimised."

To recognise and explain the work of the VI to a wider audience, a new leaflet called 'Making a difference' has been published by the VI sponsors.

The VI has also announced the formation of The Voluntary Initiative Community Interest Company (VI-CIC) to help it



access wider sources of funds. The announcement of the Strategic Partnership on Responsible Pesticide Use with the English Catchment Sensitive Farming Delivery Initiative is a recent example of this new approach. The directors of the VI-CIC include the VI sponsors and three independent directors including VI chairman Professor Barry Dent.

The Initiative also boasts a new website which can be found at www.voluntaryinitiative.org.uk

Frank Moore visits Airborne Cemetery in Arnhem

Veteran of battle who designed mower used by CWGC

IN 2004, Frank Moore, designer of the Moore Mower, presented one of his machines to the Commonwealth War Graves Commission for use in the Airborne Cemetery at Arnhem where most of the 44 members of his old regiment who were killed in the 9 day battle lie buried among some 1700 others who took part in the operation.

Whilst attending the 65th anniversary commemoration of the battle in September, Frank revisited the Old Church at Osterbeek, where he spent most of the battle and where he considers his Guardian Angel must have been based. There he met up with an old Dutch friend who is a senior member of the committee who make the arrangements for the annual Commemoration.

He told Frank that a few months previously they had had a meeting with representatives from the Cemetery who men-



tioned that the main mower they used had been designed by one of the veterans and was the best mower they had ever used.

On the Sunday morning, when huge crowds assemble for the Memorial Service, Frank managed to locate one of the gardeners and when asked whether they had experienced any problems, said that they only had to replace the battery.

After nearly six seasons of optimum use, Frank felt that at least a new bottom blade must be due. Further to Frank contacting Richard Robinson, Managing Director of Autoguide UK Ltd (now the manufacturer of the machine), Richard said "We are absolutely delighted to help and have donated a new bottom blade for the mower."

Dairy Event relocates to Birmingham NEC

THE Royal Association of British Dairy Farmers is to relocate the Dairy Event and Livestock Show in 2010 to the NEC, Birmingham from its current Stoneleigh Park, Coventry site.

The organisers say the event, which takes place on 7 and 8 September 2010, will "continue to build on its current format offering comprehensive technical, business and financial information for the entire UK ruminant sector".

All trade exhibitors from across the supply chain will be located in interlinked exhibition halls, while another hall covering more than two acres will accommodate livestock; dairy - including the competitive classes, beef, sheep, commercial goats and native breeds exhibitions.

RABDF chief executive Nick Everington said, "Since 2003, exhibitor numbers have increased by 60%, from 280 to 465 exhibitors, and we need to widen the show's appeal. the 21st century."

Claas sizes are getting larger each year

22 new students join scheme run at Reaseheath and Barony

CLAAS say the success and support for the their Agricultural Apprenticeship based at Reaseheath in Cheshire and Barony College near Dumfries, is evident in the fact that 22 new students have joined the scheme this year from their dealerships throughout the UK.

This year will see the first group of nine students starting their four-year apprenticeship based at Reaseheath College. This follows the decision by CLAAS UK to enter into a new training partnership with the college near Nantwich in Cheshire.

The 22 students come from throughout the UK. At Reaseheath both Seward in Yorkshire and Olivers (Hertfordshire and Oxfordshire) have two students starting. The other students come from: Kirby (Leicestershire); Southern Harvesters (Berkshire); Marsh (Lincolnshire); Hamblys

(Cornwall) and R&G Williams (Gwynedd).

At Barony 13 students joining the scheme this year come from Rickerby (north England), Sellars (north east Scotland) and Gordons (south west Scotland).

CLAAS is the only landbased engineering company to offer a manufacturer's apprenticeship within Scotland, which was launched last year in order to provide CLAAS dealers in Scotland and the north of England with the same apprenticeship training provision as southern dealers.

In both cases the students will be studying for a National Diploma in Land Based Technology.

One of the main benefits of the Diploma is that upon qualification, the successful candidate will receive a Pass, Merit or Distinction grade, which will enable them to better demonstrate and gain recognition for their progression and ability.



The Reaseheath apprentices

Following their graduation from the Apprenticeship scheme, these Service Engineers will be able to follow the comprehensive CLAAS UK training development plan, which is laid out by the CLAAS Academy and aligned with the Landbased Technician Accreditation (LTA) scheme.

This programme is designed

to mirror the business requirements of CLAAS dealers and also offers career progression through the LTA tiers, from LTA 2 (Service Engineer), to LTA 3 (Master Mechanic) or LTA 4 (Master Technician). As such the Apprentice scheme is the start of a continual development cycle which will offer entrants a clear career pathway.

Supply of farmland predicted to halve

"STRUTT & Parker predict supply of farmland to halve next year," is the view of Charlie Evans of Strutt & Parker's Estate and Farm Agency Department.

Mr Evans said, "I expect the volume of land next year to be half of the amount marketed in 2008".



Mr Evans' view is shaped by three main factors.

The first reason is that at the moment farmers are struggling with low wheat prices which means they need to spread their costs over as large an acreage as possible. "Most farmers are therefore potential buyers and not sellers," comments Mr Evans.

The second reason is that 2008 saw a peak in the farmland market. Values had doubled in two years and there was a large acreage being sold by landowners 'profit taking' from the land. "Many bought land for £2500 - £3000 per acre in the early 2000s" says Mr Evans "In 2008 they were given the opportunity to double their money and sell it for £5000 - £6000 per acre and many took it."

The third reason is the election next spring. "Traditionally elections cause the market to slow down considerably as the market waits to see who will be in power and considers what effect (if any) the change of Government will have on farming and property transactions" says Mr Evans

According to Strutt and Parker, there was over 190,000 acres marketed in 2008, 23% more than 2007. "I expect the volume of land marketed to fall below 100,000 acres next year - a level not seen since 2004 when the market was depressed by the, then, uncertainty surrounding Single Farm Payment."

"If I was in the market for a farm, I would look to buy soon, as I am not expecting the usual large volume of land to be marketed next spring" Concludes Mr Evans.

Forestry Commission honoured

British Construction Industry awards Lewisburn Bridge, Kielder

THE Lewisburn Bridge, in Kielder Water and Forest Park, Northumberland has won honours for the Forestry Commission in the 2009 British Construction Industry Awards.

The curved suspension bridge, built for the Kielder Partnership was designed by Dr Geoff Freedman the Forestry Commission's head of civil engineering and design. It was nominated for a Prime Minister's 'Better Public Building Award' and was the only project in the civil engineering category that was 'highly commended'.

The post and cable structure with a sustainable timber deck elegantly spans the Lewis Burn transporting runners, cyclists, horse riders, and wheelchair and pushchair users across an inlet which is part of the Lakeside Way, a new 26 mile trail which encircles the shoreline of Kielder Water.

Dr Geoff Freedman said, "It's fantastic that this imaginative project has been recognised and demonstrates how creative

design can make a real difference. It's a fine example of what Forestry Civil Engineering does best; combine expert structural engineering with a design that complements the countryside.

"Our challenge was to construct a bridge that would enhance the walk while reflecting the local forest environment. It had to be robust enough for horses, but 'light' enough to sit back in the setting and interesting enough to demand attention.

"It also had to have a non-slip deck to ensure that it was safe for horses to cross and wide enough for riders to feel comfortable leading their horses across. The handrail also had to be stronger and higher than usual to cope with the possibility of a horse stumbling or pushing against them.

"All in all, it was a very demanding specification and it's particularly satisfying that



we achieved it all for the very modest budget of £150,000", he added.

One judge of the BCI Awards Rory Olcayto, Editor of *The Architects' Journal* said, "What sets the BCI Awards apart is that it rewards successful collaboration between architects, planners, engineers, local councils and other professionals in the delivery of projects."

For he's a jolly good Fellow



PICTURED above is Professor Dick Godwin receiving his Fellowship of the Royal Agricultural Societies (F.R.Ag.S) from Adel McNicol President of the Royal Agricultural Society of England at the 2009 Royal Show.

Dick's Fellowship was awarded for his outstanding lifetime contribution to Agricultural Engineering.

There are currently only three Fellows in IAgRE.

CEMA elect JD man as new president

AT its recent summit in Brussels, the Board of Directors of CEMA, the European Committee representing the agricultural machinery industry, elected Gilles Dryancour as the new president of the organisation for a two-year term.

In his new role, Dryancour (pictured) - who is director, public affairs for John Deere in Europe, CIS, Northern Africa and the Near & Middle East - will be supported by Franz-Georg von Busse, managing director of Lemken (Germany) and by Massimo Goldoni, president of UNACOMA (Italy), who were both elected as vice-presidents by the CEMA general assembly.

CEMA represents 11 national agricultural machinery manufacturers' associations throughout the European Union.



Red Tractor logo hits £10 billion mark

THE Red Tractor logo now features on products with an annual retail sales value of £10 billion, a rise of over £1.5bn in the last twelve months, reports Assured Food Standards (AFS) – the independent organisation behind the Red Tractor food assurance scheme.

This milestone has been reached under the tenure of Colin Smith, Assured Food Standard's outgoing Chairman, who took up the post in 2003.

Much of the growth has been driven by the foodservice sector, which has grown 50% in the last year. All major retailers and more than 500 leading companies use the logo and Red Tractor is now attracting a high level of interest from foodservice operators supplying the leisure sector as well as public procurement areas such as schools and hospitals, according to AFS.

"As little as two years ago we had no presence in foodservice

so this is a important development for us," said David Clarke, CEO of Assured Food Standards.

"The Red Tractor logo is a simple short-hand for consumers who want to know that the food they buy meets strict standards of food safety, environmental protection and animal welfare as well as a guarantee of origin."

The latest announcement coincides with the arrival of new, independent, AFS Chairman, David Gregory. His role commenced on December 1st when Colin Smith stepped down from the post upon the completion of his successful six-year tenure.



L-R: Colin Smith and David Gregory

In a further step in the evolution of Red Tractor, Assured Food Standards is on the verge of launching its newly harmonised standards. From April 2010, the scheme's 78,000 farmers and growers will go live with standards that are for the first time aligned across all farm sectors allowing a more integrated approach, particularly for mixed farms.

Inaugural Lely Technician award winner

Special award in memory of NVQ apprentice

ADAM Hubbard has been announced as the very first winner of The Lely UK NVQ Level 2 Technician Award.

This special award was set up in memory of Laurence Moody, a 19-year-old apprentice at the turf maintenance and agricultural machinery distributor's St Neots HQ, who tragically died in a car accident in November 2008.

Laurence - like his fellow student and friend Adam, also 19 and from St Neots - was on apprenticeship at Lely as part of his City & Guilds NVQ Level 2 in Service Engineering (Groundcare Machinery) at Writtle College in Chelmsford, Essex, when the accident occurred. A promising and popular apprentice, Lely's training manager Ian Sumpter established this new award to recognise and reward the best NVQ Level 2 student technician in his honour.

Ian worked with Writtle College lecturer Scott Clark to select the most promising student technician of 2009.



Adam Hubbard, centre, receives the Lely Award in memory of Laurence Moody from, to his right, Laurence's parents Debbie and Nigel Moody and brother Nathan, with, from left, Writtle College lecturer Scott Clark, Lely's training manager Ian Sumpter and runner-up Andy Simmonds

Although an independent scheme open to students at any turf or agricultural company participating in the NVQ apprentice programme, Adam's hard work and positive attitude in spite of his close friend's death shone through and he was chosen as the deserved inaugural winner.

He accepted his award at this year's IOG Saltex show in

Windsor, with Laurence's parents, Debbie and Nigel Moody, plus brother Nathan, by his side. "I feel really privileged to win this award as Laurence was a very close friend of mine," he said. "I'd like to thank Laurence's family for being here to give the award their blessing, as well as Lely and my college for supporting me in my studies."

Lantra training instructors visit Reform

SIX Lantra approved training instructors recently visited the Reform Plant in Wels, Austria to learn more with regard to the manufacture and performance capabilities of their bank mower tractor range.

Over the two days the delegates were able to drive Metrac & Mounity models and also received instruction from Reform staff with regard to operating the machines effectively and safely.



Simon Richard UK agent for Reform said, "Working safely on sloping ground is a high profile issue for both employer and machine operator and a number of injuries and claims have served to highlight this. This visit by Lantra approved instructors can only be of benefit with regard to the education of all involved in groundcare concerning safe practice. The Lantra approved driver training programme is an integral part of the process."

Brian Rees, one of the Lantra approved delegates on the Reform visit added, "We work in conjunction with the Health & Safety Executive and as approved instructors we are continually involved with safety awareness training for operatives working for the Highways Agency, the Environment Agency and Local Authorities to promote safe working practices."

"This Reform visit was an extremely useful two days and the knowledge gained will form the basis of our operator training programme within the newly formed 'All Terrain Tractor' category. With the increasing focus on safety there is a huge training demand for tractor operators working on steep slopes."

CEO VIEW



Royal Society Report overlooks the key role of engineering and technology

THE otherwise admirable report from the Royal Society that calls for an additional £2 billion research funding over 10 years aimed at alleviating global food security overlooks the key role of engineering and technology in translating science into action.

The Report entitled *'Reaping the benefits: Science and the sustainable intensification of global agriculture'* published on October 21st makes encouraging reading. The study was conducted by a working group chaired by Sir David Balcombe FRS and claims to be a landmark in the examination of the contribution of the biological sciences to food crop production.

In setting out the challenge the report puts forward the familiar scenario: "Producing enough food for the increasing global population must be done in the face of changing consumption patterns, the impacts of climate change and the growing scarcity of water and land. Crop pro-

duction methods must also sustain the environment, preserve natural resources and support the livelihoods of farmers and rural populations around the world.

"Due to the scale of the challenge no technology should be ruled out"- it continues.

The recommendations include the need for a long term strategy that brings together all the funding routes and that is aligned with comparable international activities with more emphasis on an ecosystem based approach. Universities are encouraged to reverse the decline in disciplines such as agronomy, plant physiology, pathology, botany, soil science, environmental microbiology, weed science and entomology.

Who could disagree with this analysis? No one - but once again there appears to be no recognition of the key role of engineering based technologies in translating advances in science into

practical outcomes. Applying developments in agronomy, dealing with increases in yield, minimising soil damage and pollution, optimising water use, and avoiding losses and wastage throughout the chain invariably depend on engineering solutions.

The underpinning, risk taking innovation and critical knowledge transfer required to drive and implement engineering developments in these areas cannot be left entirely to the market place. The public sector must also take responsibility.

Within the UK there is neither a central focus nor support for agricultural engineering based research and our capacity is waning fast. IAGRE is urging a fundamental rethink in this position if all the funding and effort put into other areas is indeed going to reap a benefit.

Our friends across the Atlantic appear to have a wider vision. The USDA has recently established the National Institute of Food and

Agriculture (NIFA) as one of its agencies providing leadership in creating and disseminating knowledge spanning all disciplines for the development of agriculture.

'Technology and Engineering' is one of NIFA's 'targeted areas of interest'. The over view of this area states: "Technology and engineering translate scientific knowledge into action. At the same time technological innovations often require further research into materials, devices and processes.

"NIFA programmes support engineering research and new technology development as well as academic training and technology transfer. Together, these efforts result in safer, higher quality foods, more efficient and environmentally sound agricultural practices; and better educated and more economically capable communities".

Now there is a better way of thinking!

Christopher Whetnall

Don't back away from machinery research

THE Royal Society report *'Reaping the benefits: Science and the sustainable intensification of global agriculture'* examined the contribution that could be made by biological sciences in solving the developing problem of global food security.

Agricultural engineering research has a positive contribution to make towards the search for a sustainable agriculture that meets the needs of an expanding world population.

Land machinery innovation was the main force behind agricultural expansion in the past two centuries.

This century the task is to respond to new scientific developments in agriculture outlined in the report, to make crop treatments more precise and plant specific and to play a key role in sustainable farming practice and land management.

In recent years the UK government has retreated from funding research in agricultural engineering, marked especially by the closure of the Silsoe Research Institute (formally the National Institute of Agricultural Engineering) in 2005.

In the context of the "Grand Challenge" of pro-

viding food security over the next 40 years a reasonable proportion of the research budget needs to be allocated to the public finance of innovative engineering ideas and research into more efficient and environmentally compatible land equipment.

Multinational companies in the agricultural engineering industry can be counted upon to finance the evolution of their own products but small and medium-sized engineering enterprises will need public help to respond to new demands.

As suggested in the report, cooperation between the

Research Councils and with industry is essential.

The Research Councils currently fund no agricultural engineering projects at all. Eventually, the seriousness of the situation may justify the establishment of an overall Agricultural Research Development Agency with responsibility to coordinate public research expenditure and to relate UK research initiatives to those being undertaken elsewhere in the world.

Roger Lane-Nott
CEO AEA

Minister marks success of FMO skills course

Roseanna Cunningham MSP visits harvesting site at Davington Forest, Eskdalemuir

THE successful completion of the first of the new series of Forest Machine Operator Skills Development Courses, developed by the UK Forest Products Association and Barony College, was marked by a visit by Roseanna Cunningham MSP, the Scottish Environment Minister.

Having completed two weeks intensive instruction at the College, which included the use of machine simulators, the trainees initially moved to a harvesting site near Dalbeattie, before transferring to a larger harvesting site in Eskdalemuir.

Visiting the harvesting site at Davington Forest, Eskdalemuir on 2 November, the Minister met College staff, Russell Marchant, Principal and instructors, Paul Fotheringham and John Williamson, together with UKFPA representatives, David Sulman and Gavin Davidson, before meeting the trainees. All four trainees had recently been assessed under the Forest Machine Operator Certification Scheme for both harvester and forwarder operations and had satisfied the independent assessors of their levels of skill and competence.

The Minister presented College certificates to the four

trainees; Lewis Bowsher of Moffat, Gavin Henderson of Selkirk, Colin McGregor of Dunoon and Dennis Smith of Arbroath.

The site at Eskdalemuir was generously provided by Kronospan Forestry, and was overseen by George Birrell, in conjunction with Elliot Henderson.

The FMO Skills Development Programme at Barony College, which was successfully piloted in 2007, has been financially supported by the Skills Development Scheme of the Scotland Rural Development Programme, together with very significant contributions in kind from John Deere Forestry Ltd, who provided two harvesters, Forestry Commission Mechanical Engineering Services, who provided two forwarders, Clark Engineering, who provided support services and Forestry Commission Scotland, who provided the initial harvesting site, near Dalbeattie.

Two further eight week full time courses are being planned for Spring 2010, (expected to commence in March and May), each providing four training places.

David Sulman, Executive

Director of the UK Forest Products Association said, "We were delighted to welcome the Scottish Environment Minister to site and to show her the pioneering skills development course in action. This is a unique course and we are immensely grateful to all of the project partners, without whose support the course would not have come to fruition.

"We are now finalising arrangements for the next two courses and also looking forward to the possibility of further courses beyond 2010. There is a pressing need for more and better skilled forest machine operators, not only to keep pace with increasing production from our forests, but also to address the issue of



Scottish Environment Minister, Roseanna Cunningham MSP and the four successful FMO Course trainees; Lewis Bowsher, Colin McGregor, Dennis Smith & Gavin Henderson

an ageing workforce.

"This course is an excellent example of what can be achieved by partnership working and we look forward to continued success."

Skilled worker shortage may jeopardise food production say Lantra

THE nation's ability to produce enough food will be challenged because of a critical shortage of skilled workers in the environmental and land-based sector.

This warning, affecting everyone working in the sector, including land-based engineering, was presented to Westminster MPs on 21 October with the publication of Lantra's latest 'Skills Assessment' research.

The report, produced by the Sector Skills Council for the UK's environmental and land-based industries, highlights that 31% of vacancies across agriculture are hard to fill because of skills shortages,

compared to 21% across all sectors, with significant problems for farm managers (70%) and farmers (59%).

Furthermore, challenges such as climate change, new technology, food and fuel security mean that farmers and growers now need to acquire even higher levels of skills and knowledge to do their job.

Lantra say their Skills Assessment research is based upon a comprehensive review of changes and evidence that has emerged over the past year. It sets out the skills gaps and shortages of the current workforce and identifies the projected skills needs through to 2017.

Commenting on Lantra's key findings, Chief Executive Peter Martin said, "This major piece of research gives us all food for thought. We must address these critical shortages in the workforce now and take on board the need for ever increasing levels of skills.

"This is also a modern and technical sector and if we are to meet the challenges of climate change and food security thrown at our farmers and growers, we must act now to address these skills issues."

"Clearly, we simply cannot afford to get this wrong and must equip our farmers and growers, and those that service them, with the right kind of

specialist, cost-effective skills support they need," Peter Martin continued.

"There are thousands of businesses out there prepared to play their part, but their vital role in feeding the nation has to be recognised and supported at the highest level."

Richard Longthorp who chairs the Agri Skills Forum added, "We need to attract 60,000 new entrants into agriculture alone over the next decade just to stand still. Not only do we need to equip them with the right professional skills but we also need to make them feel part of an industry that itself is viewed as professional."

LAND.TECHNIK-AgEng 2009 and Agritechnica Show, Hannover

Eur Ing DAVE TINKER, FIAgE and General Secretary of EurAgEng reports

THE second Land.TechNIK AgEng Conference was another success with over 700, yes 700, participants.

There was an increase in international attendees, an increase in industry supported papers, and all this during a recession. I have to say that throughout (mainland) Europe, research and development still seems to be going strongly to ensure that companies will hit the land at full throttle when farmers start buying again.

VDI-MEG, the German professional body for agricultural engineers who are the organisers teamed up with EurAgEng in 2007 to turn the conference into an international English language conference. The 2009 conference showed that this had been the correct move.

One company sent 92 engineers and another 72. Speakers from commercial companies queued up to show to their competitors what they had been up to and the researchers were able to give presentations showing how good their rigs, data collection and analyses were and how they would be excellent partners in even more joint research projects.

This conference does benefit hugely from being held immediately before the giant Agritechnica agricultural machinery show and attendees of the conference were able to buy heavily discounted tickets for the Sunday and Monday pre-view days. Agritechnica itself organises research presentations on various topics, which included Controlled Traffic Farming this year.

Apart from the agricultural machinery on show, there are large halls with a variety of academic establishments describing current research projects, another full enough with major component suppliers to enable anyone to build their own bitsa tractor, and indeed the Russians, Chinese and Poles all had tractors there built with major components (engines, transmission, etc) from the major well known Western manufacturers.

Altogether I heard that there were over 2500 exhibitors from 43 countries at the Agritechnica show. Over 300 entrants were received for the Agritechnica Innovations Competition with 5 winning Gold medals and 28 Silver medals which again

shows how seriously the industrial companies treat the show. All of this showcasing of the latest developments in agricultural machinery with visitors from all over the world was highly encouraging.

But the British contingent, whether attending the Conference or exhibiting at the show was disappointingly small. Certainly at the Conference there were fewer Brits than North Americans and even fewer than from the Far East.

It was, however, extremely good to see 2006 EurAgEng Award of Merit winner Ray Clay, who designed the Fastrac suspension system, at the conference and show. Nominally retired, Ray, along with fellow ex-JCB retiree Tony Moore, was catching up with contacts and checking over the innova-



Ray Clay (EurAgEng Award of Merit holder) at Weber-Hidraulik discussing their double wishbone suspension unit for spray vehicles

tions such as the new suspension system for the Challenger RoGator self-propelled sprayer or the Carraro transaxle fitted with the Torotrak IVT transmission.

All in all the conference was eye-opening with 80 research presentations and a plenary presentation from Prof Martin Richenhagen, AGCO's Chairman, President and CEO. Agritechnica is just mind-blowing. It could be called the 'biggest toy-shop in the world' but it's too important for that!

So will we meet more British engineers there next time? 4-5 November 2011 for LandTechnik AgEng and 6-10 November are provisional dates for Agritechnica.

Like father like son



PICTURED above are (L-R) IAgRE member Andrew Downing, family friend Julie, Charles Downing and IAgRE CEO Christopher Whetnall at a recent Brooksby Awards ceremony.

Charles received 'The Leicestershire Agricultural Machinery Society Prize for the best first year Agricultural Service Engineer'.

The Institution of Agricultural Engineers 'Award of Commendation' went to third year apprentice Adam Godwin of Ben Burgess. Unfortunately he was unable to be present to receive his award.

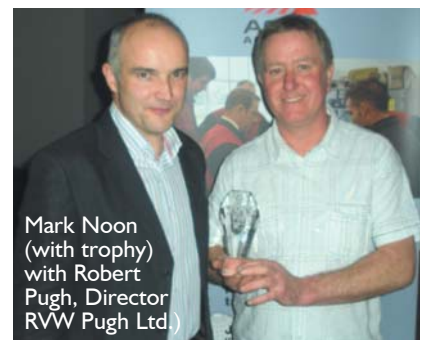
High Noon for Pugh

MASSEY Ferguson held its awards ceremony for the Technician of the Year award at the Ramada Hotel, Kenilworth, recently.

Each year the best fitters are nominated and then put through their paces in demanding tests that cover hydraulics, electronic diagnostics and computer repair and servicing.

This year Mark Noon of RVW Pugh took the coveted title. Based at RVW Pugh Ltd's Cheshire branch, Mark had already reached the final five in last year's competition, and his continued hard work and high quality workmanship meant that he was nominated again.

When Massey Ferguson then put him through his paces as



Mark Noon (with trophy) with Robert Pugh, Director RVW Pugh Ltd.

part of the final three he knew the competition was tough stating, "The other two nominations were excellent fitters, and I knew that to win I had to give my best."

Mark was clearly delighted to take the title. He said, "I was surprised, the competition was tough and the standard throughout was very high."

No substitute for experience

IAgrE President, RICHARD ROBINSON is dismayed by bureaucracy but given heart by visits to British manufacturing success stories

THE last few weeks have seen the results of too much rain, and I am sure many of our Soil and Water members are saying something along the lines of 'The old River Boards would have cleaned out those culverts, and never allowed building on flood plains'.

My grandparents' house flooded on a regular basis, we got used to cooking on the electric stove (supported on bricks), because the coke stove would be under water. The old River Board solved our flooding problem, but I suppose that meant someone else got more water more quickly than before.

I subsequently found out that the engineers had thought of that already and prepared a flood plain - guess what is built on those fields now? A housing estate!

Surely many of the problems we face are due to a disjointed planning process which has abandoned quality standards and replaced them with lots of paper and 'Risk Assessments' which take no account of years of experience gained in practical work.

AS a more positive alternative to that thought, I recently visited JCB's Compact Products Factory and saw the huge investment in improving the quality and profitability which has taken place in the last year.

Ian Sayers gave a short but really upbeat presentation (he was Managing Director of JCB Landpower when he spoke at our 2008 Conference) which included some sobering statistics. In 2007 the factory produced 14,000 machines, in 2009 they expect 3,000, albeit some products are more complicated.

Nevertheless the last year has seen effective and positive investment, I was particularly impressed with the method of checking for hydraulic leaks - not complicated, but really effective and a great confidence boost to hard pressed construction equipment salesmen!

We also visited Greenmech on the third of November, organised by our West Midlands Branch and were made very welcome by the Turner family. They have been investing heavily in product development, like most of us, we sometimes prefer not to know exactly HOW much, but their success is there for all to see, and I was once again particularly impressed with the commitment to quality.

It was also very interesting to meet some of the stalwarts of our industry, and the people who ensured that our verges and hedges are properly trimmed. They also provided extra work for the JCB's that should be maintaining our ditches.

AT Agritechnica there was evidence of huge and sustained developments from Claas with new versions of the Xerion (a concept I fully understand, but with which I always had problems when selling the Deutz Intrac). Yet more evidence of a company staying focussed on a market it understands.

What are the common denominators in these companies? Private ownership by the families that started the business, so investment can continue, even when the bean counters would suggest the opposite.

I fully understand the faith

employees have to put in their leaders, and the pain when redundancies are the only solution, but we should admire the commitment of the management who haven't given up hope.

Finally, Season's Greetings to one and all!



Seasons Greetings

to all our members from
everyone at IAgrE

Pre-Incan hydraulic irrigation systems

Fluvial Waru Waru system on the shores of Lake Titticaca, Suancata

ANGELA KHUDONAZAROVA, Senior Engineering Consultant, Parsons Brinckerhoff examines a Pre-Incan irrigation system which finds itself back in the news due to its ability to withstand current climate change pressures

THE Andes were the home of advanced civilisations centuries long before the arrival of the Conquistadors.

They created an extensive agricultural landscape that reduced many of the climatic risks associated with farming such as seasonal floods and droughts, frosts, poor soils and drainage limitations. By doing so they improved cultivating conditions of marginal lands.

Relicts of these landscapes are found throughout the neotropics from central Mexico to the Bolivian Mojos. By far the largest evidence of these systems is found in the Lake Titticaca basin.

In 2001 as part of my Masters I travelled to Peru, to the Lake Titticaca Basin, to investigate these systems which date back to 300 BC, before the rise of the Inca empire. Back then, rural farming families in Puno, south east Peru, were still constantly battling against the same severe climate on marginal lands as their ancestors.

In 2009 I wondered if they were facing the same risks on a grander scale or whether the systems were no longer functioning.

The reintroduction of a system of raised field cultivation, as used by their forefathers, has reduced production risks and enabled the successful cultivation of lands labelled of

‘poor agricultural potential’.

The objectives of my study were the evaluation and rural appraisal of this pristine system of raised field agriculture, known as Waru Waru in the local Quechuan dialect.

WARU WARU

THE agricultural potential of the area known as the altiplano in Peru, is severely limited by conditions of soil and climate.

So whilst Waru Waru has provided an additional element in the important system of diversification, it is an optional coping mechanism used by farming families to survive in the harsh environment of the altiplano made even harsher by the impact of climate change.

The Sierra or Andean region covers more than a quarter of Peru's territory. For the most part this area is inharmorous and barren. Much of the Sierra, particularly in the south, is a high plateau with an average elevation of 4,000m (13,000ft). This is the region

known as the altiplano and the area were I first studied Waru Waru in 2001.

The altiplano is home to both Quechua (northern) and Aymara (southern) Indians, who live predominantly by herding and farming, much as their ancestors did in both Incan and pre-Incan times (circa. 1500 AD and before).

Major crops cultivated in the region include potatoes, quinoa and cañhua (both high protein grains), barley, broad beans, maize and oats.

PRE-INCAN HYDRAULIC IRRIGATION SYSTEMS

ARCHAEOLOGISTS working in the Americas during the early 1960's discovered evidence of extensive agricultural engineering works that involved the movement and modification of the landscape so as to increase the agricultural potential of the land.

These ancient remains can

be found in the seasonally inundated tropical savannas of the San Jorge floodplain of northern Colombia (Parsons, 1966), near Guayaquil in Ecuador (Denevan, 1967), in the savannas of the Llanos de Moxos, the Amazon Basin and most extensively in the region of Lake Titticaca (Smith et al 1968).



Present day raised fields of the Balien Valley in highland West Guinea. 1962. Photograph by Karl Heider (Heider 1970)

Due to its abundant native diversity and access to lake water for irrigation, Puno has a better natural resource base than most other areas of the altiplano. However this is counter balanced by fluctuations in weather patterns and in Puno's isolation from, and lack of direct access to, national markets.

AGRO-CLIMATIC CLASSIFICATIONS

CLASSIFICATION of areas is



Map 1-1 Peru, Latin America



Map 1-2 Peru, project area

an important issue for the analysis of replication and transfer of technology.

According to Vidal the altiplano or Lake Titicaca catchment area is comprised of Suni or Jalca: the high valley lands with a cold climate from 3,500m - 4,000m, the Puna: the cold intermontane basin with a very cold climate from 4,000m - 4,800m and the Jancca or Cordillera: the high peaks with a glacial climate of more than 4,800m. These three zones are then subdivided into agro-ecological zones such as Circunlacustre, Suni, Puna Húmeda, Puna Seca and Cordillera.

Farmers generally manage up to 70 or 80 small parcels / compartments of land, often located at several different elevations and in different microclimates. This field scattering maximises risk reduction and forms an integral part of a system of diversification management commonly employed by farmers of the area.

The agricultural year (Campaña Agrícola) begins in August. This is followed by a period of planting over the first four months with the harvesting occurring between the months of March and June.

Given the degree of centralised agricultural planning and management used in pre-Hispanic times, it was possible for the ancient civilisations of the area to support dense populations. This concept of centralised control was therefore an important aspect to the development of successful systems of hydraulic technology used in pre-Incan times.

The issue now is whether this concept still applies to the success of rehabilitated irrigation technology or whether an alternative system of land and agricultural management is now more appropriate.



Photo 1: Seasonal Flooding. (Source: CARE).

There are other damaging impacts caused by flooding.

Photo 2 illustrates the aftermath of a flash flood of the River Iiave in April 2001. The bridge was completely destroyed, restricting the communities' abilities to access services such as markets, health centres, schools, transport and commerce.



Photo 2: Results of a flash flood of the River Iiave during April 2001. (Source: authors own.)

WARU WARU SYSTEMS

WARU Waru systems are traditional rectangular or circular in shape.

Bed and canal dimensions range from between 4-10 metres wide, 1 metre tall and up to 100 metres in length. There are three main types of Waru Waru, which are characterised according to the source of water supplying them.

• Phreatic systems

IN this system the main source of water and soil moisture is ground water. These systems are predominantly found in areas which have a suitably high water table and where there is an appropriate mechanism for groundwater recharge such

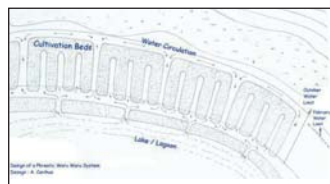


Figure 1: Plan View of a phreatic Waru Waru designed system. (Source: Murillo, 1992) Scale guide – platform length approximately 30m.

as an infiltration lagoon.

• Pluvial systems

RAINWATER is the primary source of water. Systems of this kind require small lagoons within which water can be stored during dry periods. In addition to this a system of canals must be built to enable distribution of the water to the beds. Pluvial systems are usually located at the base of hills or mountains.



Figure 2: Plan View of a Pluvial Waru Waru designed system. (Source: Murillo, 1992) Scale guide – platform length ranges from 15m – 50 m

• Fluvial systems

IN these systems water is supplied from nearby surface watercourses such as lakes and rivers. Again a system of infrastructure such as canals and dikes are required for transportation of the water from source to point of use.



Figure 3: Plan View of a Fluvial Waru Waru designed system. (Source: Murillo, 1992)

MICRO-CLIMATE ANALYSIS

MICROCLIMATES created by the construction and use of raised fields such as Waru Waru, provide protection against climatic events that cause damage to crops.

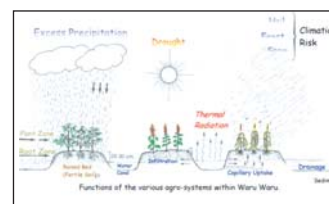


Figure 4: Microclimate analyses within Waru Waru. (Source: A. Canahua, 1992)

Figure 4 illustrates the specific microclimate attributes found within the canals and raised beds, as well as the sub-soil and atmospheric conditions. The water retains enough solar radiation to raise overnight temperatures by nearly 4 degrees Fahrenheit.

In comparison to Waru Waru, the natural altiplano, without any modification of the natural landscape, requires a high level of agricultural mechanisation and capital input, systems of both irrigation and drainage, has a high risk of frost, drought and flood, and is low in both biomass and biodiversity.

In contrast, when the altiplano's landscape is modified with raised beds, there is a marked increase in the amount of biomass generated in the system and in the diversity of species. There is a considerably reduced risk of damage due to frost, and due to the double height of the bed, less risk of flood damage.

Overall the microclimate is enhanced and additional systems such as aquaculture and the production and recycling of nutrients are feasible. During seasons of excess rainwater, the canals expedite drainage.

Conversely when there is drought the same canals readily impound water for use by the crops.

CONCLUSION

TODAY, climate change continues to wreak havoc in the altiplano, where the arrival of freezing temperatures in March this year, months earlier than usual, have killed more than a dozen people (*Peruvian Times*, April 24th 2009).

Moderate hail storms are predicted for this year and temperatures are expected to drop in July and August to as low as -27° C (-16° F) in areas that lie above 4,000m

continues over

(13,000ft).

In Puno, rain has destroyed harvested potatoes and freezing temperatures have destroyed more than 50% of the quinoa crops. Alipio Canahua, my supervisor from my 2001 studies, is still working in agricultural extension in the area. He says, "In Puno, we permanently face emergencies because of cold temperatures and floods, but there are technological, genetic and traditional resources available to solve problems caused by the climate."

Canahua also mentioned quinoa varieties resistant to frost, drought or saline soil. "We also have the traditional knowledge of the campesinos [farmers], with which we can develop appropriate technology if the government provides investment."

"One traditional technique for the flat altiplano [continues to be] that of the Waru Waru or raised fields, a method that effectively protects crops from floods and frost damage. Although this technique fell into general disuse hundreds of years ago, there are a number of pilot projects to restore the system".

Canahua said he still sees many of the raised fields being maintained since the program ended in 2001. He is now looking at using them in conjunction with other ancient techniques such as interconnected irrigation lakes called 'qochas' and the Inca-built terraces known as 'andenes' for farming the steep Andean slopes.

The Waru Waru technology was such that the impact of climatic fluctuations, both seasonally and diurnally, was minimised. Soil fertility is maintained in the system as silt, sediment, algae and plant and animal residues decay into nutrient rich-manure.

The main attributes of Waru Waru can be itemised as precipitation management, drainage facilitation, climate risk reduction, crop maximisation and natural fertiliser production.

The systems were culturally based, and were managed at either the farm household level or on a larger community scale.

Given the poverty of farming communities in the altiplano, the technology of Waru Waru does not make a prerequisite of capital finance. It is a low cost, although high labour cost,

system that increases productivity and mitigates loss or damage to crops from frost, flood and other climatic events.

The level of manual commitment to Waru Waru construction and maintenance is high. However, the higher levels of production over a period of years often offset this labour cost.

Climate change, resulting in both seasonal and daily influences, has forced the farmers of the altiplano to become more diverse in their agricultural practices to help combat these changes.

Waru Waru provides a new system that is effective, straightforward and productive.



Photo 3: Rectangular Waru Waru beds during the growing season at Caritamaya, Puno

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Diversification

THE photographs below illustrate some of the many varieties of potatoes grown in the altiplano.

This diversity reduces the risks that some crops will inevitably face in poor conditions of soil and climate. Diverse production zones, domestication of a diversity of plants and animals and maintenance of a wide genetic resource base also help in the reduction of risk that farmers face. Diversification is an important factor in risk management.



Potato varieties of the High Andes



Diversity of crops: potatoes, quinoa and cañihua.

A summary

- THE use of Waru Waru and other systems of raised field technologies provides an alternative to conventional agriculture development. It is a water management technique that holds great importance in the Andes.
- MODERN agricultural development is not always appropriate to every community. Peru's history with green revolution agriculture is testament to this alone. Traditional agricultural practices hold methods and solutions that are far more relevant and appropriate. These systems are productive, sustainable, and ecologically sound and centred on the socio-economic and cultural features of the Andean people. As such there is no one model of replication for Waru Waru because each community situation is unique. Knowledge of these ancient systems has to pass on to those most benefited i.e. small-scale subsistence farmers in the developing world.
- IT is effective in its mitigation of adverse climatic effects through frost reduction, flood protection and temperature exploitation. The creation of specific micro-climates noticeably contributes to effective risk management.
- IT is sustainable at both the household and community level, especially in conjunction with other systems of diversification management. Effectively managed, it will also sustain and abet its surrounding environment.
- IT is efficient in its maximisation of water use, for both drainage and supply, and in its ability to provide green manure. It is not financially reliant and can therefore be used by low income, resource-poor farmers.
- IT is relevant to the small-scale farmer as an indigenous system primarily developed with the specific attributes of the altiplano in mind. It is therefore a culturally acceptable and appropriate system of cultivation.
- Waru Waru is a risk reduction strategy - not a solution to climate change, but an option for managing the risks of farming in the Altiplano. It also needs to include diversification of productive activities and, although it is a labour intensive system, it appears more appropriate in the environment of the altiplano than imported capital-intensive systems.

Campaign

for the Farmed Environment

Farming and conservation groups have joined forces with the Government in a groundbreaking agreement to help farmers and land managers protect and enhance the nation's countryside

THE Campaign for the Farmed Environment (CFE) aims to retain the environmental benefits formerly provided by set-aside under the Single Payment Scheme (SPS) in three key areas – resource protection, farmland birds and farm wildlife.

The industry-led voluntary approach, which was given backing from Government in July, is seen as the most viable alternative to retaining the environmental benefits that were provided by set aside.

A network of Beacon Farms will be established across the country to demonstrate how the CFE will work in practice, as well as allowing other farmers and land managers to share ideas in backing the Campaign.

All farmers, land managers and advisers have a key role to play in ensuring the CFE is a success. The Campaign is asking farmers and land managers to renew their existing Entry Level Stewardship (ELS) agreements and choose at least one in-field option (if they are in ELS), retain and correctly record their current area of uncropped land and adopt at least one voluntary measure to meet the campaign targets. Advisers and agronomists are also being challenged to ensure they understand the environmental challenges for farming.

The Campaign unites key industry stakeholders - the NFU, CLA, AIC, FWAG, GWCT, LEAF, AICC and CAAV - to work in partnership with Defra, Natural England, the Environment Agency and the RSPB.

Working at grassroots is seen

as key and Local Liaison Groups have been set up in target counties to provide tailored advice and guidance to farmers and land managers depending on the environmental challenges and opportunities in their area.

The Campaign will also bring together the many and confusing projects aimed at farmers' management under a single banner. A number of challenging objectives and targets have been set, and must be met over the next three years, to avoid the potential for future regulation. Targets include:

- **Double the area of key in-field ELS options (additional 40,000 hectares)**
- **Retain 179,000 hectares of uncropped land across England and improve the management of at least one third of this land to support habitats for birds, insects and mammals**
- **Increase the current national level of voluntary environmental management by at least 30,000 hectares**

NFU President Peter Kendall and CLA President Henry Aubrey-Fletcher invited Defra Secretary of State Hilary Benn to join them for the launch at Peter's farm in Bedfordshire on November 5th.

Mr Kendall said, "This is all about delivering a culture change in both farming practices and the way we approach regulation. Although it's the most ambitious campaign farming has ever faced, the whole industry, from suppliers

and advisers to farmers and landowners, is absolutely committed to making it work.

"The alternative is having the regulatory option forced upon us which will no doubt bring with it more red tape and cost to farmers and growers.

"We all have a part to play in making sure this Campaign works. All farms have wildlife, natural resources and farmland birds that need protecting and no-one cares more for the land than our farmers, growers and landowners. They know that a healthy environment is vital for a sustainable future; one in which we can grow more but impact less.

"This Campaign is all about the industry uniting to bring about change but we're also encouraging ideas and initiatives from any organisations that think they have something to offer.

"We have all been challenged by the Secretary of State, who has shown belief in the farming industry, and it is now down to every single one of us to work together and deliver on our promises to secure and enhance the environmental management of farmland."

CLA President Henry Aubrey-Fletcher said, "Every farmer, landowner, land manager and farm adviser has been given a tremendous opportunity to show the industry can work together to solve environmental challenges without the need for costly and burdensome regulation. However, it will take commitment from every one of us to make the Campaign a success.

"Many farmers and land managers already undertake measures on their land to protect the wildlife, birds and natural resources, although all of these are under increasing pressure from factors such as climate change. There is still more that can be done while maintaining productive and profitable businesses.

"I urge every farmer, landowner and land manager to adopt at least one of the Campaign's voluntary measures on their land whether this be retaining and managing former set-aside to protect soil and watercourses, increasing game cover to provide winter food for farmland birds or sowing pollen and nectar mixes to boost on-farm pollinators. There is something for everyone in the Campaign."

Environment Secretary Hilary Benn said, "The Campaign for the Farmed Environment is a testament to the determination of farmers, government, and environmental organisations to work together to support and protect wildlife and biodiversity. Two-thirds of England's farmers have so far put part of their land into an agri-environment scheme and the Campaign's challenge is to build on this excellent start.

"And for those yet to join a scheme, we want to encourage them to take voluntary action that best fits how they farm, so they can support wildlife and protect water quality while continuing to produce food in a sustainable way."

www.cfeonline.org.uk

combating the effects of climate change

The village of Shyamaghat

LISA BUNCLARK, funded by the Douglas Bomford Trust, spent this summer working on a voluntary project in Shyamaghat, a small village in the Himalayan foothills, to alleviate some of the agricultural problems faced

THE primary source of sustenance in the mountain states of India is agriculture, practised in less than perfect conditions including extreme climate variations, inaccessible terrain and severely over-exploited soil and water resources.

Shyamaghat is a small, remote village nestled amidst the Himalayan foothills in the north Indian state of Himachal Pradesh. All the inhabitants of the village make their living from agriculture, growing cash crops such as corn, capsicum, aubergines and cucumbers.

Farming is small scale and carried out on a series of terraces cut into the steep Himalayan hills. No machinery is available to the families and ploughing is carried out using old-style, hand steered ploughs drawn by oxen. The living

made by these people on the land is meagre and they have no guaranteed annual income as crop yield and prices can vary dramatically from year to year.

In recent years, the income received by these farmers has reduced as crop yields have been poor and so there has been less produce to sell once they have taken what is required to feed their families.

One of the main reasons for the decrease in yield is the reduction in rainfall, which has occurred across the country as a whole and is not an issue confined only to the state of Himachal. In India this year, water reserves towards the end of the hot summer season in June/July were 40-50% lower than usual and unless measures are taken to maximise ground-

water recharge during the annual monsoon season, it is likely that water resources will continue to reduce year on year.

The main cause of this problem is global warming.

Traditionally the monsoon season falls during the months of July, August and September, and approximately 70% of India's annual rainfall is received in the space of these 3 months. However, in recent years it has become apparent that the hot, dry summer season that immediately precedes the monsoon season is extending and the rains are arriving increasingly later.

Additionally, when the monsoon rains do arrive, they are less intense and last for a shorter period than they previously used to.

The implications of climate change on water supply are compounded further in the region of Himachal Pradesh in particular due to the mountainous terrain. The steep hill sides result in a high percentage of rainfall runoff during the monsoon and in some areas the runoff is so great that within a few minutes dry nullahs (steep sided valleys) become raging torrents.

In some cases these rainwater rivers dry up within a few hours, but in others they flow for the remainder of the wet

season and for several weeks or months after the rains have passed.

In addition to these temporary springs, there are many natural springs that flow throughout the year as meltwater runs from the high snow-topped peaks of the Himalayas, down through the nullahs in the surrounding foothills. The villagers of Shyamaghat and those in many of the surrounding rural areas depend on natural springs as their primary (and in some cases only) source of water and a large proportion of the women's time daily is spent walking to the hand pumps to collect water for their families.

However, in the same way that water reserves are reducing each year, the flow of natural springs is becoming increasingly low and it is feared that unless action is taken the springs may eventually dry up completely leaving the families with no nearby source of water.

The implications of such an occurrence would be huge as the natural springs are the source of life and income for the villagers and are needed for all their everyday needs, including drinking, washing, cooking and crop irrigation.

THANKS to funding from the Douglas Bomford Trust, this summer I was lucky enough to



Digging foundations for the irrigation tank

... the flow of the spring can be sustained for several years to come by increasing the percolation rates of rainfall

have the opportunity to spend 12 weeks on a placement in India using my skills as a civil engineer to help alleviate some of the problems faced by the villagers of Shyamaghat.

I was selected, along with fellow engineer, Marie Kelly, to carry out the voluntary placement by the British charitable organisation Engineers Without Borders UK (EWB-UK), which is a student-led charity focused on removing barriers to development using engineering.

EWB-UK's programmes provide opportunities for young engineers in the UK to learn about technology's role in development and share their skills with development organisations working to relieve poverty.



The reinforcement cage for the irrigation tank

In partnership with EWB-UK, Marie and I worked with the Rural Centre for Human Interests (RUCHI), a private, non-profit, rural development agency that has been working with communities in the Himalayan foothills of North India for more than 28 years, to solve the water resource issues in Shyamaghat.

RUCHI's work activities range from awareness creation and empowerment of people to micro credit, preventive health care, sanitation, environmental improvement, agriculture and horticulture extension, soil and water conservation and man-

agement, utilisation of non-conventional sources of energy, promotion of rural technologies and other economic activities.

Although the situation in Shyamaghat may at first seem impossible, the flow of the spring can be sustained for several years to come by increasing the percolation rates of rainfall. If the proportion of rainwater runoff in the catchment area can be reduced, more water will percolate and infiltrate, which will build-up the groundwater reserves.

It is this groundwater reserve that provides the source for the spring in the dry summer months; hence if the level of the water table can be increased, the flow of the springs will also increase. With

a larger volume of water, the villagers of Shyamaghat will have more water available for day to day use, but most importantly for irrigation.

The result of this is two fold; firstly, the crops currently grown will have a higher yield and produce a higher quality of crops. Secondly, where previously the reduction in spring flow during the summer left no surplus water for use outside the necessary day-to-day tasks of drinking, cooking and washing, water will now be available for irrigation throughout the entire year.

This means that the villagers can make more efficient use of their land and produce additional crops, increasing both the volume and variety of produce.

These changes will of course also lead to an increase in income for the farmers, improving their general standard of living and providing some security for the future.

THE simplest way that an increase in rainwater percolation can be achieved is by the construction of gully plugs and/or a check dam across the nullah in Shyamaghat along

which the majority of the rainfall runoff flows.

Gully plugs generally consist of a random rubble masonry (dry stone) wall wrapped with a wire mesh that forms a 'plug' in the nullah. Due to the gaps between the rubble the gully plugs do not completely stem the flow of the runoff, but it is slowed down adequately enough to increase the rate of percolation slightly.

However, an effective way to increase percolation more significantly is by the installation of a check dam, which prevents runoff downstream of a particular point altogether. These check dams are relatively small at about two metres in height and are traditionally built using random rubble masonry construction, held together with a concrete mortar and finished with a layer of concrete plaster. In Shyamaghat a series of two check dams will be constructed along the selected nullah to maximise rainwater percolation.

The second way in which the threat of water shortage faced by the villagers of Shyamaghat can be greatly reduced is to provide an alternative source of water, so that they do not rely solely on the natural spring; this additional source of water will be obtained from a rainwater harvesting system.

Each household will have a 2,500 litre ferro-cement tank, complete with guttering to collect the water from the roofs, channelling it to the tanks and a coconut filter to purify the rainwater as it enters the tank. In addition to the individual tanks, the village will have two community ferro-cement irrigation tanks, each approximately 20,000 litres in capacity.

Rainwater for these tanks will be collected from rainfall running off gently sloping concretised floors that will surround each house. The rainwater will be channelled from where it falls on the concrete



Lisa Bunclark and Marie Kelly surveying the nullah prior to the check dam design

floor, to the irrigation tanks, via a system of gullies and pipes.

Several filtration chambers will be present along this transportation network to remove any large debris, such as leaves and animal dung, that may lead to a blockage in the pipes. Fine filtration by coconut filters is not required in the large community tanks as this water is not intended for drinking purposes.

When the rainwater harvesting system is completed, Shyamaghat will be a 'rainwater harvesting model village', providing an example which it is hoped locals in the surrounding area will recreate in their village with help from RUCHI.

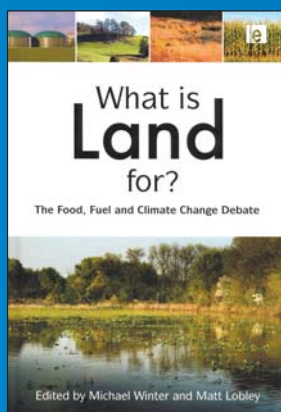
There are already plans to construct a similar rainwater harvesting system in the nearby village of Bhogpur and others are likely to follow if adequate funding can be obtained to assist with construction costs.

HERE in the UK it is easy to take our plentiful water resources for granted and fail to appreciate how fortunate we are to have water to satisfy us beyond our needs.

Taking part in this project has made me even more determined to follow my passion for development work in the agricultural sector and help farmers in developing countries increase both crop diversity and yield, securing their livelihoods for what I hope will be many years into the future.

If you would like to know any more details about the project, please contact me on lisabunclark@hotmail.com.

More information about RUCHI and EWB-UK can be found on their websites: www.volunteer-ruchi.org and www.ewb-uk.org.



Land and the use of land provide a key link between human activity and the natural environment
CHRIS BIDDLE
 reviews a major new analysis of the issues

The food, fuel and climate change debate

LAUNCHING a new book, **What is Land for?**, The Government's Chief Scientific Officer, Professor John Beddington described in his words 'The Perfect Storm' fuelled by an increasing demand for food, increasing demand for energy and increased demand for water at the time as the world is adapting to the impact of climate change. "Furthermore, I believe that crisis point will arrive in 2030 rather than 2050 as had previously been forecast.

"Demand for food and energy will jump 50% by 2030 and for fresh water by 30%, as the population tops 8.3 billion, and climate change will exacerbate matters in unpredictable ways."

ALL of which is addressed in considerable detail in **What is Land for?** edited by Michael Winter and Matt Lobley, both from the Department of Politics at the University of Exeter.

In recent years, agricultural commodity surpluses in the developed world have contributed to a mind-set of 'land surplus' in which set-aside, extensification and alternative land uses have been key terms.

Suddenly all this has changed as a consequence of rapidly shifting commodity markets.

Prices for cereals, oil seeds and other globally traded commodities have risen sharply driven largely by a shift to bio-energy cropping and fuelled by concerns over post-peak oil and climate change.

By and large, the agricultural sector has embraced the 'new environmentalism' of climate change with enthusiasm, proudly proclaiming the readiness of the industry to produce both food and energy crops, and to do so with confidence in markets to determine the balance between food and non-food crops in land use.

But policy and politics have not necessarily caught up with these markets, argue the

authors, and industry-led changes and some environmentalists are beginning to challenge the assumptions of the new 'productivism'.

Is it necessarily the case, they ask, that agriculture's best contribution to tackling climate change is to grow bioenergy crops or invest in anaerobic-digesters or make land over for windfarms?

Might not there be an equally important role in maximising the carbon sequestration or water-holding properties of biodiverse land?

What is Land For? tackles these key cutting-edge issues of this new debate by setting out a baseline of evidence and ideas.

The authors quote Winston Churchill to sum up the on-going debate.

"This is not the end. It is not even the beginning of the end. But it is perhaps, the end of the beginning".

The study of land and land use has evolved through time, they say, the main drivers in agricultural land use have themselves changed, but the central concerns remain how to satisfy the multiple needs and desires associated with the use of land.

Although large steps had been taken to put the issues of climate change and the depletion of natural resources on the global policy and science agendas, that could only be viewed as the end of the beginning.

In their view, large steps still need to be taken to position land as key to these debates, particularly they argue, in the UK and in a UK context - and especially in England where funding for research has been neutered and fragmented over recent years

If the rush to bio-fuels induced by a tunnel-vision mentality of reducing dependence on fossil fuels teaches us anything, it is that land research needs to be at the heart of climate change agendas, both in terms of policy and science.

What is Land for?

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Partnership formed with suppliers

United tackle enviromental issues

AS a worldwide brand, Manchester United's pledge is to lead the field on green issues, to become a model of environmental best practice.

And as part of that process, they actively involve their suppliers on a regular basis with meetings and discussions. "We cannot do this alone," says Keith McIntosh, Group Health, Safety and Environmental Manager at the Premiership club. "Our suppliers are key to measures we take". To achieve this the Club has formed a MUFC Supply Chain Partnership which is run in association with Government agency, Envirowise

Over the past years, MUFC have invited their suppliers to a series of meetings at the Club, not only to talk about energy savings and efficiencies - but to act as a catalyst for change within those businesses they are associated with.

The Manchester United model is persuasive, the Club having reduced costs by over £200,000 in recent years due to adopting energy saving measures according to Keith McIntosh.

One of the companies involved in the initiative is Stockport-based Cheshire Turf Machinery Ltd. Managing director Steve Halley has been attending the meetings for two or three years.

He told a recent gathering, "Frankly I was sceptical when Keith urged us to look at

every aspect of our business - and said we were bound to save money if we took a few practical steps and engaged our staff in an environmental programme.

"However, if nothing, Keith is tenacious, I would describe him as a 'Roy Keane in a suit'!

"We had just moved premises so I decided to see what area of business would have impact on costs.

"Some activities were just a case of getting organised, like recycling the wood from the crates in which the machines are delivered, whereas previously they were simply discarded. That saved money on skip removal.

"Then with water costs being such a large item, we installed a system which would recycle the water from our wash-down area - an important area of our business.

"I'm glad to say that the whole of our staff have embraced the energy saving measures - and come up with countless ideas of their own.

"We changed stationery, put timers on



Steve Halley receives a special certificate in recognition of Cheshire Turf Machinery's environmental commitments from George Johnstone, Chairman of the Man Utd Environmental Management Team, alongside Tony Sinclair, United's head groundsman

faxes and printers, and ensured lights were on timers and sensors. No part of the business was ignored.

"Analysing the most recent quarterly bills, I was delighted to discover that our energy costs had reduced by 26% compared with the same quarter last year.

"Quite apart from the satisfaction of being energy conscious, the cost savings make the efforts well worthwhile - and that encouragement was a direct result of Manchester United's initiative directed at their suppliers."

www.envirowise.gov.uk



LEFT: Recycling the water in the wash-down area has reduced water costs ABOVE: Andrew Robinson of amenity supplies company Rigby Taylor addresses the MUFC Supplier Chain meeting at Old Trafford watched by Keith McIntosh (standing left)



Battlefield to cattle field

A new scheme is teaching combat casualty skills for remote and rural workers

REMOTE and rural workers are more likely to die in the workplace than any other industry, with almost one fatality per week reported to the Health and Safety Executive (HSE).

And, with changes to the HSE's First Aid at Work (FAW) guidelines coming into effect in October 2009, exposing employers to fines of up to £20,000 and possible imprisonment, the UK's only first aid training course tailored specifically to teach the 'muscle memory' required to tackle emergencies that are seen in rural and remote locations has been introduced.

Hereford-based 7MST (7 Medical Support Training) has launched FARM (First Aid Rural Medicine), a unique training course that draws on the experience of highly trained ex-military medics whose knowledge is steeped in 'keeping people alive' in austere locations.

Agricultural and forestry workers, estate managers, game keepers and utility company engineers are among countless others who need better first aid training, the company says, to increase the chances of survival in the event of an emergency involving moving machinery, dangerous equipment, heights or isolation.

Training director Steve Benbow is a former military and Subaru World Rally team paramedic and 'remote area practitioner' who works with the NHS ambulance services.

He wants to reduce the staggering fatality statistic and said taking the necessary actions as a lone worker or 'buddy aid' in a remote location could mean the difference between life and death.

"The new guidelines state that employers now have to carry out a risk assessment as part of the change in legislation so we teach muscle memory. Our clients are put through the most rigorous training and role-play scenarios to give them the insight, knowledge and tools to deal with situations that are not traditionally covered in basic first aid training," he said.

"Much can be learnt from the pioneering techniques used by the military medical teams currently deployed in Afghanistan, especially from the approach to prolonged field care.

"I realised nothing like this existed in the UK specifically for rural workers, like the farmer who may be four or five muddy fields away from his home while operating dangerous, heavy duty machinery, or the estate manager organising a shoot who needs to be sure his staff can cope in an emergency."

FARM challenges traditional first aid methods with advanced, evidence-based training techniques that have been proven to work on military casualties so trainees become confident in a real life situation, especially in the event of a delayed NHS

response due to the remote incident location.

Steve Benbow added, "Standard first aid training relies on the imminent arrival of the emergency services within 8 - 16 minutes, but FARM challenges those techniques by teaching continuous casualty care with prolonged management of the sick or injured. In fact, some locations in the UK can expect a pizza to be delivered quicker than calling for a life saving paramedic ambulance.

"Basic steps like maintaining body temperature, keeping sugar levels up, stemming catastrophic blood flow and administering fluids can help to keep the casualty stable; which is vital when the accident scene is very remote and not easily accessible to the emergency services.

"It is therefore more vital than ever for rural employers to ensure their first aid training reflects the risk assessment and annual refresher training recommended within the legislation."

As part of the training, products rarely seen outside of specialist remote medical areas are demonstrated, such as Celox, a haemostatic clotting agent, and Emox, a chemical driven oxygen administration set. These are lightweight and durable and comply with the HSE's guidance that first aid equipment needs to be 'wherever people work'.

The training is awarded with a BTEC level 2 First Person on Scene (FPOS) certificate that

is accredited by the Royal College of Surgeons of Edinburgh.

The FARM course is endorsed by the Royal Agricultural College Cirencester, The Countryside Alliance and the British Association for Shooting and Conservation. Training is delivered across the UK and tailored according to the clients' risk assessment needs, individual topography and the risks that they face. Instructors are holders of Certificate in Teaching in the Lifelong Learning Sector

Instructors are LANTRA approved and are also qualified in hydraulic cutting equipment and advanced extrication technician trained by the Fire and Rescue Service.

For more information on 7MST or to book a training course call 0845 834 0144 or email training@7mst.co.uk.

The HSE, 2007/08 reports the following figures for agriculture, hunting, forestry & fishing in Great Britain:

- Fatal injuries - 42
- Major injuries - 694
- Over 3-day injuries - 1094

(As reported to all enforcing authorities - many more may not have been reported.)

IAgrE emphasises importance of CPD

The Council, led by Michael Woodhouse, recently debated whether the Continued Professional Development events are fit for purpose

AT the recent Council meeting held at Harper Adams university college, Michael Woodhouse, Delivery Manager at Natural England, led a debate entitled 'IAgrE CPD events - are they fit for purpose' all about the importance of Continued Professional Development (CPD).

Michael talked about what is meant by CPD, types of CPD, how members can go about acquiring the appropriate skills and the issues involved.

Christopher Whetnall, IAgrE CEO adds, "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.

"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".

CPD is acknowledged by many professions as vital to a successful career and must be self-owned and self-managed by the individual. Activities should also be based on a 'structured approach' relevant to the individual's needs and enhance that person's competence.

Typically CPD involves keeping up to date with the latest

advances, developing specialist knowledge, broadening knowledge and improving general knowledge and management skills.

The lively debate concluded with the agreement that a small team of members would take forward a number of recommendations and develop a set of options for consideration.

The group will aim to:

- Review the CPD processes within IAgrE and canvas members for views on how it can make CPD more relevant to members
- Review the option to upload CPD records electronically on the IAgrE website



Michael Woodhouse

- Seek to develop a programme that broadens the appeal of IAgrE to a wider audience
- Seek to develop joint CPD events in conjunction with other similar organisations

Further articles on CPD will be appearing regularly in future editions of Landwards

Council at work . . .





ANDY COBB, Professor of Plant Science at Harper Adams University College explains

Japanese knotweed (*Fallopia japonica*)

WHAT ARE WEEDS?

WEEDS are all things to all people, depending on the viewpoint of the individual.

To some they are plants growing where they are not wanted; to others they are plants growing in the wrong place, in the wrong quantity, at the wrong time; and to some they are regarded as plants whose virtues have yet to be fully discovered!

An intriguing example of the latter is the increasingly rare weed in cereal crops, corn gromwell (*Buglossoides arvensis*, formerly *Lithospermum arvensis*). It has recently been discovered that the seeds of this weed contain relatively high concentrations of stearidonic acid, a precursor of the long chain fatty acids commonly found in fish oils

It might then be that this weed becomes a successful crop to provide a sustainable source of these important components of the human diet in years to come, protecting declining global fish stocks.

The need to control weeds only arises when they interfere with the use of the land, and this is usually in the presence of a crop, such as in agriculture and horticulture. Weed control

is also necessary in other situations including amenity areas, such as parks and lawns, in water courses, or on paths and drives where the presence of plants may be regarded as unsightly.

It should not be overlooked, however, that weeds contribute to the biodiversity of ecosystems and should only be removed where financial or practical implications make their presence unacceptable.

In the absence of pesticides, including herbicides, it has been estimated by Oerke and colleagues (1994) that as much as 70% of the major crops of the world would be lost due to the action of pests, weeds and diseases, a value reduced to 42% with the use of agrochemicals. Without them we would need at least 90% more land to offset this loss in production.

However, only about 3% of the globe is available for agriculture. Hence the judicious use of pesticides is essential to feed an increasing global population.

INVASIVE WEEDS

THESE are plants that adversely affect habitats that they invade, from an economic, environmental or ecological

perspective.

It is thought that a combination of several mechanisms cause the invasion, since most introduced plants do not become invasive weeds. Common traits include:

- **The ability to reproduce both vegetatively and by seeds**
- **Fast rates of growth and reproduction,**
- **High dispersal ability,**
- **An ability to alter growth form to suit conditions,**
- **Adaptation to a range of environments and**
- **Association with human activity.**

An introduced species can typically out-compete a native species for nutrients, light, space and water.

One recent mechanism for success is the 'Novel Weapons Hypothesis', recently reviewed by Inderjit and colleagues (2006). This is based on the findings that *Centaurea diffusa* (Diffuse knapweed) and *Centaurea maculosa* (Spotted knapweed) are stronger competitors against native species because they release novel bioactive compounds into the soil which are phytotoxic to native species.

Many introduced invasive weeds in pastures are toxic or non-palatable, due to thorns and spines, and forage losses by invasive weeds in US pastures alone have been estimated at approaching \$6 billion per year. Indeed, Pimentel and colleagues (2001) have estimated that invasive weeds in the USA, UK, Australia, South Africa, India and Brazil are responsible for annual economic losses in crops and pastures of 87.4 and 7.52 billion dollars, respectively.

The term 'sleeping species' is used to describe plants that have appeared benign for years, but which might suddenly become invasive following natural events, such as flood, fire, drought, climate change or change in land management.

As an example, recent studies in Australia have identified a number of invasive species that are likely to shift their ranges over 1000 km southwards from the tropical and sub-tropical regions of the country with global warming. These will obviously impact on agricultural yields in the years ahead.

In the UK, five common invasive alien species are Japanese knotweed (*Fallopia japonica*), renowned for its

rapid growth and concrete-lifting ability; Himalayan balsam (*Impatiens glandulifera*), a fast-growing inhabitant of river banks and stream margins; Giant hogweed (*Heracleum mantegazzianum*), a coloniser of waste ground and river banks which poses a serious health risk to humans due to its poisonous sap which can cause severe blistering of the skin; Floating fairy fern (*Azolla filiculoides*) forms dense mats in slow moving water and streams; and Floating pennywort (*Hydrocotyle ranunculoides*), another aquatic weed that can block drainage systems and rapidly colonise slow-moving water.

Shaw and Tanner (2008) describe the development of biological control methods for these weeds, utilising insect pests and fungi introduced from the native countries of these species, for control in the UK, with mixed success.

WEED CONTROL METHODS

AS discussed above, the biological control of weeds, especially using insects and perhaps fungi, will become increasingly important in future, especially for crop growth in stable environments.

However, the vagaries of the weather in the UK will inevitably render this a limited approach. Mechanical weed control is becoming increasingly practised, especially in organic or pesticide-free zones.

The use of shallow tillage, a harrow or rotary hoe prior to or just after the emergence of the crop can be an important contribution to weed management and control. Weed control might be less effective

overall but the costs are also reduced compared with herbicide use. Crops can easily be injured, however, by mechanical control methods and an increased planting rate of 10% and above is sometimes recommended in the USA to compensate for potential crop loss.

Herbicide use is the most common, economical and effective means for weed control. A wide range of products is available for all our major crop species. However, due to the astronomical costs of developing a new herbicide, the success of glyphosate and environmental considerations, the discovery and commercialisation of new active ingredients has slowed to zero.

It is two decades since chemistry with a new mode of action appeared as herbicides. Instead, the agrochemical companies have concentrated on the development of variations on the same theme, ie 'me-too' or imitative chemistry, that is based on synthesising new analogues of existing molecules with, ideally, improved activity or a different spectrum of weed control.

A good example being the bleacher herbicides (which turn treated weeds white) that inhibit the plant enzyme hydroxyphenylpyruvate dioxygenase (HPPD) in sensitive species. Many HPPD inhibitors have been developed by several companies since their discovery in the late 1970s.

The arsenal of chemical weed control agents is, however, likely to decline in the coming years as a result of increased weed resistance to existing products, demands from consumers, changes in EU legislation for pesticide

approval and the implementation of the Water Framework Directive.

The new EU legislation 91/414/EEC proposes that active ingredients are to be judged by hazard rather than by actual risk. Thus, we know that some herbicides, at high doses, might cause cancer or reproductive disorders in laboratory rats (hazard) but, if used correctly, following label recommendations, they are safe to use in the field (risk).

Or, to use a more relevant, day-to-day example, we know that high doses of paracetamol can cause terminal liver damage (high hazard), but that the risk at the dose needed to cure a headache is very low.

The consequences of this legislation are that we might lose many valuable herbicides such as the auxin-hormone herbicides (eg 2,4-D and dicamba), pendimethalin (for control of grasses including black grass), linuron and ioxynil (valuable actives in the tank-mix that broaden the spectrum of weed control).

Along with the potential loss of the triazole fungicides for the same reasoning, this could lead to reductions in cereal yields of up to 35%. Fewer active ingredients could then lead to an increase in weed resistance, which would result in further yield losses, due to poor weed control.

Can we rely on fewer herbicides? The answer to this author is a resounding no, as illustrated by the example of glyphosate. Because it is very effective, economical and environmentally benign, glyphosate has become the most widely used and important herbicide in the world. It dominates the market for non-selective weed control and has now become a selective herbicide in transgenic crops (ie crops that have been engineered to breakdown glyphosate and so are not damaged by the herbicide, whilst all other vegetation is killed).

Indeed, there are now over 100 million hectares of glyphosate-resistant crops grown globally each year, with over 90% of the soybean, cotton and 60% of maize crops in



Himalayan Balsam (*Impatiens glandulifera*)

the USA. This success has resulted in less diversity in tillage and weed control practices and crop rotations, creating a selection pressure for plants that can survive glyphosate.

Further repeated and persistent glyphosate use in monocultures has seen the emergence of glyphosate-resistant weeds, which will lessen its value if it continues to be used in this way. Glyphosate then, is vital for world food production, and should be used correctly to avoid resistance and reduced efficacy in future. So, the consequences of reducing the number of available herbicide active ingredients are potentially alarming.

In the short term, food prices would rise from a lowered crop yield, whilst in the longer term chronic food shortages could be a real threat.

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Spotted knapweed (*Centaurea diffusa*)

Of lions & wildebeests

GEOFFREY WAKEHAM considers who, in the current economic jungle, has a better management philosophy, lions or wildebeests

These words of wisdom were originally written for Christmas 2008 and started with good wishes for 2009. World events intervened.

Anyway, here goes again. Let us hope we get to Christmas all in one piece.

Best wishes for Christmas and may the New Year treat you better than 2009 may have done.

BECAUSE of global warming there may be a shortage of reindeer and polar bears and this is my excuse for pursuing Lions and Wildebeests.

One of my students wrote as her final sentence to her final examination, *"I have run out of time but remember there are more wildebeests than lions."*

In spite of this truism the management posters ask us to be like lions, sharp of eye and confident of our strength. Go out there and seek out the prey (problem/challenge) and tackle it. Make sure you bring home the meat (profits) to feed the cubs (new products and infra-

structure). They are the next generation to maintain the pride (company). Leave a few scraps for the hyenas (shareholders).

Stuart Rose of M&S likened the old M&S to "a slightly mangy lion" when he joined the company, but as a "lion cub: alert, lithe, bright eyed, virile, all senses alert" after announcing the full financial figures after introducing his changes. (With a year gone since this was originally written the cub has grown older).

In reality, do wildebeest have a better management philosophy than lions? Should we develop a strategy based on being wildebeest and keep clear of becoming lions of the industrial world?

Looking at the different lifestyles and reproductive cycles may give us a clue to their relative success rates in maintaining or expanding populations. Wildebeest live in large loosely related herds alongside other grazing ani-

mals and move long distances to locate their food. Their food is easy to obtain in given areas over relatively short periods but they have to travel up to 3000 km/yr to locate fresh pastures. The availability and location of these pastures is not entirely predictable but past experience and an ability to locate grass over distances in excess of 50km mean they survive through the annual cycles and periodic climate shifts.

Their passage through an area stimulates fresh growth and fertilises the ground as they pass. Because most predators are territorial and limited in numbers, they do not have a large impact on the viability of such large groups of animals.

They are not seen as direct threats to man, but farming activities have disrupted some herd's migration routes. In some areas where cattle diseases have been eliminated by man, numbers have exploded.

They are seen as a major tourist attraction and this

increases the value of maintaining their environment. In the short term man may be able to mitigate the impact of climate change and also see the financial advantage of doing so. However major shifts in climate could see a loss of habitat with no access to new areas of pasture.

They act as a large organisation that targets predictable and easy markets. Though they have competitors for the same customers these have only a limited impact on the available income. They are willing to adjust their patterns of activity to ensure they adapt to small changes in the market environment and balance decline in one area by targeting other distant markets.

They stimulate the market by their activities in a given area. Major shifts in the market could easily spell disaster as they are so dependent on the status quo and may be unable to adapt to such changes quickly enough.

“As a business model the only positive pointers that can be seen from their lifestyle is that they cooperate within the pride”

Lions have a completely different life style and strategy for survival. They live in small groups with a clearly cooperative structure within a limited territory and defend it from other prides. They hunt a prey that is large, can outrun them and if mindful able to defend itself. By working as a team they are able to corner and bring down large animals. This allows them to gorge on meat while prey is available.

The migratory nature of the prey means that for long periods food is scarce. During these periods young animals will starve, only the strongest survive. To survive they will resort to catching very small prey. Climate change will impact heavily on numbers and has already led to the elimination of lions in a number of regions.

Though they are a tourist attraction, in the past man has hunted lions to extinction in many areas. Many farmers still see them as a threat to their livestock and persecute them.

As a business model the only positive pointers that can be seen from their life style is that they cooperate within the pride/company but not as a species/industry and when pressed they will change their hunting patterns/market. They have restricted themselves to a local seasonal market that fluctuates in size and is difficult to penetrate. Individual customers only trade once; they never come back to trade again.

Breeding patterns could be taken as a model for the policy regarding the introduction of new products and services. Wildebeest are highly success-

ful breeders producing fully mobile offspring within days of birth. Few constraints are put on the herd by the new animals.

Lions produce three or four cubs a year but often all of them will die within a year due to starvation. Those that survive take two to three years to mature into fully independent animals. When a new male takes over a pride it will often kill all the cubs of the previous dominant male.

It would seem that that Wildebeest have the better new product introduction policy. However, if their migratory routes are broken by the activities of man (farming, as well as climate change) then both they and the lion have a poor future in the wild.

The future business of being a Lion would seem to be limit-

ed to a wild life park in the West Midlands. Wildebeest may fare little better unless they replace turkey at Christmas. They will have to be bussed from wildlife reserve to safari park and back being released on the wrong side of a river to provide the necessary tourist spectacle.

With the increase in EU regulation, competition for available resources and a rapidly changing economic climate, will UK based industry do any better than the lions and wildebeests?

I propose we develop the life cycle of slime mould and cockroaches as business models. Let us drink to slime moulds this Christmas and tuck in to the odd cockroach haggis at the New Year. They will survive along with the cockroach. They are the future.



AGRICULTURAL ENGINEERING

*The Wrest Park Story
1924–2006*



Edited by
BILL DAY, LIZ FIELD & ANNE JARVIS

Agricultural Engineering: the Wrest Park Story 1924–2007
edited by Bill Day, Liz Field and Anne Jarvis.
Elsevier, 2009. 168pp

A book on the history of the work of the National Institute of Agricultural Engineering, which later became Silsoe Research Institute, is now available.

The first two chapters describe the origins of the Institute in Oxford in 1924 and its progress to Wrest Park in 1947–8 via Askham Bryan in Yorkshire during the war years.

The remaining 12 chapters describe the agricultural engineering work undertaken, together with highlights and personal anecdotes from former staff.

The price is £20 per book plus postage and packing as follows:

- UK: £5 per book
- EU: £8 per book
- ROW: £10 per book

For further details, or to order a copy please visit:

<http://www.iagre.org/wrestparkbook.shtml>

or contact IAGrE Secretariat on

T: +44 (0) 1525 861096 E: secretary@iagre.org

PROFILE: Chartered Environmentalist

Clive English is a senior Project Director and Land Consultant for HTSPE Ltd (formerly Hunting Technical Services) - a development consulting group based in the UK.

Clive has over 30 years experience in land sector work in over 17 countries in Africa, Asia and the Caribbean. A geographer and agricultural engineer by training, Mr English initially worked in natural resources and agricultural surveys later branching into irrigation agronomy.

For the last 15 - 20 years he has mainly focussed on programmes in environment, land use, and more resettlement planning, land administration and tenure regularisation.



Name

Clive English, CEnv, FIAgrE

Current Assignment:

Project Manager, Long Term Technical Assistance for the Millenium Challenge Account (MCA) Mozambique Land Component. Direcção Nacional de Terra e Florestas (National Directorate of Land and Forests DNTF) 2009 - 2013.

This is an implementation programme to improve service delivery in the land sector in Mozambique in the areas of land administration and titling and land use planning.

Academic Career:

- M.Sc Agric Engineering, Land Resource Management. (University of Cranfield, Silsoe College, Bedfordshire, UK) 1980.
- B.Sc Hons Geography, (University of Birmingham, UK), Upper Second Class, 1977.

Areas of Expertise:

Programme management, planning and implementation, land tenure and administration, policy, legislation and procedural development, participatory land planning and administration, resettlement planning, public liaison, public information and awareness, monitoring and evaluation as applied to the land sector, land institutions development and change management.

Training and teaching, environmental assessment and monitoring, application of remote sensing and geographic information systems (GIS) technology to land planning resource/use analysis, soil and land evaluation, land use mapping, institutional capacity building.

Why did you choose to become a Chartered Environmentalist?

ALMOST all of the very diverse programmes in which I have been involved have environmental issues as a common strand. Sometimes I am called on to address these issues myself or I may be in support of, or managing someone else in this role.

My experience has been that standards of environmental work - specifically consultancy - have been less than satisfactory.

How do you feel that being professionally registered (as a Chartered Environmentalist) helps you in your career?

IN my work supervising and managing consultants and practitioners I believe chartered status gives the authority to ensure the highest standards are maintained.

Environmental issues are too important to be left to casual or amateur specialists. I care about these issues both personally and professionally. Wherever environmental issues become important in multi-disciplinary work I am in a position to be able to address these fully.

What discipline areas have you worked in and which discipline area are you now working in?

- Soil science and land evaluations
 - Irrigation agronomy
 - Environmental Planning
 - Land use and natural vegetation studies
 - Land Use planning- Land reform - land administration and tenure
 - Reforming and rehabilitating the institutions of land and systems
 - GIS and remote sensing
- The last two disciplines are now the subject of my work in Mozambique.

What have been your main achievements?

STRONG land and environmental institutions are important change agents but the investment in them over the years has been weak - particularly in the developing countries where it is often needed most.

In the last 10-15 years I have successfully managed two major land related programmes in Guyana and Rwanda. Both of these programmes made a significant difference in several key areas, effective and efficient land titling, transforming the institutions of land and training people up to skills levels that have changed their lives. These are complex multi faceted implementation projects that if successfully implemented have wide ranging and tangible benefits.

Successful implementation of these two programmes, in par-

ticular have been significant achievements. The Guyana programme won a major ward for change management achievement under the Management Consultants Association annual awards programme.

How do you see your work developing in the future?

MY work in land administration and land titling and planning will certainly continue with the long term inputs envisaged in Mozambique.

This is a newly developing area of importance, centring on land rights as populations grow resulting in increasing competition for space. Traditional systems of land allocation are coming under increasing pressure with the result that formal law is increasingly coming into play.

Any tips for those newly qualifying?

STANDARDS are all important coming together in a mix of both academic qualifications in key areas, technical experience, and ethics in anyone individual.

Experience in field science is essential - this is the best possible training ground for all environmental work - particularly in development. The best possible advice is to ensure fieldwork and supporting science is sound - never take anything for granted and make sure that fact is separated from opinion.

MEMBERSHIP ENQUIRIES

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MEMBERSHIP MATTERS

BRANCH REPORTS

WEST MIDLANDS BRANCH

Visit to Jaguar Land Rover Training Academy - 29-9-2009

MEMBERS from the IAgrE West Midlands branch were fascinated recently on a visit to the new Jaguar Land Rover Training Academy to learn how an old book warehouse, which had stood empty for several years, was transformed into a low cost energy, state-of-the-art technical training facility.

The new Academy brings together training facilities previously based at Jaguar Land Rover's design and engineering headquarters in Gayton and manufacturing facilities at Castle Bromwich. It occupies over 4,000 sq metres of floor area including a 60 metre workshop and training zone equipped with vehicles, components and systems for hands-on training. The facility also has 16 classrooms, including 4 that can accommodate vehicles.

The chemical company BASF helped Jaguar Land Rover with the renovation by offering advice and solutions in addressing environmental efficiency and sourcing sustainable materials for the project.

Instead of using conventional air conditioning in the classroom area, the design team choose a new type of plasterboard which contains phase change material consisting of microscopically small polymer spheres containing a wax storage medium. When the temperature rises the phase change material inside the polymer capsules absorbs heat and melts. When the temperature falls the liquid solidifies and emits heat which ensures a more uniform temperature, without the carbon emissions and costs



associated with conventional air conditioning.

"Some very clever design ideas have been built in," said William Waddilove, West Midlands member.



"Heat generated in a corridor is transferred elsewhere in the building and by being a corridor does not upset the temperature control of the rest of the open floor office. People sensitive lighting is used throughout except the foyer and other key areas. It comes on when rooms are occupied and light levels are adjusted to standard levels accommodating bright and dull weather."

After touring the building and training facilities the members had a glimpse of a range of production models but sadly they were not allowed to photograph next year's models!

WEST MIDLANDS BRANCH

Greenmech Chippers visit

AT the kind invitation of Mr Tony Turner, Chairman of GreenMech, some twenty five members and guests of the West Midlands Branch attended the factory visit and assembled in the Training Wing, where they were warmly welcomed by Tony and his son Jonathan, Managing Director.

After very welcome refreshments the proceedings began with presentations firstly from Tony, describing 'The Old' - he was then followed by Jonathan, whose topic was 'The New'.

Tony began by describing the fortuitous sequence of events that had led him from an apprenticeship with Bomford Bros Ltd in the 1950s, under the tutelage of the renowned Douglas Raymond Bomford, through years of work on prototypes and as a demonstrator - salesman to the building of a prototype County Hydramower (in his own time), and then in 1963 to setting up his own company as Turner Engineering Ltd.

The new company specialised in arm-mounted hydraulically driven flail mowers, mainly for Local Authority use on roadside verges, and from small beginnings grew to become a highly successful manufacturer and world-wide exporter, based on the pres-

ent site at Alcester. Later a separate entity was formed to own the site and the manufacturing arm, then Turner International, was sold to a conglomerate Group, Elswick Plc in 1979.

In the late 1980s Turner's main competitor, Bomford & Evershed Ltd, also joined the Elswick Group, and soon after the two companies combined to become Bomford Turner Ltd. Meanwhile, Tony's son, Jonathan, was pursuing a career as an engineer in the Royal Navy where he rose to the rank of Commander with responsibility for electronics and weapons systems on naval destroyers, and when Tony set up another new company to exploit the opportunities provided by the Climate Change lobby it seemed logical for him to bring that expertise to bear upon the new challenges that provided.

Jonathan then introduced 'The New' - the GreenMech company set up to exploit the need to reduce carbon emissions by the 'green' technique of chipping and mulching wood and brash rather than burning it. With good design a chipper can pay for itself, he pointed out, by saving labour

quite apart from its contribution to reduced CO2 emissions.

The most exciting developments of the new era have been the SAFE-Trak system, described as "the mountain goat with two short legs and two long legs" whereby the powered track on each side of the machine is independently enabled to move outwards and downwards to permit the machine to operate on slopes up to 35 degrees, and the concept of multiple disc cutters on the chipper flywheel in place of the traditional knives, giving three times the cutter life and reduced cost.

The company has grown rapidly and is



Tony Turner (left) and Richard Robinson, Institution President (centre), inspect the SAFE-Trak Chipper

continues over

the proud recipient of Queen's Awards both for Exports and for Innovation.

The visit continued with a conducted tour of the factory, with commentary from Tony and Jonathan. It was notable that the product range extends up to chippers able to deal with material up to 12" in diameter and includes around a dozen distinct models.

In addition the 'Flagship' of the range is a massive self-propelled SAFE-Trak tractor/tool carrier known as the Multi-Task MT 120, with full electronic/hydraulic controls, retailing at around £100,000.

The manufacturing facilities are no less impressive, with a recently-acquired laser cutting machine capable of cutting mild steel up to 20mm and costing around £500,000, 200-ton plus press brakes and a state of the art shot-blasting, zinc coating and powder-coating plant to produce the

high quality, durable finish for which GreenMech products are renowned.

The party then returned to the Training Wing to find further refreshments had been provided and these were enjoyed whilst discussions continued.

Proposing a vote of thanks at the conclusion of proceedings, the President highlighted the fact that the outstanding success of GreenMech demonstrated clearly that the current decline in the manufacturing industry was far from inevitable, and that a well-run British manufacturing company, both within and outside the agricultural engineering industry, with a capable and enthusiastic management who listen to,



The factory tour - Jonathan Turner extols the virtues of the flywheel 'Disc-Blade' system

and meet, the needs of their customers can compete and win on the world stage.

The proposition was carried with acclamation, and all present agreed that the evening had been of great value and an exceptional event in the Branch calendar.

John Fox

YORKSHIRE BRANCH

Air Braking meeting

THE Yorkshire branch held a meeting titled *Air Braking* which was expected to be the usual slide show of equipment and details on the latest braking legislation.

Tractair's Martin Constantine and Alex Constantine Chairman and Quality Manager respectively arrived and when asked if they needed a screen and projector stated that neither was needed in their talk. This caused a little concern as the secretary was quietly told that tonight was going to be a 'hands on talk'!

On entering the room from the bar we were met with two long empty tables joined together, which as you can imagine made the audience wonder what was going on.

Martin and Alex were introduced by the chairman, who was not sure what was going

on either and handed the meeting over.

"Well chaps it's a hands-on night tonight", Martin said amid blank looks from the assembled few. He continued by telling us a brief history of the company explaining that 96% of their business was for export from the UK albeit the OEM's who fitted the gear then exported back to the UK among other areas.

He then said that we were going to build an air brake system for a tractor. Then one for a trailer before connecting them together and operating the trailer brakes!

He proceeded to introduce the various components, explaining in detail their operation and function in the system, while Alex assembled them in a logical order.

There was a few sighs of relief I am sure when no one was asked to partake manually in the exercise.

As the system grew questions from the audience were answered and slowly we all got more and more enthralled wondering

how he was going to operate the system.

On completion a switch was heard to be pressed and a hidden compressor charged the system and hey presto we had an operating system.

This then encouraged many other questions about legislation etc, which Martin explained was slowly being formulated and was due to be ratified 'Soon'!!

Finally reference was made to the VOSA document for their inspectors when pulling up tractor trailer combinations on the road, available for down loading from www.tractair.co.uk, where the ultimate GV9 can be served on the operator.

A vote of thanks was given by Lance Butters who told us of one operator in Lancashire leading silage in the spring whose tractor/trailer combination weighed in at over 30 tonnes!! I bet the trailer brakes were . . .

Gordon Williamson

YORKSHIRE BRANCH

Valtra Tractors talk

IAgrE's South Yorkshire members recently had the opportunity to listen to Andy Miller of Valtra Tractors talk about oncoming emissions regulations and how tractor manufacturers are having to adapt their engines to comply with the oncoming rules and regulations.

"Andy gave us a brief history of the Valtra organisation and how they fit into the AGCO group before going on to talk about impending off-road engine emissions tier legislation," said Gordon Williamson, Yorkshire branch member.

"The legislation is already common on commercial truck engines but it's much later coming into force for off-road vehicles. Another challenge for tractor and combine manufacturers is there is less room in the

engine compartment to fit all the additional components required to achieve the new emission levels," he added.

Andy of Valtra explained there are various technologies manufacturers are using to achieve legislative requirements but at AGCO Sisu Power engines will be utilising SCR (selective catalytic reduction) technology.

While previous emissions' tiers were managed with in-cylinder technologies, purely changing the combustion process to achieve a cleaner burn is not enough to achieve the reductions in NOx and Particulates that are needed to reach Tier 4 Interim/Stage IIIB.

SCR uses an industrial urea-water solution to convert the excess nitrogen oxide that results from the highly optimised combustion into harmless water and nitrogen, of which the air always contains approximately 80%. In this way the exhaust gases are clean and harmless.

The SCR system consists of a tank for the

urea-water solution, a pump system, an injection nozzle and a catalyst.

The event finished with an open discussion about the new technologies and one question asked was what happens if the container holding the urea solution runs out and is not replenished. Andy explained that the electronics are programmed to notify the driver in good time for him to get back to base and into 'get home' mode if it did run out.

AGCO Sisu Power has integrated the SCR control into a powerful ECU (Engine Control Unit) with leading edge computing technology and its latest Stage IIIB engines will feature a new generation of Sisu Tronic engine control electronics where the software will offer many new and improved features.

Finally Andy couldn't resist finishing without talking about his experiences plus the trials and tribulations of running the UK Valtra Tractor Pulling team - a topic and hobby close to his heart.

NORTHERN IRELAND BRANCH

Manufacturing, research and power generation site visits

RECENTLY, members of the Northern Ireland Branch of IAGrE travelled south for several interesting visits including Richard Keenan and Co. Ltd's Manufacturing Centre at Borris, Co Carlow, Oak Park Research Centre, Carlow and the ESB pumped storage hydroelectricity plant at Turlough Hill, Co Wicklow.

Keenans

THE first version of the famous Keenan mixer wagon was made in the 1980s by farmer, engineer, inventor Richard Keenan as a reliable machine with low power requirement and able to mix wet silage with other ingredients.

The present company was set up to further develop the machine along with its evolving associated nutritional backup services. This has now developed for a world-wide market with wholly owned subsidiaries across mainland Europe as well as in the UK, US, Australia, New Zealand and South Africa.



Michael O'Grady (Marketing Manager) explains the operation of the PACE system

Michael O'Grady, Keenan Marketing Manager for Ireland, described how the original concept has been refined and developed along with a comprehensive nutritional guidance service for customers. The latest patented version of this is known as the 'Mech-fiber' system in which the bulk density and composition of the mixed forage is managed to achieve maximum animal feed performance.

Keenan's own International Nutrition Director (Prof. David Beever) oversees this side of the operation and works closely with research establishments and farming customers. The formula is adjusted to take account of the different forages and livestock systems in the world markets which Keenans now serve.

A new technology development pioneered by Keenan has been the introduction of PACE (Performance Acceleration & Control Enhancement), as an optional extra that can be fitted onto all 6 paddle machines. Here a PACE control box is fitted to the feeder which is linked to the weigh cells. It directs the operator in the order and quantity of adding ingredients as well as their mixing times. Each batch is processed taking into

account the feed information and livestock production performance requirements.

With their engineering interests, the IAGrE visitors especially enjoyed being shown the feeder design and production facilities. These included the modern team-based production line with quality signed off at each stage.

After the painting process it was interesting to see the user instruction decals in French being fitted to some of the machines reflecting the fact that the Keenan feeder is now exported world wide.

All were keen to see how the original design concept has been further developed. The original 4 paddle design has evolved to a system of 6 slow moving angled paddles and gentle chopping of large bales involves holding them on a cradle. This is lowered progressively as each paddle takes off a portion against the serrated fixed knife and further slicing occurs when the forage is moved over spaced knives on the mixer chamber floor.

The visit finished with an enjoyable technical discussion.

More details of the Keenan model range and the associated services can be viewed on www.keenansystem.com

Oak Park Research Centre

OAK Park is well known as the national centre for arable crop research run by Teagasc, the agricultural research and advisory service.

The focus of the visit was the Crop Sciences and Alternative Crop Uses programme where work under the direction of Dr John Finnan is progressing in the evaluation of a range of arable energy crops. Trials considering all aspects of short coppice willow husbandry are still ongoing such as the capacity of the growing crop to take up pollutants from waste products like sewage sludge or brewery wastes. Drying costs for bulk harvested chipped willow are substantial and the centre has had some success using low-volume ambient air ventilation to condition the crop during a long holding storage period.

One of the main areas of interest was the miscanthus crop planted at Oak Park. It is a tall perennial plant green plant with a fine bamboo like appearance. After a 2 year establishment period it will be harvested in March / April each year by mowing and baling. There is a prospect of dry matter yields of 8 -15 tonnes / hectare dry weight and the compressed crop can be used as a



Dr John Finnan shows the IAGrE visitors the Miscanthus crop trial at Oak Park

solid fuel. There are also high hopes in the longer term for the development of a process of conversion to bioethanol.

Further market development is needed to fully exploit energy crops and Oak Park has been carrying out a series of trials on the feasibility of high density pelleting to improve convenience of biomass as a fuel for both domestic and commercial boilers. The centre is in the process of installing a multi-fuel boiler combined heat and power system to serve their entire site and as the basis for more trials work.

The visitors also had an illustrated talk by Mr Bernard Rice (a long standing good friend of the Northern Ireland IAGrE Branch) on the subject of Experience of Renewable Energy Projects in Ireland. Reference to the work at Oak Park can be viewed on www.agresearch.teagasc.ie/oakpark

Pumped storage hydro-electric ESB power station at Turlough Hill



Padraig Dooley (ESB Engineer) left, with the IAGrE visitors in the control room within Turlough Hill.

THE Electricity Supply Board (ESB) is Ireland's main electricity supplier.

Turlough Hill is the only pumped storage hydro-electric power station in Ireland and when it was completed in the 1970s it was the biggest civil engineering project ever undertaken there. It is discreetly concealed in the Wicklow Mountains to utilise surplus power from hydro power generation elsewhere in the network, mainly at night, to pump water from a lower lake up to a mountain-top reservoir 286 metres above.

During periods of peak demand the water is channelled through Siemens turbines which can supply a combined output of 292 MW. The same turbines are also used as pumps, powered by off peak electricity, to return the water to the high level storage for reuse.

Unlike conventional power stations, which take some time to come on line, the hydropower installation can generate its full power within less than one minute. The turbine installation and control systems are housed within the mountain.

The power station is not open to the public so the visitors were privileged to get an arranged conducted tour by ESB engineer Mr Padraig Dooley. More information on ESB activities and projects for sustainable power can be viewed on www.esb.ie.

Terence Chambers

NEWS ABOUT MEMBERS

OBITUARY -

**Peter Hebblethwaite, BSc, NDA, MSc, MIAgrE, CEng
1927-2009**

It is with deep sorrow that we record the death of Peter Hebblethwaite, after a short illness. A life-long member, Peter joined the Institution in 1953.

In his long and varied career there was for Peter one almost constant theme - Agricultural Engineering. He first worked professionally, in 1949, at the NIAE, Wrest Park, Silsoe, newly moved from its wartime home in Askham Bryan, Yorkshire, as an AEO (Assistant Experimental Officer), testing and reporting on field and laboratory performance of farm and horticultural machinery.

A year later he was on his way to the USA, to spend two years as a Graduate Research Assistant at Michigan State University, lecturing and involved in the construction of research prototypes.

Returning to Silsoe in 1952, and in a move indicative of the wide range of his expertise and interests, over the next fourteen years Peter became successively Head of Test Technique, Head of Implement Test Department and Head of Farm Buildings Department. These roles provided the in-depth experience of harvesting machinery, fertiliser distributors, sprayers, feed processors and a range of mobile and static plant that was to serve him well in his next enterprise.

Leaving the NIAE in 1966, Peter joined Massey-Ferguson as Product Planning Manager, Canada and UK. During a span of some twelve years he progressed through Product Introductions Manager to become Product Marketing Director with special interest in Combines, Balers and Forage Harvesters, together with the development of long and short term marketing strategy.

The next two moves marked a change of emphasis - a stint of six years with Rolls-Royce Motors as Export Sales Manager, responsible for the sale and distribution of diesel engines, was followed by two years with Perkins Engines Ltd as Engines Project Manager, again concerned with exports of diesel engines and spare parts.

Then in 1987 came a surprise - a year as CEO of the Mid-Hants Railway! Known as 'The Watercress Line' it is an enthusiasts' steam railway that runs the ten miles between Alresford and Alton, stopping at two intermediate stations on the way.

In 1988, having turned 60, Peter joined the Group Practice of Olver & Rawden, Consulting Forensic Engineers, in Balsall Common, near the home he shared with his wife, Sonia, and their family. Married in 1957, they have three children - Kate, Belinda and Mark, and now the family has been increased to include two sons-in-law and four grandchildren.

Peter remained with Olver & Rawden until his death. He will be sadly missed by his family and by his many friends and colleagues in our profession and industry.

John Fox

LONG SERVICE CERTIFICATES

Reginald Fred Norman, CEng, FIAgrE

A CERTIFICATE for 60 years membership of the Institution together with a very pleasant note from the president recently arrived.

An event that merits comment on a few highlights of a career that started by graduating from Newcastle (part of Durham University) as MSc alongside a small group of fellow graduates from what was, in many ways, experiment in training individuals in more than one discipline. That highly flexible approach certainly served me well through a career starting in academia and finishing as managing director of a substantial UK agro-chemical business.

After graduating I became a lecturer at the Edinburgh College of agriculture, teaching mechanisation to a range of students from short-term diploma to degree level. It may surprise some younger members to learn that the syllabus included steam threshing and ploughing. In practice replaced by instruction on tractors and three point linkages, especially the Ferguson system, and the then rapidly expanding use of the combined harvester.

Then, as now, funds for research were hard to come by, and projects for mechanical treatment of grass in the field to improve wilting and reduce effluent levels from the subsequent silage had to be abandoned. Frustration with the system was partly responsible for a move to the world of commerce in the form of Pest Control Ltd., then a major contract spraying operation and crop protection chemical producer.

The company was taken over by Fisons Ltd. and became Fisons Pest Control Ltd. 'FPCL', which led to a change in policy, adding the sale of farm-scale spraying equipment and crop protection chemicals alongside the contract operation.

To meet this requirement I designed a number of tractor-mounted and trailed machines that were sold through machinery distributors and in bulk quantities to tractor manufacturers for sale under their own brand.

It will be no surprise that the stand-alone spraying business was not profitable and after a short period of time the business was sold to

Ferguson. It was at this time that my role changed to that of manager responsible for marketing of crop protection chemicals. This included the activities of the subsidiaries in Africa, mainly Sudan - aerial application and supply of insecticides for cotton pest control; elsewhere in east Africa, Rhodesia and South Africa a range of crop protection products were supplied to both government agricultural departments and private farms. Trading in these countries was, to say the least, and interesting experience.

At this stage (1960s) Fisons Farmwork Ltd. was formed and I was appointed its managing director in addition to my other responsibilities. Much of the equipment was now obsolete being ex-land-lease, some updating with in-house designed tractor mounted saddle tank units with 40ft booms was undertaken.

These units were copied by Russia and were widely used on state farms, I saw such units in Eastern Europe in the late 80s and early 90s. The land drainage operation was modernised by the introduction of high output Dutch machines.

In the late 60s I joined CIBA as managing director of their fledgling UK operations, the company became part of the merged Ciba-Geigy (C-G) in the early 70s. I was appointed managing director of the merged agricultural division with the task of establishing the company as a major force in the UK crop protection market. The policy adopted was to use accurate application of crop protection products as a means of ensuring the best returns especially from the autumn applied grass herbicides, which rapidly became market leaders.

As part of this overall approach 'Sprays and Sprayers' was established as a major annual event for spray chemical equipment, and as part of this annual Spray Operator of the Year competition was introduced. Both of these events are now incorporated into the 'Cereals Event', and I believe they have made a major contribution to the effective application of crop protection chemicals.

I took a personal interest in BASIS

(UK) Ltd as a director and later chairman of its 'continuous development' activity.

It was a great honour to have my contribution to all these developments by the award of the C.B.E in 1989 for "contribution to agriculture and the British Crop Protection Council".

The journey from a fledgling company in 1968 to a joint market leader in crop protection in the UK in 1990, was achieved, not least through applying the adaptability of an original training that incorporated variability of agriculture with the discipline of engineering. Clearly a combination which I strongly advocate.

Lewis Campbell, CEng, FIAgrE

THIS award seems to remind me that I am now entering the age of ancient history.

When I joined the Institution, I was a young graduate who had taken up a position with the UK Overseas Civil Service and was posted to Trinidad, as the Agricultural Engineer with the Department of Agriculture. This was to be the beginning of an interesting, and might I say, satisfying career in the service to agricultural development in the tropics.

Being an overseas member I had little opportunity to participate actively in the activities of the Institution. However, I maintained close touch with its activities through its regular publications and personal communications.

After five years I joined the teaching staff

of the Imperial College of Tropical Agriculture, which was to become the Faculty of Agriculture of the University Of the West Indies. This led to broadening my professional experience and also gave me the opportunity to become more closely involved with the work of the Institute, including the occasional visits to the UK on sabbatical leave and attending some of its meetings.

I spent the period 1965 to 1967 in the UK completing research for the Ph.D. of London University. I was fortunate to have had the opportunity to conduct this research at the laboratories of the newly opened National College of Agricultural Engineering, on the invitation of the then Principal Dr. Peter Payne, with whom I had been acquainted during his days at Wye College. It is during this period that the Headquarters of the Institution was moved to Silsoe and this allowed me to be better informed about its activities.

After 12 years of lecturing at The University of the West Indies, I assumed an appointment with the World Bank and was seconded to the senior staff of the new Caribbean Development Bank in Barbados. I was recruited specifically for the purpose of identifying, preparing and appraising projects in land development.

This was a challenging assignment and I enjoyed every bit of the time I spent working on agricultural development projects, although I had to forgo much of my time to administrative work as head of the

Technical Division and later, the Agriculture Division. My last three years there was as Director of the Projects Department and this left me little time to devote to the work that I loved most.

In 1981, I moved to Washington DC to serve as a Rural Engineer with the World Bank, working primarily on a wide range of projects in rural development in the English speaking African Countries. I was happier to be more active in applying my professional skills.

While working in most African countries cannot by any sense of the imagination be considered a piece of cake, the glaring need for improved technologies to raise productivity spurred me on to get fully involved in working on a wide range of projects that would serve the rural people to improve their livelihoods. As time went on I maintained my connections with the Institution because I recognised the great measure of information that I could gather from that association and I am very grateful for the experience.

I am now retired in the Philippines but am maintaining interest in natural resources conservation and management, particularly catchment rehabilitation and water conservation.

I am involved in a small way in working with interested groups to make a difference in doing something about these problems that have grown to monumental proportions and could soon become extremely critical for this archipelago.

The Ram on the Green - Denis Welstead, MIAgrE

CLOSE to the hydraulic ram unveiled in October, pictured here on Church Green, Kings Worthy, Winchester is the site of the now demolished 'Vulcan Ironworks'. The hydraulic ram is representative of the principal product of a foundry established there circa 1883 by local two brothers, Arthur Stuart and H Williams. In successive ownerships this survived for approximately one hundred years.

The cast iron ram, in simple terms, is a self-acting pump for delivering water from source to where it is needed and did so long before mains supplies were available in rural areas.

The rural location of a heavy industrial enterprise, so far from the sources of raw materials, many years before the railway came to King's Worthy is unusual but not unique. Demand for the finished product came largely from farms and landed estates of which there were many in the Itchen Valley.

The firm also had connections throughout Great Britain and many parts of the world maintaining a thriving export trade.

Arthur Williams died in 1888 and the firm was acquired by Herbert Perkins Vacher under whom the business progressed although it was later badly affected by the disastrous fire which totally destroyed the works in 1907.

However, helped by an insurance payment, they were quickly and totally re-built by 1908 with extra facilities on an enlarged site of about 0.675 acres confirming the growing success of the business under Vacher's direction.

The business continued to flourish becoming renowned in Vulcan's field of engineering. Vacher retired in 1913 when the firm was bought by the works foreman, Robert Green (an apprentice and employee since 1890) with a partner, George Butler-Carter. Carter died soon after but Green continued and introduced several patented improvements to the product.

The foundry and engineering works closed in September 1982 and the business purchased by Charles Doble the MD who still owns Green & Carter and it is situated in Somerset. Work continues in the manu-

facture and refurbishment of hydraulic rams for which, even in modern times, the demand continues.

At the unveiling ceremony Mr Doble said Rams made over 200 years ago are still working and over the centuries 100,000's have been produced. He told us about the ram sent to Tristan de Cuhna a remote volcanic island in the South Atlantic. There is no harbour and in the unloading operation it fell thousands of feet to the bottom of the sea, and another had to be sent.

Thanks to Tony Downland & Derek Brockway



L-R: Denis Welstead, Mr & Mrs Charles Doble

Membership changes

Admissions

A warm welcome to the following new members:

Fellow

Moore M
(Warwickshire)

Associate

Ecroyd K (Lancs)

Student

Bicton College

Christopher J
Coward A D
Dickins J E
Dingle S
Gibbons G
Hicks J
Hirst A
Homer K
McDowell S
Mill C J
Owens R
Rostilly L
Scott E
Slocombe J P
Sweetapple P
Symons R
Thomas S
Thorne D
Warne E J
Weekes J J
Withers S

Brooksby Melton College

Albutt S
Baker M
Bale T
Barker R
Brookes O
Butlin J C
Campbell B
Cave S R
Chisnall K
Corney R A
Craig T S
Dawson R
Emery L
Gascoyne D

Gerry W
Grant C G
Hall M
Halliday G
Hewitt J C
Hilsdon H
Hing T
Hollingsteal J
Howells S J
Hutton A
James M
Jones M
King C
King J M
Lott M
Makepeace M R
Marchant W
Mason R
Mills M
Nibloe J
Nicol C
Reed A
Samways J
Simpson B
Smith C
Smith M
Spalding J
Sparkes N
Starbuck D J
Stokes C L G
Stowell H J
Stringer O R
Thomson C
Thomson G
Twigg W J
Waddington S
Whitlow R T
Wilson O G
Wood S

Cranfield University

Badmos B K
Boye A
De Brogniez D
Denicolai M
Dickins E L
Dufosse K C C N
Gavu J
Hailes-Parry D L
Hargreaves J M
Jarratt A F
Mannion A
Meyer V

Norman K R
Osinski P
Sarlej R
Vylupek O
Wallwork A
Williams M G
Wright K A
Zemanova M A

Greenmount College

Anderson M
Blaney M
Buchanan A
Coleman S R
Doogan C
Duncan G J
Fleming D J
Francey S
Gilles A
Hamilton A
Hanson P
Hylands M D
Kerr M
McConaghy A
McElhinney R
McGarry D
McGovern A J
McKay A R
McKeown A P
McNally R
McNeill S V H
Majury C
Maybin D D
Sawey J J
Simpson D W I
Sleator D
Sloan M J
Sloan R
Stratton A
Taylor I
Verhoeven P
Warden G W M
West A
White D
Wilkinson R W

Plumpton College

Benson A
Clarke A
Cook J
Cornford B A
Day C

Doleh S
Drewett G
Edmond O
Edwards R
Francis S
Franks W C
Hubbard T
Marshall D
Palmer R A
Pinder M P
Sheppard M C
Ticehurst J R
Vale P M
Vockins J
Wraight L
Yates C

Reaseheath College

Aindow J
Allen D
Ashton J E
Astley M
Baldwin J R
Baron M J
Baxter S D
Bray S A
Brooks S W
Bourne M
Burton J
Carter D S
Chatterton G R
Clark S
Coleman S
Connolly T P
Craddock L A
Day J
Downes-Hopkins T
Edwards L C
Etchells S
Evans R
Fall T
Fallon J P
Gauld S
Graham O
Gratton R
Grice-Gibson S
Gronland P J
Gwitt T
Hardwick M T
Haslam R
Hatton S
Hayward M
Hennessy P M
Hill N

Hooper M
Honey W E
Hope J
Hopkins T A
Howarth A
Hughes D L
Jackson T H
Jarzyna B
Jones A L
Kennally I
Kirby G R
Kirkham O G
Lambert T J
Lee R D M
Lilley A
Lynch P
Lyon A A
MacDougall A R
McKenzie D
Machin W S
Main D R
Martin G P
Mercer R S
Milner G
Morgan M
Moss A
Moss T S
Nicholls T
Oliver C
Park K A T
Pollard G R
Potts J D
Preston S L
Reynold O J s
Ridding J
Ross Z J
Steggel N R
Stewart I R S
Stewart S D C
Sullivan T M
Talbot A W
Thomas T J
Twentyman R K
Twigg T A
Wardman B
Wilkinson J P
Williams A W
Wright J
Wyke L

Re-admissions

Eltilib K H O
(London)

Deaths

Hebblethwaite P
(West Midlands)
Maddock I R
(Dorset)
Thompson R W
(Oxon)
W T A Rundle OBE
(Hampshire)

Transfers

Member

Bird D (Yorkshire)

Engineering Council

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

Registrations

IEng

Adams A J

EngTech

Griffiths R J
Hannah P
Murr A
Read J O
Roberts D

Society for the Environment

Registrations

Tinker D B

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

Brooksby Melton College
Asfordby Road
Melton Mowbray
Leics
LE13 0HJ

Cranfield University
Cranfield
Bedfordshire
MK43 0AL

Long service certificates

Name	Grade	Date of anniversary
50 years		
Reginald Fred Norman	CEng, FIAgrE	14 Oct 2009
50 years		
Edward Bruce Barnett	CEng, MIAgrE	10 Nov 2009
John Alastair		
Coates Weir	IEng, CEnv, HonFIAgrE	10 Nov 2009
Matthew Jaimeson	FIAgrE	13 Nov 2009
35 years		
Richard Christopher		
Gower Danby	FIAgrE	21 Oct 2009
Reginald Vincent Ward	IEng, MIAgrE	21 Oct 2009
Robert Leslie Pilcher	EngTech, MIAgrE	7 Nov 2009
William Wilson McKinlay	IEng, MIAgrE	29 Nov 2009
Christopher George Nendick	AIAGrE	1 Dec 2009
John Dumelow	CEng, MIAgrE	16 Dec 2009
David Corfield Black	IEng MIAgrE	16 Dec 2009
25 years		
Anthony Goodall	CEng, MIAgrE	15 Oct 2009
Wesley John Edwards	AIAGrE	16 Oct 2009
Barry John Higginbottom	IEng, MIAgrE	22 Oct 2009
Brian George		
Felton Matthew	IEng, CEnv, MIAgrE	30 Oct 2009
Christopher Michael Thomson	AMIAgrE	31 Oct 2009
Robert Edward Crook	MIAgrE	1 Nov 2009
Johannes Garardus		
Hendricus Portegijs	AMIAgrE	21 Nov 2009
John Philip Metcalfe	CEng, CEnv, MIAgrE	22 Nov 2009
Nigel Leonard Warner	CEng, MIAgrE	22 Nov 2009
Stanley John Sherrell	AIAGrE	24 Nov 2009
Michael John Watchorn	AMIAgrE	30 Nov 2009
Peter Daniel Fisher	CEng, CEnv, MIAgrE	18 Dec 2009
Christopher Jaworski	IEng, MIAgrE	18 Dec 2009
Melvyn Frank Everitt	MIAgrE	18 Dec 2009
John Michael Sharp	CEng MIAgrE	19 Dec 2009
Timothy Margetson Place	AMIAgrE	19 Dec 2009

Academic members continued

Greenmount Campus CAFRE 22 Greenmount Road Antrim Northern Ireland BT41 4PU	Bilsborrow Preston Lancashire PR7 0RY
Harper Adams University College Newport Shropshire TF10 8NB	Oatridge Agricultural College Ecclesmachan Broxburn West Lothian EH52 6NH
Institute of Technology Tralee Clash Tralee Co Kerry Ireland	Pallaskenry Agricultural College Co Limerick Ireland
Myerscough College Myerscough Hall	Plumpton College Ditchling Road Lewes East Sussex BN7 3AE

Commercial members

Agricultural Engineers Association (AEA) Samuelson House, 62 Fodder Way, Hampton Peterborough, PE7 8JB	Garford Farm MaChinery Frognall Deeping St James Peterborough PE6 8RR
British Agricultural & Garden Machinery Association (BAGMA) Entrance B, Level B Salamander Quay West, Park Lane, Harefield Middlesex, UB9 6NZ	Huntaway Consulting Ivy Cottage Torlundy Fort William Inverness-shire PH33 6SW
Alvan Blanch Development Co Ltd Chelworth Malmesbury Wiltshire SN16 9SG	John Deere Ltd Harby Road Langar Nottinghamshire NG13 9HT
Autoguide Equipment Ltd Stockley Road Heddington Calne, Wiltshire SN11 0PS	Law-Denis Engineering Ltd Millstream Works Station Road Wickwar Wotton-under-Edge Gloucestershire GL12 8NB
Bomford Turner Limited Salford Priors Evesham Worcestershire WR11 5SW	Shelbourne Reynolds Shepherds Grove Ind. Est. Stanton Bury St Edmunds Suffolk IP31 2AR
David Ritchie (Implements) Ltd Carseview Road Suttieside Forfar, Angus, DD8 3EE	SSAB Swedish Steel Ltd De Salis Court De Salis Drive Hampton Lovett Droitwich Worcestershire WR9 0QE
Douglas Bomford Trust Barton Road Silsoe, Bedford MK45 4FH	White Horse Contractors Ltd Lodge Hill Abingdon Oxfordshire OX14 2JD
FEC Services Stoneleigh Park Kenilworth Warwickshire CV8 2LS	

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

EVENTS

IAgrE Branch Meetings and Events**Yorkshire Branch****January 2010 - tba**

VISIT TO GINETTA

For more details please contact the Branch Secretary: Gordon Williamson.

Tel: 01937 843891 Email: gordon.williamson@ntlworld.com

Wrekin Branch**Monday 11 January 2010 starting 7.30pm**

THE USE OF REED BEDS IN RURAL AREAS TO TREAT WASTE WATERS

Speaker: Clodagh Murphy, David Cooper, ARM Reedbeds

Venue: Lecture Theatre, Reaseheath College, CW5 6DF

For further details contact the Branch Secretary: Graham Higginson

Tel: 01242 870458 E-mail: wrekin@iagre.biz

South East Midlands Branch**Monday 11 January 2010 starting 19.30**

ENGINEERING SPORTS TURF FOR IMPROVED ENVIRONMENTAL PERFORMANCE

Speaker: Mark Bartlett, Cranfield University

Venue: Maulden Church Hall

Mark leads the sustainable sports surfaces programme in the Centre for Sports Surface Technology at Cranfield University and will give an overview of the work from re-engineering biological systems to delivering improved environmental function, assessments of soil carbon modelling in turf grass farming and sports facilities, and the quantification of natural turf sports surfaces. For further information contact the Branch Secretary: John Stafford

Tel: 01525 402229 E-mail: john.stafford@silsoe-solutions.co.uk

Northern Ireland Branch**Wednesday 27 Jan 2010**

TRAILER BRAKE LEGISLATION AND ITS IMPLICATIONS IN PRACTICE

Speaker: Dr Andy Scarlett, Scarlett Research Ltd

Venue: CAFRE Loughry Campus, Cookstown

For further details please contact the Branch Secretary Ian Duff.

Tel: 028 8672 6977 E-mail: duffi@iagre.biz

Yorkshire Branch**February 2010 - tba**

VISIT TO MARSTON RADIATORS

For more details please contact the Branch Secretary: Gordon Williamson

Tel: 01937 843891 E-mail: gordon.williamson@ntlworld.com

Wrekin Branch**Monday 01 February 2010 starting 7.30pm**

TBC

Speaker: TBC

Venue: Lecture Theatre, Harper Adams University College, TF10 8NB

For further details contact the Branch Secretary: Graham Higginson

Tel: 01242 870458 E-mail: wrekin@iagre.biz

Western Branch**Wednesday 03 February 2010 starting 2pm**

LINDE HYDRAULICS LTD

Venue: Abingdon, Oxon

Host: Rupert Caplat. Linde Hydraulics Ltd is responsible for the UK and Ireland interests of one of the world's largest and most regarded manufacturers of hydraulic equipment - Linde Material Handling. For further details please contact the Branch Secretary: Nick Handy

Tel: 07801 309912 E-mail: nick.handy@man.eu

South East Midlands Branch**Monday 08 February 2010 starting 19.30**

BRANCH AGM AND STUDENT MEETING

Venue: Maulden Church Hall

For further information contact the Branch Secretary: John Stafford

Tel: 01525 402229 E-mail: john.stafford@silsoe-solutions.co.uk

West Midlands Branch**Tuesday 09 February 2010 starting 19.30**

JOHN DEERE PRODUCTS

Speaker: David Culpin

Venue: Chris Tallis Tractors, Hinton on the Green, Evesham

This is an ideal opportunity to find out more about John Deere products. The dealership is located just south of Evesham on the A46 - ample parking in the yard. For further details please contact Branch Secretary: Michael Sheldon

Tel: 01926 498900 E-mail: michaelcsheldon@yahoo.com

Northern Ireland Branch**Wednesday 17 February 2010**

DAVID BROWN TRACTORS - CELEBRATING 80 YEARS

Speaker: Leslie Hutchinson

Venue: CAFRE Greenmount Campus, Antrim

For further details please contact the Branch Secretary Ian Duff

Tel: 028 8672 6977 E-mail: duffi@iagre.biz

Wrekin Branch**Monday 01 March 2010 starting 6.30pm**

BRANCH AGM AND PRESENTATION

Speaker: tbc

Venue: Temperton Room, Harper Adams University College, TF10 8NB

Presentation by President's Representative, Andy Newbold.

For further details contact the Branch Secretary: Graham Higginson

Tel: 01242 870458 E-mail: wrekin@iagre.biz

Northern Ireland Branch**Date TBC**

BRANCH AGM; PRESENTATION ON THE LTA SCHEME

Speaker: Leslie Hutchinson

Venue: CAFRE Greenmount Campus, Antrim

After the AGM there will be a demonstration of electronic diagnostics in action led by a Technician from a manufacturer supporting the scheme. For further details please contact the Branch

Secretary Ian Duff.

Tel: 028 8672 6977 E-mail: duffi@iagre.biz

South East Midlands Branch**Monday 08 March 2010 starting 19.30**

SINGLE WHEEL TESTER

Speaker: Kim Blackburn, Cranfield University

Venue: Maulden Church Hall

For further information contact the Branch Secretary: John Stafford

Tel: 01525 402229 E-mail: john.stafford@silsoe-solutions.co.uk

West Midlands Branch

Tuesday 09 March 2010 starting 1915

BRANCH AGM AND TECHNICAL TALK 'AGCO – GPS TECHNOLOGY TWENTY YEARS ON'

Speaker: Dr Mark Moore, AGCO

Venue: AGCO Training Centre, Stareton, Stoneleigh, Warwickshire
Mark Moore, who was awarded the Michael Dwyer Memorial Prize in 2008, is an internationally recognised expert in the subject of precision farming and the application of technology to agriculture. For further details please contact Branch Secretary: Michael Sheldon

Tel: 01926 498900 E-mail: michaelcsheldon@yahoo.co.uk

Yorkshire Branch

Wednesday 10 March 2010 starting 1930

BRANCH AGM AND TECHNICAL TALK 'LATEST DEVELOPMENTS OF THE FUEL CELL TRACTOR'

Speaker: CNH

Venue: Buckles Inn, Askham Richard, York

For more details please contact the Branch Secretary: Gordon Williamson

Tel: 01937 843891 E-mail: gordon.williamson@ntlworld.co.uk

Western Branch

Wednesday 10 March 2010 starting 6.30

WESTERN BRANCH AGM FOLLOWED BY TECHNICAL PRESENTATION BY BICAL BIOMASS RENEWABLE SOLUTIONS

Speaker: Hugh Loxton

Venue: RAC, Cirencester

BICAL is the leader in the successful production and continued development of Miscanthus, the multipurpose crop for energy and industry. For further details please contact the Branch Secretary: Nick Handy

Tel: 07801 309912 E-mail: nick.handy@man.eu

South East Midlands Branch

Thursday 01 April 1200 starting 19.30

HYBRID & ELECTRIC VEHICLE RESEARCH AT JAGUAR-LAND ROVER (JOINT WITH IME)

Speaker: Mike Richardson

Venue: University of Hertfordshire, Lindop Building

The development of vehicles to meet the challenge of climate change and the work of Jaguar and Land Rover in this area. For further information contact the Branch Secretary: John Stafford

Tel: 01525 402229 E-mail: john.stafford@silsoe-solutions.co.uk

Wrekin Branch

May - Date to be confirmed

VISIT TO ACTON SCOTT HISTORIC WORKING FARM

Venue: Acton Scott Historic Working Farm, Acton Scott, Church Stretton SY6 6QQ

The farm was the venue for the popular Victorian Farm TV series. For further details contact the Branch Secretary: Graham Higginson

Tel: 01242 870458 E-mail: wrekin@iagre.biz

If anyone is interested in car sharing to any of these events you can liaise with fellow members by using the discussion forum in the Members Only section of the IAgRE website - www.iagre.org/memaccess.php

Other Events:

10 March 2010

Fusion Events

PRECISION FARMING EVENT

Venue: East of England Showground, Peterborough PE2 6XE

A showcase of practical solutions for those looking to implement precision farming, and to profit from crop production. Alongside indoor displays of equipment is a new dedicated guidance and steering arena, which provides visitors with an opportunity to see how steering systems work and provide potential to transform field efficiency. Recommended to agronomists and growing professionals as well as technically able and professionally qualified growers.

Tel: 0845 4900 142 Email: andy@farm-smart.co.uk

Web: www.farm-smart.co.uk

21 Apr 10 to 24 Apr 10

IMechE

ESSENTIAL MANAGEMENT SKILLS FOR ENGINEERS

Venue: Keele University, Staffordshire

This four-day conference enables delegates to develop the skills to further their careers through a combination of: keynote lectures; interactive skills workshops; business management exercise; technical visits. IAgRE are co-sponsoring this event and discounted rates (at IMechE member rates) apply. For further information please contact Diane Lorenzelli, Events Executive, IMechE

Tel: 020 7304 6837 Fax: 020 7222 9881

Email: d_lorenzelli@imeche.org Web: www.imeche.org/events/c1310

Tuesday 11 May 2010

IAgRE

LANDWARDS 2010: NATURAL TURF FOR SPORT: ENGINEERING SAFE AND SUSTAINABLE SURFACES

Venue: Cranfield University, Cranfield, Bedfordshire

Details: tbc.

Tel: 01525 861096 Email: secretary@iagre.org

Tuesday 11 May 2010

AEA

SCOTGRASS 2010

Venue: Acrehead Farm, SAC Dairy Research Unit, Crichton Royal, Dumfries

For further information please contact Duncan Russell

Tel: 01733 207607 Email: services@aea.uk.com

Thursday 20 May 2010 starting 9.30

IAgRE

YOUNG ENGINEER'S COMPETITION

Venue: tba

Students, having been given a set of standard wheels, a battery and maximum dimensions, will have created a remote or radio controlled vehicle with the aim of producing the best performance on a standard test track. For more information on this event visit the web address or contact the Secretariat

Tel: 01525 861096 Web: www.iagre.org/files/yeocompletter.pdf

Full details of forthcoming events can be found on www.iagre.org/eventselect.php

Conference 2010



Natural Turf for Sport

Engineering Safe and Sustainable Surfaces

A CONFERENCE FOR ALL THOSE WITH AN INTEREST IN SPORTS TURF ESTABLISHMENT AND MAINTENANCE

The construction and maintenance of safe and sustainable sports surfaces is a fundamental prerequisite for the safety and enjoyment of participants in sport from the grassroots level through to the professional game. In recent years, much progress has been made in the development of artificial turf surfaces however natural turf still remains the yard-stick by which the performance of synthetic alternatives is measured.

The performance of a natural turf surface is governed by the complex interaction of many variables e.g. soil type, water content, soil density, grass species, soil nutrition and pH. There is, therefore, an excellent opportunity to see how engineering disciplines such as drainage, irrigation, soil mechanics, soil physics, agronomy and mechanisation underpin the construction and maintenance of natural turf sports surfaces.

The conference will place particular emphasis on the interaction between participants of sport (both human and equine) and sports surfaces.

Roger Lane-Nott (Chief Executive of the AEA) will chair the conference.

The morning session will commence with a paper delivered by **Mr James Calder** – Consultant Orthopaedic Surgeon and Honorary Clinical Senior Lecturer at Imperial College London. He will talk on the effects of sports surfaces on the human foot and ankle.

Dr Iain James (Cranfield University) will examine 'How sports surfaces work: A mechanical exploration' He will look at the mechanical behaviour of sports surfaces using various studies from the field and labs including both human sports performance and machinery-surface interactions

Dr Richard Earl will complete the morning session with a paper on pitch design and construction.

Dr Sian Lawson (William Leech Senior Lecturer in Bio-Medical Engineering at Newcastle University) a Principal Investigator in musculo-skeletal bio-mechanics will start the afternoon session with a presentation on equine gait analysis in the context of sports turf.

Mike Maher of TurfTrax Course Services Ltd will talk about the development of the "going stick" for the monitoring of sports surfaces.

David Shelton (Shelton Sportsturf Drainage Solutions LLP) will talk about developments in machinery for sports surface drainage.

Roger Davey (Irritech) will explain some of the criteria used when designing irrigation systems for sports surfaces.

LANDWARDS™2010

Conference

May 11th

Venue:

Cranfield University

For further information, please contact:

IAgrE Secretariat:

conferences@iagre.org
01525 861096

For online booking, please visit

www.iagre.org

The professional body for engineers, scientists, technologists and managers in agricultural and allied industries including amenity, food, forestry and biological systems

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and a founding constituent body of the
Society for the Environment*

Convened by



in association with



AGRICULTURE



FORESTRY



ENVIRONMENT



AMENITY



HORTICULTURE

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