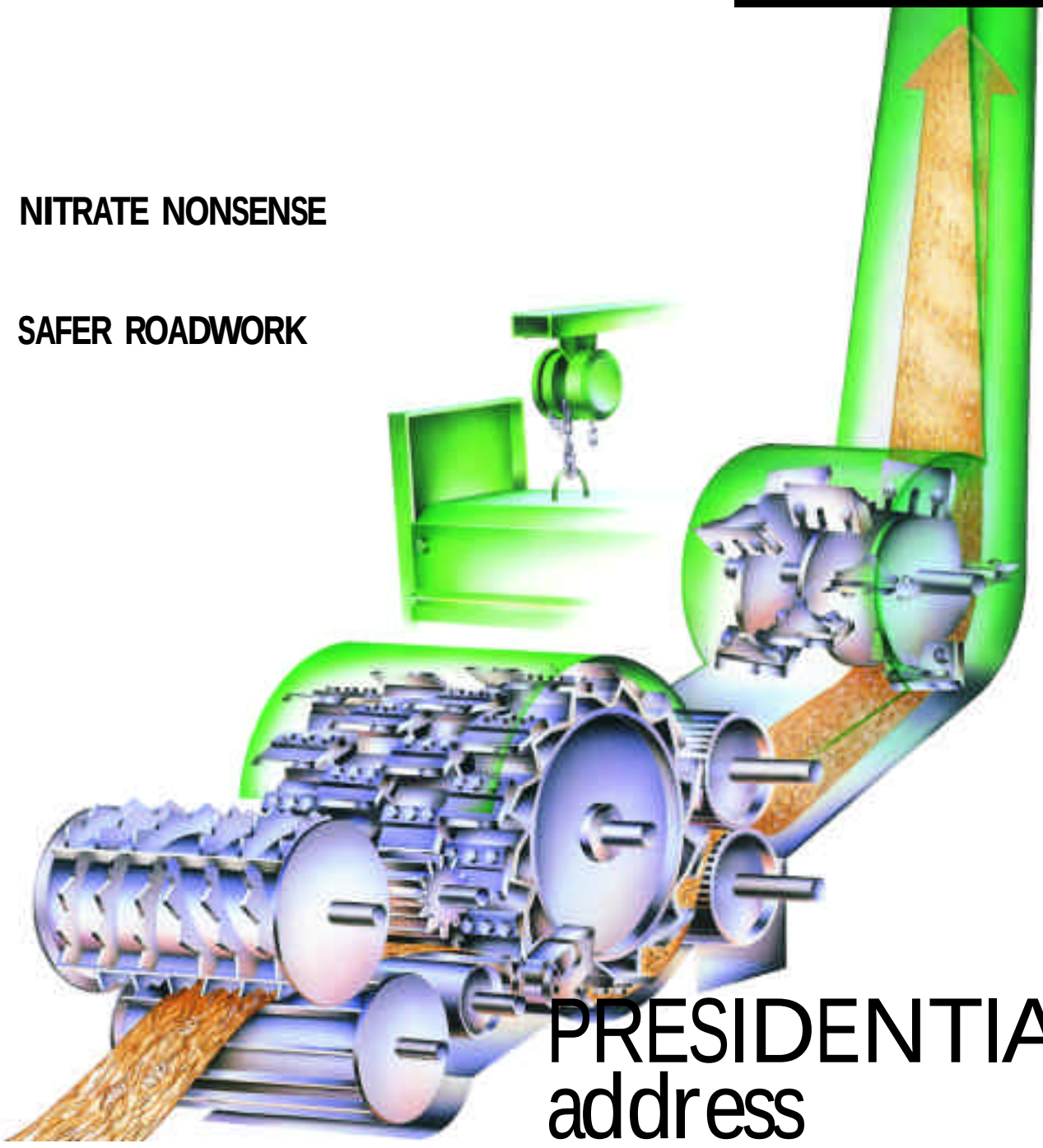
Agriculture • Horticulture • Forestry • Environment • Amenity

LANDWARDS

Early Summer 2002

- NITRATE NONSENSE
- SAFER ROADWORK



PRESIDENTIAL address

IAgrE JOURNAL Volume 57 No.3 www.iagre.org

FUSION WELDING

Welding polyethylene pipes with confidence

A 1M euro European-funded project has just been completed.It developed a fusion welding machine with an integral ultrasonic non-destructive examination (NDE) system.This has the potential for providing complete confidence in the long-term quality of each weld produced.

The project was managed by TWI and involved twelve other organisations from five European countries.The objectives were to:

· optimise three ultrasonic NDE techniques for butt welds in PE pipes (TOFD, tandem and creeping wave);

· establish the limits of such an NDE system;

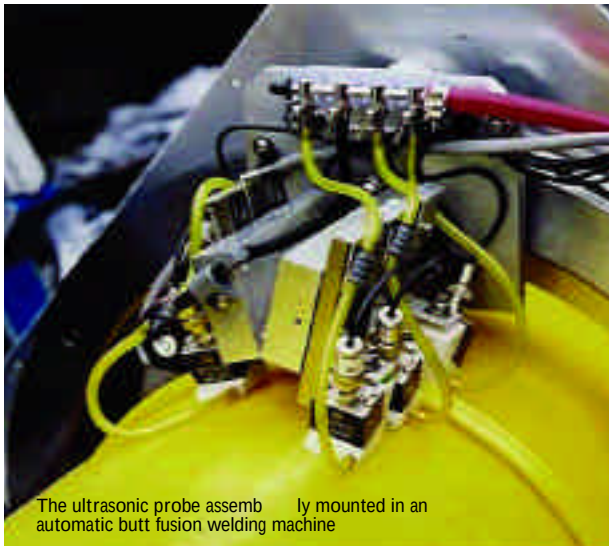
· determine critical defect sizes and levels of particulate contamination in PE pipe butt fusion welds;

· design and manufacture a prototype welding/NDE machine.

These objectives were all met and the results were very encouraging. Work carried out during this project has important implications for the pipeline industry.

Although the project only covered one grade of PE, using one welding procedure, the advantage of a combined TOFD, tandem and creeping wave system is that it should be applicable to other grades of PE using other welding procedures as it does not rely on a specific shape or size of weld bead.

TWI Ltd is one of Europe's largest research and technology organisations with over 400 staff.Based near Cambridge, UK since 1946,TWI provides industry with technical support in welding, joining and associated technologies such as NDT, surfacing,and cutting. It's services include contract R&D, technical information, advice and consultancy, training and qualification. TWI uniquely offers a single source of all of these services for the joining of engineering materials.



The ultrasonic probe assemb ly mounted in an automatic butt fusion welding machine

TWI is internationally renowned for bringing together multidisciplinary teams to implement established or advanced joining technology or to solve problems arising at any stage – from initial design, materials selection, production and quality assurance, through to service performance and repair

CONTACT

Mike Troughton at TWI.
E-mail:
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SHAFT DRIVES

Variable speed and floating shaft drives

An extended range of compact variable speed drives and floating shaft drives supplied by Robert Cupitt Limited is providing further versatility in application and installation for OEM machine and automated assembly line building.

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Front cover: *Forage harvester mechanism (Graphics:John Deere Ltd)*

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PRESIDENTIAL ADDRESS

Dr Dan Mitchell

During the last few years this Institution has progressed rapidly in the services it offers its membership. We now have a range of specialist group meetings in support of local branch meetings. We now produce our flagship journal Landwards six times per year and include more news from the membership. We have delegated authority from the Engineering Council to accredit courses and offer a pathway through to becoming a Chartered Engineer. We also have an active web site which includes job vacancies.

Looking back on my own career, I have benefited considerably from membership of this Institution. It has given me a route to professional Membership and then Fellowship and also to becoming a Chartered Engineer. It has put me in touch with key agricultural engineers in industry, teaching and research. At interviews, I have always been asked to which Professional Institution do I belong and, when I joined the Electricity Council first as a senior engineer and then as a manager, it was a vital part of my CV. Today, it is key to developing my consultancy opportunities.

We use and take from our professional institution for most of our career but there comes a time when we should put something back and encourage younger engineers to develop their skills for the future.

By taking on this role I hope that I can put something back and support the business plan in continuing to move forwards.

There are three assets that I believe I can offer the Institution of Agricultural Engineers:

Experience, Energy and Contacts.

1. Experience

36 years experience as an agricultural engineer and engineering manager.

First as a very green lecturer in mechanisation at Walford College where I also managed a barn hay drying trial for Midlands Electricity.

Then as an engineering postgrad at Reading on farm buildings and electrical underfloor heating for pigs, and sponsored by the Electricity Council.

This was followed by eleven years' advisory and research work on farm buildings with the Scottish Agricultural Colleges. Because of my experience managing projects for the Electricity Council and my interest in energy, I then joined the Electricity Council as a senior engineer and for two years was national livestock specialist. Then I moved into engineering management and for nineteen years was the enthusiastic manager of the electricity industry's Farm Electric Centre. It was an exciting challenge as I was given sole responsibility for developing the centre's role. I had the challenges of first establishing agricultural engineers in each UK electricity company then providing training and raising the services profile for use by UK farmers and growers. I successfully managed the centre through privatisation of the electricity industry and continued to manage it as a profit centre within the parent company. The overall objective was to provide a technical support service for UK farmers and growers and to develop the role of electricity in British Agriculture and Horticulture. I also took the opportunity to establish a farm electric service in South Africa which had, at its height, six centres and 120 staff.

For the last two years, I have been running my own consultancy with six clients, including working as Reader in Engineering for Harper Adams University College.

2. Energy

I have considerable personal energy and can usually see the wood for the trees so I will be undertaking this role with enthusiasm. I am a strong

believer in the concept that 'today is not a dress rehearsal for tomorrow'.

3. Contacts

Because of the wide experience that I have already outlined, I have amassed a large range of farming, engineering and management contacts through graduating from Wye, Reading and Aberdeen, from working in Shropshire and Scotland and being based at Stoneleigh with a national role, and through working in both the Agricultural and Electricity industries. As a Fellow of the Royal Agricultural Societies F.R.Ag.S., I have also learnt the importance of having eminent people linked to our Institution.

It is important to understand what the Engineering Council and the new Engineering and Technology Board are doing and to learn from other Institutions and students. In the last four years, I have had the opportunity to visit a wide range of university engineering departments as both of our sons are studying engineering. Colin is finishing his finals in computer engineering and David is in his first year reading mechanical engineering. This has given me a unique opportunity to see how the larger institutions operate. They take student membership seriously and see it as the bedrock of current and future membership. Through the support of The Douglas Bomford Trust, we are now able to offer free student membership to AgEng students over a three year period starting last Autumn. This move is vital and I hope to visit several more colleges to offer student membership. I also ask those members at colleges to help ensure that more students become student members. I am happy to visit colleges as your President and to work with the staff.

With regard to overall membership, we now have about1700 members and to my surprise this membership is only bringing in 12 new members per year.

Are we a secret society !? NO. Surely we can do better.

All of the larger institutions also have membership via the eminence route for senior managers and influencers in their field. We are now moving on this issue and there are at least 20 key people who are being targeted to join us. If the head of a large organisation joins via this route, he or she will become more involved with this Institution and hopefully help with membership within his or her company or organisation. This will again help to raise the Institution's profile, attractiveness and influence.

My strategy for the next two years as President is based on three elements in support of the Institutions Business Plan. If you agree with this approach, then please join with me to help deliver the actions.

• Student Membership

There are 51 Colleges teaching Agricultural Engineering or farm mechanisation at different levels. We need to encourage both the students and staff to all become members. A new poster describing this Institution is ready for distribution to Colleges.

• Eminent Members

As mentioned above this aspect of membership is being encouraged to grow.

• Press and Public Relations

We are not as well known as we should be.

For instance the great effort put into Landwards is not currently being matched with a wider circulation to key journals, libraries and individuals.

The list of regional and specialist group meetings is excellent. We again need to circulate it more widely.

We need to further develop the web site www.iagre.org and its links to key agricultural and engineering contacts. If you know of an engineering job vacancy that could be of interest to the membership then please send it in. It goes on to the site very quickly.

We need to build up a key press list for the circulation of good news and we need to produce press releases on a regular basis. I have set up a small PR group with the specific objective of making this Institution more visible. Ideas are very welcome and I am grateful for the good response we had recently via email to a request for more press contacts.

With regard to the overall field of engineering, I was recently at a meeting of engineering institutions in London. Over 60 Engineering Institutions were represented by both Presidents and Vice Presidents – a very worthy gathering. It struck me that they were all well fed and that we should see ourselves as the Institution that has a major infuence on feeding all of them. Small we may be but vital? Yes!

At a later meeting with the Engineering Council and new Engineering and Technology Board, I was impressed that part of our annual fee goes towards promoting engineering throughout society. Engineering certainly needs to raise its profile. It is up to us all to play our part by raising our Institution's profile.

Let us move forward with a positive attitude, eg ROUND LIKE A SHOT.

Going to bed the other night, a farmer noticed people in his shed stealing things.

He phoned the police but was told no one was in the area to help. They said they would send someone over as soon as possible.

He hung up. A minute later, he rang again. "Hello", he said, "I called you a minute ago because there were people in my shed. You don't have to hurry now because I've shot them."

Within minutes there were half a dozen police cars in the area, plus helicopters and an armed response unit. They caught the burglars red-handed.

One of the officers said: "I thought you said you shot them."

To which the farmer replied, "I thought you said there was no one available!"

In summary, being small has advantages because it gives the opportunity to meet a wide range of members and we can act more quickly than a larger Institution. I am also convinced that we have a better opportunity to mentor young engineers. I have benefited from a wide range of engineers and managers who have helped me progress. This Institution needs to increase its membership by taking student membership seriously and developing links with similar minded engineers. We now have better links with the AEA and will be developing links with other groups.

If we can raise our profile then I am convinced that we have an exciting future. The foundations are very solid and the scope for progress unique.

The Institution of Agricultural Engineers is a vital organisation in British Agriculture and has an important international role with members in many countries.

May 2002

TRAINING

Lantra becomes Sector Skills Council 'trailblazer'

Lantra has recently received the news it had been waiting for, as it was announced it had become one of only five UK 'trailblazer'Sector Skills Councils.

Currently recognised as a National Training Organisation (NTO), Lantra has been selected to lead the new streamlined network of Sector Skills Councils (SSCs) in developing and testing innovative approaches to learning and development.As a 'trailblazer', the Government has licensed Lantra for a two-year period, to deliver a new skills,training and development agenda for the industries it supports. A wider round of bidding for Sector Skills Council status is expected to take place shortly. It is envisaged that Sector Skills Councils will be truly 'employer-led' and 'trailblazers' will be seen to pilot the new arrangements for the other sectors.

News of the move away from the National Training Organisation network was delivered in September, when John Healey, the Minister for Lifelong Learning, addressed NTO chiefs.This decision was taken on the back of a review, prompted by the Minister's predecessor, Malcolm Wicks, which began in the autumn of 2000.Since then, Lantra has remained dynamic in its approach to its work for the sector, thus enabling them to provide substantial evidence of its worth to the land-based industries. Lantra are currently responsible for the interests of over 1.5 million people and 360,000 businesses, spread across 85% of the UK's landmass.

Peter Martin,Chief Executive, who has continually assured the sector during this transitional period, spoke of the news, saying:"Gaining SSC status is just reward for the long and sometimes difficult process that we embarked on back in 1997 of bringing together a number of related industry training bodies into a single organisation. Being an SSC will now allow us to plan ahead with a greater level of confidence and ensure that we meet the needs of our sector more effectively than we have been able to do previously."The move to SSCs is expected to see a significant number of amalgamations of existing NTOs or the development of new employer-led sector bodies.

"Lantra will respond positively to requests from other NTOs if this brings synergy and added value to our approach," said Gordon McGlone, Chairman designate of the new organisation. Lantra is, however, keen to stress that any such moves would not be made to the detriment of current industries and would be done in consultation with industry and partner organisations.

AMENITY

Farmers get to tour wetlands work

Farmers whose farms lie on the banks of scientifically important Midlands river were given the chance to tour a farm which has undertaken work to preserve and enhance wetland habitats

The Environment Agency organised a farm walk, at Sheepwash Farm,Whittington near Lichfield,which lies on the River Tame. The walk gave the farmers, who farm along the River Mease, a chance to observe developments being carried out by the farm's owner, Mr Gray, under the Countryside Stewardship scheme.

A large arable reversion and wetland creation has taken place on the farm,which is next to the River Tame. The work is part of a larger Countryside Stewardship Grant for the whole farm.

Countryside Stewardship Grants are administered by DEFRA (Department of Environment, Fisheries and Agriculture) to promote environmentally sensitive methods of farming and to promote wildlife on a farms. Grants are available for a wide range of work such as planting trees and hedgerows, pond restoration,managing pasture/meadow and wetland creation.

The Environment Agency, English Nature and FWAG (Farming and Wildlife Advisory Group) are working in partnership to promote Countryside Stewardship to farmers along the River Mease. The Environment Agency is supporting FWAG to provide advice to farms on the river on how to manage their farms to increase its value to wildlife and to assist them in applying for Countryside Stewardship Grants. English Nature provide additional grants for farmers and land managers to enhance farmland in the floodplain of the river.

The River Mease has been identified as being important for nature conservation,it has been designated as an SSSI and a candidate Special Area of Conservation (SAC), of European importance for its crayfish,spined loach, crayfish and otter.

The Environment Agency encourages wetland creation on farmland as it has several benefits.As well as creating an important habitat for wildlife, wetlands improve water quality and store water in rural areas during times of flood; in the long term this may reduce flooding problems in urban areas downstream.

Agency Conservation Officer Ruth Hering says:"Farmers are one of the custodians of our landscape and have a vital role to play in protecting and enhancing it.This scheme gives them the support and assistance to continue their work and safeguard the countryside for future generations. It's ongoing success is testament to both the initiative and farmers' willingness to make changes which benefit the environment. We look forward to seeing it develop further in the future and for it to be adopted in other parts of the country."

Velcourt takes a leading role in EU remote sensing project

One of Europe's leading farm management companies, Velcourt plc, is taking a lead role in a new EU-funded project designed to help address the environmental pressures exerted by intensive farming practices and enhance the economic competitiveness of Europe's agricultural industry.

The company, which manages 60,000 hectares on behalf of landowners, is leading a programme to evaluate the economic and practical potential of developments resulting from a project entitled 'Integrating Synthetic Aperture Radar with Optical products for Crop Management (ISOCrop).

Valued at +2 million, the two-year investigation which started on 1st January is part of the European Framework Funders Project and involves a consortium of five European-based companies: Velcourt, Astrium, Infoterra, ATISAE and BAE Systems. Its primary objectives are to develop techniques to retrieve crop parameters from Synthetic Aperture Radar (SAR) imagery and develop a framework for integrating these capabilities with Superspectral Optical products through existing satellite-based crop monitoring services.

Explaining the background to the project, Keith Norman, Velcourt's Technical Director, commented: "The intensification of agriculture over the last 40 years has encouraged greater use of fertilisers and pesticides and has led to the removal of field divisions. Although the technology potentially exists to vary inputs, the factor limiting the uptake of this technology is that real-time spatial information relating to the growing crop is currently unavailable to most farmers. Only a very small number are able to adjust application rates in line with crop requirements and localised soil conditions, which has long-term implications for our eco-systems, the sustainability of the agricultural industry and food safety."

The major reason why existing satellite data sources cannot always meet the needs of farmers and agronomists is a simple one. In many parts of the world where the technology could be utilised most effectively, cloud cover prevents current optically based systems from operating at key times during the season, acting as a barrier to the collection of time-critical data. To overcome this limitation and enable the development of cloud-independent products, the ISOCrop project will focus on methods of integrating data gathered using existing optical technologies with those from Synthetic Aperture Radar.

"SAR is already an integral part of crop discrimination techniques used by certain EU Member States to provide the data necessary for them to implement IACS controls," explains Keith Norman. "Research has shown that SAR has the potential to provide a range of additional crop management information, including surface soil and canopy moisture contents, which cannot be retrieved using existing optical data sources. Consequently a great deal of effort is being directed towards the development of products with the potential to provide solutions to everyday farm management issues."

Massive potential

ISOCrop's initial research efforts will focus on wheat, the crop of greatest economic importance to farmers in Europe and on which the majority of the necessary structural and radiative transfer modelling has already been carried out. Significantly, the companies involved in the project span four of the largest arable crop producing EU Member States, namely the UK, France, Spain and Germany, which together account for almost 80 per cent of European wheat production.

"Although development work for other key crops will follow, within the scope of the ISOCrop project there is a need to focus on one crop. This will enable us to establish a complete picture of how SAR and optical products can support all aspects of wheat management in Europe," comments Dr Rosie Bryson, Velcourt's newly-appointed Research and Development Project Manager. "For the project to achieve its objectives will require major advances in SAR product development and an evaluation of SAR Optical synergy which has no precedent. The project will therefore span two full cropping seasons, providing independent datasets over multiple sites for research, product development and validation, as well as providing a substantial body of agronomic evidence."

As the CAP moves away from production-related support systems and commodity prices within the European Union align with world markets, European farmers are currently coming under severe economic pressure. To survive, they will have to further improve both their efficiency and competitiveness, as well as complying with increasingly stringent environmental legislation and greater demands from customers over food safety issues.

"There is enormous potential to increase the efficiency of arable farming in Europe and other parts of the world through improvements in crop monitoring and the optimum use of inputs such as fertilisers, fungicides and water," comments Dr Bryson. "The timely delivery of spatial information, at a cost justified by the resulting improvements in profitability, will enable the development and implementation of a wide range of innovative farm management practices. These will result in economic advantages to those farmers who make use of them, improvements in food safety for consumers as well as considerable benefits for the environment."

NITRATE NONSENSE

Bill Butterworth

Introduction

Nitrogen in farming is of topical interest with respect to the pollution of aquifers, waterways and drinking water, yet no more than half comes from agriculture and even that can be eliminated.

Pollution control

Have you ever wondered why the fens in the UK don't pollute the watercourses that run through them? Similarly, why does the obviously high nutrient level in the lush tropical jungles not run straight into the river when it rains, bearing in mind that there is more rain every day in the rain forest than most temperate climates get in several months?

On the UK Environment Agency's figures, at least 45% of the mineral nitrogen applied in farming goes straight into the ground water when it rains, more in sandy soils and less in clays. Why? Do the regulators not stop to think about this difference and how it might affect the way the reduction of nitrate pollution is approached?

Mineral nitrogen

What happens to mineral nitrogen is shown in principle in Fig. 1. Mineral fertilisers ionise in moisture. Clay, if it is present, has colloidal properties. The surface of the clay particles are electrically charged and mainly negative, so clay can only hang onto cations such as calcium, trace element metals and ammonium.

Soils have great difficulty hanging onto anions such as nitrate. That explains the science of why mineral fertilisers leach out when it rains.

To put this into commercial context, UK farmers spend about £400 million on mineral nitrogen fertilisers pa. On the Environment Agency's figures, approaching £200 million of the fertilisers, go straight into the ground water with rain. It costs the water companies and the Rivers Authority (now part of the Environment Agency) more than that to remove it again. What it means directly to any individual farmer is that approaching half the nitrogen that is bought is wasted.

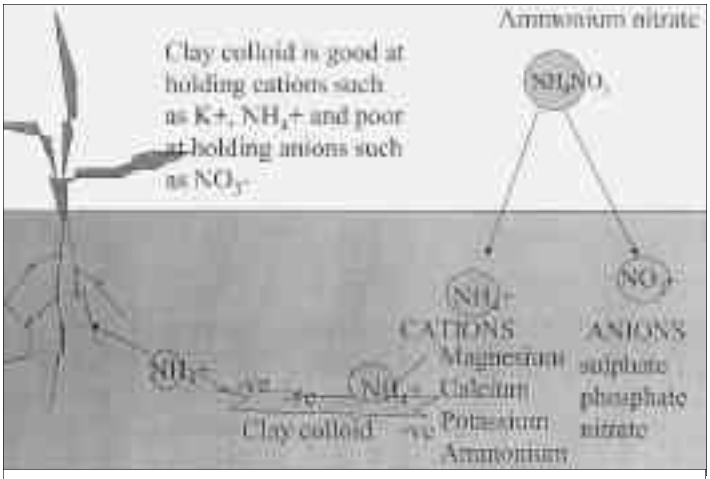


Fig. 1 When mineral fertilisers such as ammonium nitrate are applied, the cations are held in the soil colloid 'bank' which also holds water but rain will take close to half the nitrate into the ground water

Organic nitrogen

For those who have begun to study the work done by Dr William Albrecht in the 1960's on 'Cation Exchange Capacity', and those who currently follow Neal Kinsey's current work, extending Albrecht's achievements, there has to be an interest in humus. Kinsey shows humus has 3 or 4 times the capacity of clay to hold onto not only cations, but anions too. It therefore follows that humus will hold onto nitrates!

It might be thought that 'humus' and 'organic matter' are one and the same thing. Not so, humus was called 'DBS' when I was a student at Reading in the early 60's, 'Dirty Black Stuff', because the soil scientists did not have much idea what it was. It was in Japanese research that the answer began to emerge.

The molecules of humus are large complex hydrocarbons, carbohydrates and proteins which are not found in organic matter. These molecules are found in the dead bodies of soil micro-organisms – bacteria, fungi which feed on the organic matter and incorporate it into their own bodies and hence the soil. As they are big organic molecules, they do not wash out in the rain. So now we know the reason why the reserves in even rich soils, such as the black fens, can be held without leaching. But how does the plant get its food without opening the door to the leaching of those nutrients?

Golf greens

The Professional Golfers' Association (PGA) in the USA became interested in why golf greens get fungal diseases and yet similar grasses on livestock farms do not. Clearly, manure, organic matter and humus were involved, but how? It is known from much other work that the soil mycorrhiza, the fungi which surround all plant roots, have a major role to play

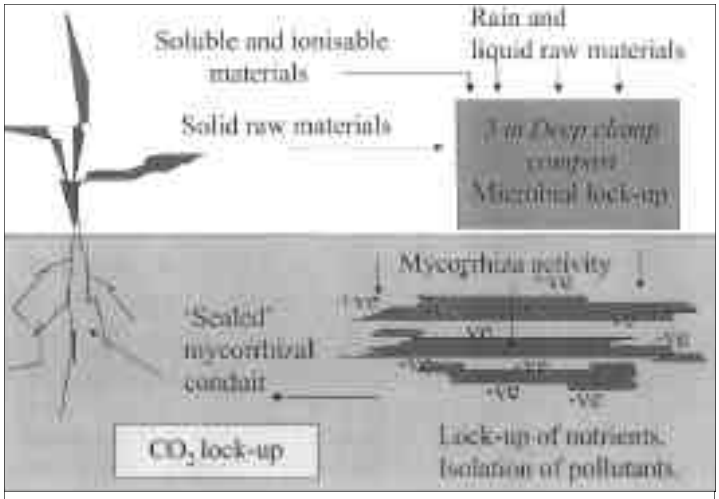


Fig.2 Illustration of pollution control

in soil and plant metabolism. Some have very significant antibiotic abilities. Others are involved in phosphate and potash release. The PGA researchers went on to look at the relationship between the mycorrhiza and the plant root hair. To their surprise, they found that some of the mycorrhiza went across the root hair wall into the plant.

Further research at Aberystwyth has shown that some mycorrhiza do this and others do not but all have a very much closer relationship than was previously thought. This close relationship is at a molecular level and explains a number of things. One interesting route of thought is that the closeness of relationship and how it varies may explain why some crops catch a disease and others do not. What it certainly does do is give a credible explanation of what the 'closed loop' really is when it is talked about in organic farming and recycling. Fig. 2 shows the 'closed loop' and the reason why mineral nitrogen and organic nitrogen are different. If farming practice can turn all nitrogen into humus, then farming will save £200 million a year of nitrogen loss and the water industry will save more than that by not having to remove it.

It appears that the 'feed' of the plant by the mycorrhiza is demand led. If the crop wants more food, then the mycorrhiza will deliver at the rate required provided the humus reserves are there and the soil is biologically active. Top crop yields can, therefore, be delivered within 'organic' systems.

The logic is simple, if there is enough 'waste' of a suitable nature, compost it and spread it to land. If there is not enough nitrogen fertiliser value in the compost, add more waste because the nutrients in the compost will not leach since they are rain insoluble. If there is still not enough nitrogen, then take woody compost and sprinkle mineral nitrogen on top of the heap during composting to turn it into microbial protein. When spread, the nitrogen is not nitrate and not rain soluble but available to the plant through the mycorrhizal conduit.

Carbon and nitrogen sink

The organic 'experts' were right all the way along but they knew little of the mechanisms involved or why they were successful. They were, therefore, often wrong in managing the technology and often voiced findings which brought about a less credible image. Using the work of Dr William Albrecht and Neal Kinsey to manage 'waste' to land offers a major opportunity not just to 'feed the soil, not the plant' but to show how to manage a global scale sink for carbon and nitrogen.

Clearly, natural ecosystems operate almost completely without nitrates, except, possibly, while nitrogen is in transit. Eliminating significant pollution would therefore seem to depend on building up soil organic matter and then reducing cultivation which allows oxidation of the soil proteins and release of nitrates.

Exactly the same logic applies to building a global carbon sink. In the UK alone, in excess of 100 million tonnes of waste is currently collected and put to landfill sites. This means that money which could come into farming via composting, is largely already spent. All that carbon would be locked up. It would save a calculated £500 million worth of mineral fertiliser – imported in bulk and with high-energy input.

The 'Nitrogen Directive' was formulated in the early 90's and the motives for formulating it were entirely valid. What is written above shows the need to overhaul this directive and also the need for the Department for Food and Rural Affairs (DEFRA), in attempting to obey the European Union (EU) directive, to tighten things up. There is a need for them to stop and think. When regulators base their interpretations on inadequate science, then everybody pays far more. When that science and logic is available, there is no excuse for this.

There is another factor and it is about basic objectives. No farmer wants to lose the effects of his fertiliser purchases. All farmers are very happy to be genuinely concerned about pollution. The practical solution is composting waste and direct drilling. With an understanding of what the 'closed loop' really is, we can cut nitrate pollution. Without that understanding, we are in a state of flux and stand a very good chance of not achieving the objective and, in addition, destroying the farming industry.

BIO NOTE

Bill Butterworth FIAgrE, is an independent researcher and consultant in recycling to land. He was the architect of the 'reverse franchise' structure of Land Network, the farmers' consortium. It targets the 100 million tonnes plus per annum which could safely be recycled to land for food production and forestry. Bill supports the view that this would save at least £500 million on imports, as it was before the advent of mineral fertilisers. He can be contacted at: Land Network International Ltd, 26 Bailey Close, Devizes, SN10 2RW. Tel: 0845 130 6900 Email: environment@usk.u-net.com Web: www.usk.u-net.com

RESEARCH RECRUITMENT

Student debt crippling engineering research, says Academy

Britain's universities cannot recruit enough high-quality engineering research students to drive future innovation, the Royal Academy of Engineering warns in a new report, 'Doctoral level research students in engineering: a national concern'. Most of the country's top university engineering departments are reporting serious problems in persuading the best UK graduates to stay on for doctoral studies.

New engineering graduates, faced with a choice between low academic pay and the far higher starting salaries available in industry and commerce, understandably choose the latter. The choice is even starker when they already have debts to pay off from their undergraduate studies. Several departments told the Academy that they recruit well over half their PhD students from overseas, many of whom return home after their studies.

This trend will ultimately result in a chronic shortage of university lecturers and researchers. Many universities are already experiencing acute difficulty in filling vacancies amongst their engineering teaching staff. Doctoral research students are critical, for they provide tomorrow's university lecturers and, for some industries, the innovators.

"This is a huge problem for our economy as a whole," says Academy President Sir Alec Broers DL FREng FRS, Vice Chancellor of the University of Cambridge. "Without new researchers today there will be no new knowledge tomorrow."

"The problem is not just about money," says Professor David Nethercot FREng, Head of the Civil Engineering Department at Imperial College of Science, Technology & Medicine. "Doing a PhD is not as attractive as it used to be, partly because of the image of becoming a specialist boffin. In fact, it's a great way of learning transferable skills and taking responsibility for a piece of work." While some industries no longer pay a premium for a PhD, unexpected opportunities are opening up where research experience in computer modelling and other new engineering disciplines are very valuable.

The Academy's report calls on the Government and the Research Councils to increase the PhD grant for engineering doctoral research students to a level that compares with the salary they could reasonably expect in industry. The Higher Education Funding Councils must also address the low salary levels and short-term contract problems faced by university lecturers.

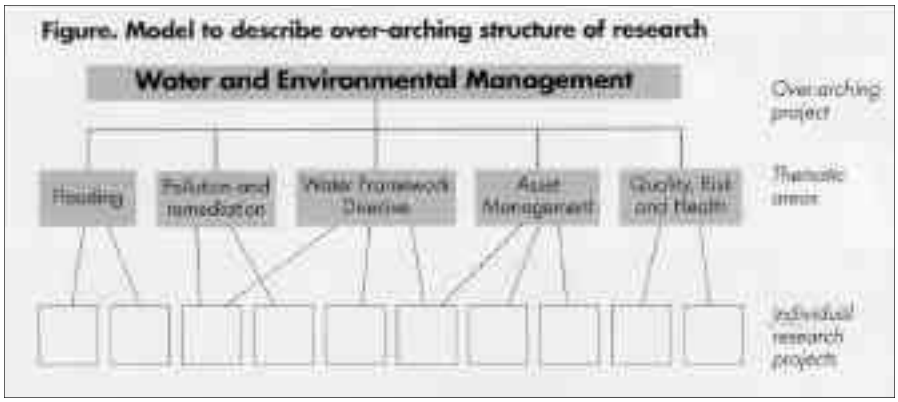
RESEARCH STRATEGY

Integrated water management

Many of the challenging research issues facing the water industry are multi-disciplinary in nature and require the best expertise to solve them. The forthcoming Water Framework Directive will increase the need to look across all aspects of water management.

In this context, EPSRC organised an Integrated Water Management Workshop that brought together, amongst others UKWIR, DEFRA, the Environment Agency, Ofwat, DWI and the four research councils EPSRC, NERC, ESRC and BBSRC.

The prime aim was to develop a set of strategic recommendations for research. This should feed, over time, into the development of a more integrated strategy for water research between all the funders.



To ensure that all aspects of water management were debated, presentations from stakeholders on current research were given in the context of the issues of risk, health, climate change and soil/air/water interactions.

Discussion groups looked at five thematic areas, focusing on the strengths and weaknesses of the current approach to water research and how it can be improved, whilst at the same time examining opportunities for future integration between research disciplines, providers and end users.

Finally, the consensus set of recommendations was drawn up together with an agreed approach to implement and communicate them.

CONTACT

For more details on the initiative, contact Annette Bramley at EPSRC. Email: annette.bramley@epsrc.ac.uk

New Enforcement Policy sets clear standards for investigating and prosecuting workplace accidents

Today the Health and Safety Commission (HSC) published its new enforcement policy statement, which for the first time sets out specific criteria for deciding whether to investigate and prosecute breaches of health and safety law.

The policy will apply to all Britain's enforcing authorities,including the Health and Safety Executive (HSE) and all local authorities in England, Scotland and Wales.It will make clear to inspectors, employers, workers and the public what standards they should expect when it comes to enforcing health and safety in the work place.

The policy states that a prosecution should normally take place in any one of a number of circumstances, including:

· when a workplace death is caused by a breach of the law;
· if there has been reckless disregard of health and safety requirements;
· if the offender's standard of health and safety management is far below what is required.

Decisions on whether to investigate a workplace incident must take account of a number of factors, including:

· the severity and scale of potential – as well as actual – harm;
· the offender's previous health and safety record;
· the wider relevance of the incident, including the public concern it causes.

The HSC's policy also requires all Britain's enforcing authorities and their inspectors to:

· ensure they consider the role of the management chain, and individual directors and managers,in any possible offences – and take enforcement action against them if the evidence shows this is justified;
· notify the director of an offending organisation each time the enforcing authority issues an improvement notice, prohibition notice or takes a prosecution against that organisation;
· publicise annually the names of all organisations and individuals convicted of health and safety offences over the previous 12 months, as well as similar information regarding all improvement and prohibition notices issued over the same period;
· publicise the decision-making process so that everyone can understand how the enforcement policy will work in practice.The Health and Safety Executive (HSE) has already developed a model for achieving this,which will be finalised shortly and also be used by local authority inspectors.

HSC Chair Bill Callaghan said: "Our main concern is for accidents not to happen in the first place – and therefore much of the enforcing authorities' activity is designed to encourage employers to assess risks properly and take relevant preventive measures. But when serious incidents do occur, we must have an effective framework within which appropriate enforcement action can take place.

"The policy demonstrates to employers, workers and all other interested parties what they can expect from the enforcers – and how the watchdogs should respond to serious workplace incidents.The standards should be the same, regardless of the inspector, enforcing authority or the sector of industry involved."

Mr Callaghan emphasised the need to hold employers accountable for their organisations' health and safety performance. He said:"Most employers do treat health and safety as a priority. But there are still too many who don't, with tragic consequences.In particular, inspectors must consider carefully the role of individual managers and directors when serious failures do occur – and ensure that appropriate action is taken against them if the evidence justifies it.

"The HSC relies on the cooperation of responsible bosses to safeguard the health and safety of Britain's work force and tries to give every encouragement for them to do so. Last year we published good practice guidance for directors of public and private sector bodies. Building on this, we now expect the authorities to notify directors whenever formal enforcement action is taken against their organisation."

Mr Callaghan concluded with a warning to negligent employers:"Now, more than ever, there is no excuse for those at the top to be ignorant of their responsibilities or to fail to take effective action.If you cannot manage health and safety, then you cannot manage."

In order to ensure its continuing effectiveness, the enforcement policy will be monitored over the next five years and reviewed by the HSC.

MORE INFORMATION

The HSC's enforcement policy statement is on the web at www.hse.gov.uk/pubns/hsc15.pdf Copies of the Statement (HSC15), can be ordered online at www.hsebooks.co.uk or are available from HSE Books, PO Box 1999, Sudbury, Suffolk, C010 2WA. Tel: 01787 881165. Fax: 01787 313995.

CODE OF PRACTICE

Tractor haulage and machinery movements on the road

Farmers, agricultural contractors and tractor drivers need to move tackle and laden trailers on the road and at peak times.This can annoy other road users by slowing progress and by bringing mud onto the road. Perthshire Machinery Ring have taken an initiative to draw up a Code of Practice in an effort to resolve difficulties that they have experienced locally. By seeking participation and guidance from other key organisations, this draft code of practice is being further reviwed and will be adopted more widely once the consultation processes have been completed.

The Code of practice Drafting Committee, made up from members of the Scottish Agricultural Contractors Association (SACA), Tayside Police and Perthshire Machinery Ring, has completed its deliberations and the findings of the group have been ratified by the Tayside Road Policing Unit.The Code has been set out in easy to understand sections, free from as much legalistic jargon as possible and is presented here. Over the next few months,the Police will work in a supportive role, by assisting farmers and agricultural equipment users in understanding what is expected of them.

1) This is not intended to be a LEGAL INTERPRETATION of the LEGISLATION governing agricultural machinery on the road, but a simple, practical Code of Practice which, when implemented, will greatly increase road safety and the prevention of accidents.

TRAILER

2) All trailers on the Public Highway must be fitted with a fully operational braking system.
3) Agricultural Vehicles travelling in excess of 32 km/h (20mph) must be fitted with a service brake applied progressively by the tractor service braking system and a FAIL SAFE Secondary Braking System. Code of Practice efficiency required is: Service Brake – 30%; Fail Safe Secondary Brake – 16%.
4) All Tractors and Trailers exceeding 48 km/h (30mph) on public roads must be fitted with 2 line air operated brakes which achieve a Service Brake efficiency of 45% and a Fail Safe Secondary Brake efficiency of 25%.
5) The number plate displayed on the trailer/attachment must be the same as any registered agricultural vehicle belonging to the towing vehicle firm or company.
6) Ensure that all bulk loads, whilst in transit,are covered with Nets or Sheets to prevent any spillage which could be considered hazardous and dangerous to other road users and pedestrians
7) All Bags, Boxes or Bales must be held down by means other than by their own weight or contents, whilst in transit.
8) All Tractor Trailers and appliances travelling at over 20mph to be fitted with mud wings or mud flaps to the rearmost axle.

SAFETY

9) Ensure that Safety Cabs are fitted to all tractors travelling in excess of 32 km/h (20mph), cab fitments to include Windscreen Washers and Wipers,Speedometer, Horn and Twin Mirrors.
10) Ensure that the points of all 'forks or tines' are covered with 'PROTECTORS' i.e. boards or plates,when travelling on public roads.
11) Tyres on all agricultural vehicles and trailers travelling at more than 32 km/h (20mph) should have not less than 1 mm tread and be free from cuts and bulges.
12) No White Lights, whether Rear-facing Tractor Working Lights or broken lenses, should be visible from the rear, during the hours of darkness, whilst on the Public Highway.
13) Fit Triangular Boards and Illuminated Light Boards to all long ploughs and implements when on all roads,and when items project over 2 METRES behind the towing vehicle. Also fit marker boards to the tractor showing the widest part of any projecting towed apparatus. Tractors travelling on the public highway may be fitted with dual wheels provided that they are under three metres in width and have over-centre catches with a locking pin. Screw-on types are not acceptable. Such tractors must be fitted with Marker Boards to the front offside and rear offside of the vehicle to show the widest point of the vehicle.
14) Ensure that Amber Beacons fitted to all tractors and are functioning,free from dirt,switched on at all times and be seen 360 degrees around the vehicle. Front and Rear Lights and Indicators to be fully working and free from dirt and able to be seen. Steering and Brakes on Tractors to be properly maintained and in order at all times.All trailers must have an amber beacon at the rearmost point of the trailer.
15) All Combine Harvesters must be escorted whilst being driven on the public highway.
16) At suitable opportunities, operators of Agricultural Vehicles shall consider other road users by giving way to following vehicles by pulling off the carriageway to allow the following vehicles to pass safely.
17) Agro-chemicals transported on the road shall be kept in locked containers and restricted from public access.

CONSIDERATION FOR OTHER ROAD USERS

18) Remove MUD, deposited by tractors and/or appliances when on public roads,as soon as practical or at least at the end of the working day.
19) Place 'Mud On Road' warning signs are placed at the extremities of any fouling of the carriageway and ensure that these
20) Remove all Hedge Cuttings from public roads or at least ensure that they are swept into the verge as soon as practical after hedge cutting and that the area be properly signed that work is in progress.
NOTE:The combined Maximum Gross Weight (MGW) of a Tractor and Trailer is 24390 kg of which 18290 kg is the MGW of trailer plus load.

CONTACT

John Gregory, Assistant Manager of the Perthshire Machinery Ring, would be pleased to receive any constructive comment on this draft Code of Practice. His e-mail is: perthshire@farmersweekly.net

Farmer gets 'Legal Aid' – after crop is ruined

Thousands of small businesses face a similar problem every year – the costs and risks of going to court are prohibitive. Where can they get some help?

Legal costs can cripple a small business and big companies are quick to put up cost hurdles to put off all but the most persistent claimants with the deepest pockets.But there is now a way in which small businesses can get justice without risking this year's profits or having to sell the family silver, as this example from the farming industry proves.

Real life example

Mrs G ran a dairy farm with her mother Mrs S, who sadly died before the case was concluded. They won six-figure damages after a courageous court battle against the manufacturers and installers of defective equipment. It was the classic situation for a small business, the expensive equipment they had bought did not work properly and the cost of losing their legal action could ruin them.

The case against the finance company, the manufacturers and the plant installation company concerned a poorly designed and defectively installed milking parlour. The parlour caused infection and injury to the cows and failed to cope with a planned increase in the herd.

According to their solicitor, "It was a big decision to go to court but by taking out a LawAssist policy it created a level playing field with the co-defendants.When they made a low offer of settlement to buy us off it was a great comfort to know our costs were insured as we held out for a full settlement."

It's Legal Aid for business

"We cannot understand why any business would now consider litigation without LawAssist. The insurance settles the legal bill if you lose and there is no 'success fee' to pay if you win. With funding to meet important costs,such as barrister's fees and the insurance premium it is possible to put all of your legal costs 'on account' until the case is over"said Greystoke's marketing manager Brian Dunk.

"This is the closest thing yet to providing Legal Aid for businessmen"he added. It usually only costs £40 and to see if a case qualifies for LawAssist.

How LawAssist works

1.Think you have a good case?
2. Get your solicitor to submit the papers to LawAssist (usual cost £40).
3.If LawAssist agrees they will offer insurance and funding.Use the funding to pay the premium and other costs, deferring pay back until the case is over.The insurance acts as 'security' for the loan, so there is no 'means testing'.
4.When the case is concluded, if you have won, reclaim most of your costs from the other side (usually this will include your insurance premium too) and pay back the loan plus interest. There is no 'success fee'so usually the interest will be the only non-recoverable cost. If you lose at court, the insurance will pay off the loan plus interest costs.
5. So, provided you have a good case to start with using a LawAssist approved solicitor may cost you no more than your time and the initial assessment fee of £40.

CONTACT

For details please contact Greystoke Legal Services Ltd. Tel: 020 8771 7772. Email: sales@greystoke.co.uk. Web: www.greystoke.co.uk LawAssist is not available for criminal, matrimonial, defamation, stress related and tribunal matters.

CONVOCATION

Shame Hunger and Malnutrition 2002

An international conference, focusing on food-security and poverty alleviation in West Africa, is being held in October by the West African Society for Agricultural Engineering [WASAE] and The Nigerian Institution Of Agricultural Engineers [NIASE]. The conference is being supported by The Federal Government of Nigeria,The Food and Agricultural Organisation Of The UN (FAO), and the Technical Centre for Agricultural and Rural Cooperation (CTA).

Sub-Themes

The main theme is aimed at considering options and an action plan.The following sub-themes are proposed.

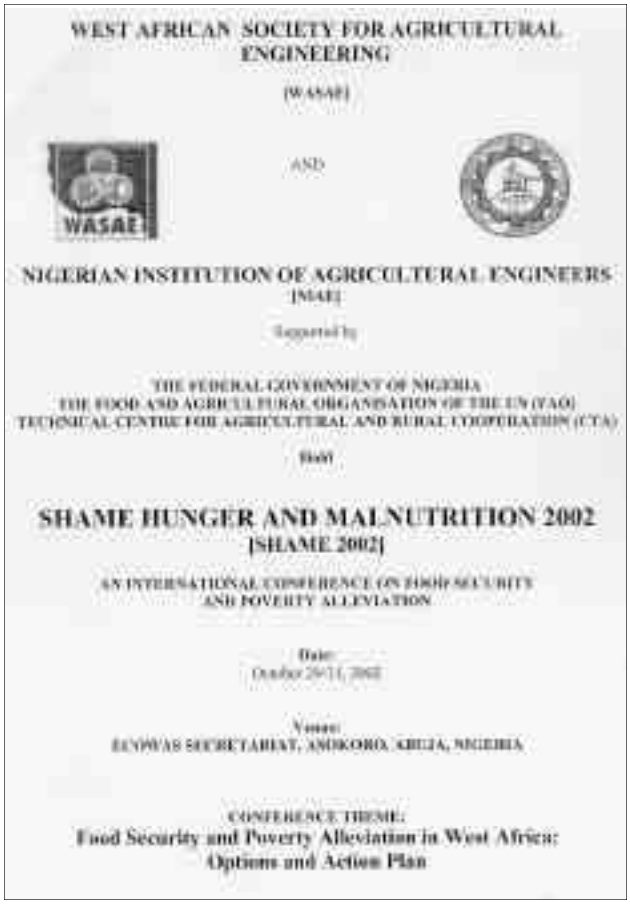
- Policy Issues and Conceptual Framework
- Economics, Economic and Technological Development
- Food Production, Processing and Preservation
- Globalization, Competitiveness and Food Security
- Regional Integration and Trade Liberalization
- Energy, Agricultural Mechanisation and Food Security
- Environmental Issues and Food Security
- Sustainable Soil and Water use Management
- Agricultural and Rural Engineering Infrastructures
- Private Sector/NGO Initiatives and Poverty Alleviation
- New Technologies (ICT, genetic engineering, new materials etc) and Food Security
- Aquaculture and Biodiversity

Synopsis

National food security broadly defined includes the capacity of a nation to provide sufficient supply and the existence of socio-economic conditions that permit all citizens and other members of society to meet acceptable minimum standards of consumption.It could also be looked at as access by all people at all times to have enough food for a healthy and active life. Food security in any country will enhance political, social and economic stability of that country.

However, more than 800 million people in developing countries were undernourished at the beginning of the 1990s and several tens of millions of people are dependent on emergency food aid each year although such aid is falling sharply. A responsible society will like to ensure that citizens have adequate access to good food and enjoy good health and nutritional well-being.

Obviously, no country is comfortable in leaving its food supply completely in foreign hands. There is a school of thought that globalisation and the associated global pressures of trade liberalisation are making the goals of food security and poverty eradication much more difficult to attain in the developing countries.



West African countries must robustly respond to these challenges, first by gaining deep understanding of the conceptual issues and then employing technology and management sciences to fashion out enduring solutions (knowledge and inno-

Bimonthly EARLY SUMMER 2002

MEMBERSHIP MATTERS

THE NEWSLETTER OF THE INSTITUTION OF AGRICULTURAL ENGINEERS

INSTITUTION NAME

Our name and identity came under discussion eight years ago when we began a strategic programme to counteract declining membership. The industry was downsizing and many members were taking early retirement. Numbers were bound to decline but our task was to ensure the Institution service and image would not exacerbate the problem.

We quickly agreed a modern logo, which better represented the membership's wide interests in the land - based industries. Our emblem Ceres locked us into agriculture but most of our members were actually working in related industries. We therefore needed something to represent Amenity, Forestry, Agriculture, Horticulture etc and we felt the ploughed field represented land which had been engineered in some way.

The next natural debate was the name. It was agreed by everyone that it was no longer representative but we would not change unless a name came forward which was broadly acceptable and which would satisfy the members. We had also to consider the abbreviated version – the designatory letters after members' names. They would have to make sensible groupings – perhaps they were even more important than the name itself – so one suggestion was to retain the letters and change the name to suit them. After a year of debate and consultation with Branch AGMs, the decision was made to stick to the old name, one major deciding factor being international recognition. We were afraid our quite large foreign membership would no longer recognise us or that they would worry that their professional qualification may not be recognised in their own country. The subject was closed hopefully for at least 10 years.

However membership has continued to decline, an important factor being the foreign exchange rate. The strong Pound has made membership relatively expensive and we have had many foreign resignations. Perhaps it is time to reconsider the relative importance of the name abroad and concentrate on what will sell the Institution in the UK. We must not, however, forget the importance to our expatriate members of the international recognition of the designatory letters IAgrE.

The debate began again late last year and the need for change gained much support from new and younger members of Executive and Council. Council passed a resolution to put the case to membership. We have now reached a point when a full democratic vote of the membership is in order.

To make sense of this, a motion was put forward at the AGM in May 2002. The result was a mandate to go to the membership with a couple of agreed choices so that members can make a clear decision. We are afraid that a motion of whether or not to change followed by suggestions of new names will become confused, as happened in the past. The factors are:

- a name to represent the members' activities in engineering and technology with land being the common factor
- a name which will result in sensible designatory letters (perhaps trying to retain IAgrE)
- a name which will be attractive to prospective new members who may not necessarily be engineers
- a name which describes a family of Engineers and Technologists working in some way with land and the associated environment.

We urge members to participate in this debate by sending your opinions and your suggestions for publication in the next two issues of Landwards.

My Presidency has been a very enjoyable experience and I would like to thank everyone in the membership who has contributed to the work of the Institution. From the outside I never realised just how many members actually get involved. Everyone has a contribution to make and I would like to see a few more new faces next year. We have taken the Institution forward and slowed the decline in membership. I hope we continue to invest some of our assets wisely each year to make IAgrE a lively, break-even professional body – we only need ten percent of our members to introduce a colleague in order to put us in that position. Thank you for the honour of allowing me to be your President for two years. I won't say it has been easy, but it has been extremely rewarding and I now leave the 'hot seat' in the very capable hands of Dan Mitchell. I wish him every success.

Geoff Freedman

AWARD OF MERIT FOR PROFESSOR PETER LEEDS-HARRISON

Peter Leeds-Harrison (right) receiving the Award of Merit from the President for distinguished work in agricultural science .

Peter Leeds-Harrison first joined the ranks of the Agricultural Engineering profession in 1965 when he became a trainee at Evers & Wall, the sprayer manufacturers, prior to entering Rycotewood College in 1966 at the age of twenty. He then progressed to the National College of Agricultural Engineering where he graduated with a BSc (Honours) in 1972.

His first academic interest was in farm buildings whilst he was working as a Technical Officer with the Farm Buildings Information Centre and later as an RICS Research Fellow at NCAE, which led to a PhD from Reading University in 1979 on the subject of 'Natural Ventilation of Livestock Buildings'.

Following his PhD studies, Peter remained in Silsoe joining the staff of Cranfield in 1978 as a Research Officer concerned with the drainage of clay soils.

Since then he has progressed through the academic ranks to be appointed Professor in Soil and Water Management in 1999.

Peter's work over the past 24 years has been concerned with many facets of soils, ranging from soil physics, the management of heavy clay soils, irrigated agriculture, the fate and behaviour of pollutants in soils and overland flow systems for the treatment of dirty water to the environmental assessment of wetland areas.

During this period Peter has published over 80 papers and reports, has managed six major research projects, has undertaken over 25 consultancies in UK, Europe and ten other overseas countries.

In addition he has supervised 15 successful research degree students and maintained a full teaching programme within Cranfield University.

Peter Leeds-Harrison has indeed made a major contribution to Agricultural Engineering by expanding our knowledge of soil and water management and also some of the current environmental problems, which will become increasingly urgent in the course of time.

OBITUARY

MURIEL FRYETT

Muriel Fryett died very suddenly in March 2002. She was the widow of Ray, the sometime Secretary of the Institution. Ray managed the Institution with a 'jigsaw' of ladies, some full-time and some part-time. Muriel, with her training in accountancy was a very successful part-timer in what was a very happy team.

In the early 1980's, I spent a lot of time commuting from Aberdeenshire to Silsoe and was very fortunate to receive tremendous hospitality in the Fryett household. Life there was dominated by the Institution and the Douglas Bomford Trust, and into both they put their heart and soul. As relaxation, they both gardened enthusiastically, meanwhile discussing the minutiae of the Institution activities.

In her widowhood, Muriel lived on at No 1 Manton Spinney, to which visits were always a pleasure.

Our sympathy must go to Muriel's daughter Penny who lost her mother and brother in a very short space of time.

Hamish Shiach

RETIRED CHARTERED ENGINEERS' CLUB - EXETER

The Club was founded in 1986 with the objective of providing a social meeting place for retired Chartered Engineers and a means of keeping Members in touch with achievements and developments in the Engineering Professions. The Club is open to retired Chartered Members of Engineering Institutions and currently includes one hundred representatives from Mechanical, Marine, Civil, Chemical, Aeronautical, Structural, Electrical and other disciplines.

Monthly meetings are in the I S C A Bowls & Bridge Centre, Exeter which is a comfortable venue with many facilities including a bar and dining area. Meetings commence with informal coffee time in the lounge, short reports concerning Club business then a Presentation on a subject of interest to Engineers. Visits to venues of technical interest and social events are arranged.

Prospectiv e Members are welcomed as Guests at all Club ev ents. For further information please contact Honorary Secretar y, John Knivett - tel. 01395 443 988.

JOHNSON NEW HOLLAND TROPHY AWARD FOR ROBIN PICK

The Johnson New Holland Award is presented annually to the student or group of students submitting the best final year project as part of a Degree, Higher National Diploma or Higher National Certificate course in Agricultural Engineering. The objective of the award is to encourage and acknowledge innovation by young engineers.

Robin Pick, aged 23, comes from a farming family near York, and has been involved in Agriculture most of his life having worked on the family farm and for an agricultural contractor during the University holidays. He was educated at Pocklington School and attained 10 GCSE's and 4 A level's. In 1995, he won an Arkwright Design Scholarship through a national design competition that provided a bursary for his A level studies. Thereafter, he enrolled on a four year sandwich degree in Agricultural Engineering at Cranfield University at Silsoe, graduating in June 2001 with 1st Class Honours.

At present, he is employed by AGCO at the Coventry Manufacturing facility, were the Massey Ferguson 4300 series range of tractors are produced and is undertaking their Engineering Graduate program. The program involves 12 months working in various departments within the business, with the aim of developing his knowledge of company systems, and aiding his professional development.

The title of his winning project is: 'Reducing the risk of tractor overturns on slopes'. Tractor overturns on slopes as a result of stability loss are a very serious problem. They can result in personal injury and severe damage to a tractor. The final year project was undertaken to investigate the possible increase in stability, from the selective locking of the pivot point of a tractor as the angle of overturn was reached.

A pivoted front axle provides a very simple and cost-effective way of allowing a tractor to adjust to changes in the surface of the ground. It does, however, adversely affect the stability of a tractor. A rigid axle four-wheel vehicle becomes statically unstable when the centre of gravity passes vertically outside a line joining the contact patch of the down slope wheels, whereas a vehicle with a pivoted front axle becomes unstable when the centre of gravity passes vertically over a line joining the centre of the pivot point of the front axle to the centre of the contact patch of the down slope rear wheel. This means that the stability of a pivoted axle tractor is significantly less than that of a rigid axle four-wheel vehicle.

The optimum height of the pivot point for maximum stability is at the same height as the centre of mass. In practice, however, it is very difficult to incorporate a high pivot point into the design of a modern tractor because of the position of the engine. Therefore, selectively locking the pivot point would retain the benefits of a pivoted axle without changing the current tractor layout, but offer the stability of a rigid four-wheel vehicle as a tractor approached the angle of overturn.

The results of an investigation using a scale model showed that the locking of the pivot point offered the possibility of a significant improvement in the static angle of overturn when compared to a pivot point that was free to rotate. A stability formula was developed and predicted values compared with the experimental data for different heading angles on the slope. The increased stability was equivalent to being able to work on a slope of between 4.3 and 9.80 steeper, and thus provided a window of increased safety that would allow the operator time to correct the position of the tractor.

Robin Pick (right) displaying the Johnson New Holland trophy and his own prize which were presented by Steve Churchill of CNH UK Ltd, the sponsors of the young engineer innovation award

LONG SERVICE CERTIFICATES

Name	Grade	Date of Anniversary
50 years		
Stanley Derek Minto	FIAgrE	13 Jun 2002
25 years		
Adrian Richard Thomas	CEng MIAgrE	17 May 2002
Daniel James Christopher Shaw	IEng MIAgrE	17 May 2002
John Peter Frost	MIAgrE	17 May 2002
Keith Thomas	CEng MIAgrE	1 Jun 2002
Geoffrey William Taylor	EngTech MIAgrE	8 Jun 2002
Graciano Fermiano Mervyn Abreo	EngTech MIAgrE	16 Jun 2002
Ivan Stanley Burrowes	IEng MIAgrE	16 Jun 2002
Donald Matthew Roberts	AIAgrE	28 Jun 2002

BRANCH MERITORIOUS AWARDS 2001

The awards are made to members who have consistently rendered outstanding service to Branches of the Institution over a number of years.

Ian J Fleming is one of those 'timeless' colleagues who is well-known and highly respected for his dedicated contribution not only to the mechanisation of agriculture during his career, but also to the collection and restoration of key agricultural machines during his active retirement.

Born in London during the early stages of the First World War, he graduated in Agriculture in 1937. He was employed by the Edinburgh and East of Scotland College of Agriculture as Assistant Lecturer in Agricultural Engineering until 1940 when he joined the Army and served in REME both at home and overseas. After the war, he was recruited by Scottish Agricultural Industries Ltd as Manager of one of the agricultural machinery depots. He was later involved in the development of bulk fertiliser handling, work study, and the provision of contract fertiliser spreading services as well as the contract sowing of grass seed. Following early retirement in 1970, he became training adviser to the agricultural machinery trade in Scotland and Northern England.

Retiral in 1980 provided the opportunity to participate more fully in the Scottish Country Life Museum Trust of which he was, until recently, Joint Secretary and now continues as Technical Adviser. He has tirelessly pursued languishing machines of historical merit and helped to ensure that the Museum of Scottish Country Life, recently relocated at West Kittockside near East Kilbride, contains one of the most comprehensive collections of combine harvesters in Europe. He was also co-author of the book:'Britain's First Chair of Agriculture at the University of Edinburgh 1790-1990' to mark the bicentenary of the founding of the Chair for which Robert Burns, that famous Bard, was initially a contender but decided that he did not fancy academic life!

Ian was Chairman of the Scottish Branch of the Institution from 1962-64, as well as serving on the Branch Committee for many years before and after that time. He continues as an active Branch member and still regularly attends Branch Conferences. He cherishes his 50 year Membership Certificate which was presented to him in 1998 and it is with great pleasure that we offer him a Branch Meritorious Award to acknowledge our appreciation for his commitment to, and participation in, a lifetime of Agricultural Engineering.

David Mehaffy has been Secretary of the Western Branch for the past 10 years and having trained his replacement, he is now able to become their Vice-Chairman (so they haven't let him get away).

The retiring Chairman has worked closely with David and confirms that the Branch could not have had a better Secretary, nor could the Institution have had a better ambassador. Kverneland, for whom David works have been extremely helpful through the years,even when losing a talented engineer for a day at a time has resulted in significant cost to them.

The continued health of the Western Branch is almost entirely due to David's hard work, patience and persistence and we hope we can utilise this once he has had a little time to recuperate. As well as serving the Branch,David is one of a dwindling group of Agricultural

Engineers actively involved in the design and development of new machines. His professional reputation is extremely high and Kverneland are very fortunate to have him.

The Western Branch wishes to acknowledge David's contribution by commending him for the Branch Meritorious Award.

Oliver Statham has been a loyal and active member of the Institution since 1964 when he joined South Western Branch,subsequently transferring to London and Kent Branch and later to Southern Branch.

Oliver has served on Branch Committees since 1966 and for circa 15 years his leadership as Southern Branch Secretary, together with his contributions towards the development of Branch activities,have been of immense assistance to both Branch members and the Institution.

In 1969, Oliver joined the Potato Marketing Board (subsequently renamed The British Potato Council) as a specialist in engineering, buildings and storage within the Research and Development Section.

Until 2000, Oliver, as Outdoor Event Organiser, was responsible for the staging of the world's largest commercial scale field demonstrations of potato growing,harvesting and storage.

The Southern Branch wishes to acknowledge Oliver's contribution by commending him for the Branch Meritorious Award.

MICHAEL DWYER MEMORIAL PRIZE 2001 AWARDED TO PAUL HEMINGWAY

Following the award of an Honours degree in Agricultural Engineering from Newcastle University in 1976, Paul spent two years with a Ford Dealer as a Trainee Service Manager. Finding he had a talent for training, Paul moved to Harper Adams – then an Agricultural College – for an eleven year stint of lecturing in agricultural engineering. During this period, he found time to complete an M Phil and to become a Chartered Engineer – this latter achievement is no mean feat for those in teaching.

Since 1989, he has worked for JCB in various roles including time with JCB Developments,JCB Landpower, JCB Sales and latterly JCB Training.

Having made the successful transition from academia to industry, Paul has enjoyed a successful career with JCB. During his time with JCB Landpower, Paul was part of the team responsible for the development and introduction into the agricultural market of the JCB Fastrac. Given the revolutionary nature of this product which effectively broke new ground and opened up new application areas within agriculture as a true on and off road vehicle, the provision of technical support for dealers and users would have been crucial.

Clearly committed to his discipline and, no doubt helped by his lecturing experience, Paul has presented invited papers at a number of international conferences. Indeed, this commitment to education and training has been clear throughout his working life as evidenced by his current position as Product Training and Development Manager with JCB Training,his Chairmanship of AEA's Education & Training Committee and his ongoing work as an external examiner at Harper Adams University College.

The prize to a mid-career engineer who has made out - standing pr ogress in the agricultural engineering indus - try was presented by Mrs Brenda Dwyer to Paul Hemingwa y

DOUGLAS BOMFORD PAPER AWARD

The Douglas Bomford Paper Award is presented to the author(s), at least one of whom is an Institution member, who demonstrate originality and technical excellence in a scientific paper published during the previous year in either the Institution Journal Landwards or in the Journal of Agricultural Engineering Research. Assessment criteria include: engineering content; potential for practical and commercial use; relevance to the current problems and needs of industry; as well as quality of presentation and the authors' authority in the subject material.

The Board of Trustees were pleased to announce that the award this year is presented to Peter J Kettlewell MIAgrE at Silsoe Research Institute (SRI) and his five co-authors, three of whom are from the same Institute, one of whom (B M Veale) is from Forge Yard and the other (M A Mitchell) is based at Roslin Research Institute.

The study addresses an important aspect of livestock welfare, namely, the design of a prototype mechanically ventilated transport vehicle for pigs, sheep or cattle. The design complies with current legislation and meets the 'higher standard' ventilation requirement for vehicles which are to be used to transport animals for over 8 h. The system provides air movement over all the animals and is independent of vehicle movement.

Peter Kettlewell (right) on behalf of the group of co-authors receiving the award from John Fox, Vice Chairman of the Douglas Bomford Trust

Kettlewell P J; Hoxey R P; Hampson C J; Green N R; Veale B M; Mitchell M A (2001). Design and operation of a prototype mechanical ventilation system for livestock transport vehicles. Journal of Agricultural Engineering Research, **79**(4),429-439.

LETTERS TO THE EDITOR

19 April 2002
Dear Sir,

I was intrigued to read the first sentence in the article about New Holland crawler tractors on page 29 of the Late Spring issue of Landwards.

It so happens that I have been around for some time, and even a member in the Institution for no less that 57 years now, but in all that time I have never heard of a New Holland crawler. A little research soon shows that the Holt crawler evolved in 1909, the Caterpillar trademark dating from 1910. Holt crawlers were used extensively in the 1914/18 War, and Holt changed the name to the Caterpillar Tractor Co in 1925. As you are well aware, Caterpillar continue on a very large scale today and have always, though now pro rata to a lesser extent, covered the agricultural market though more especially in the USA. Of course there is also the International Harvester crawlers to consider.

So....how Alan Hawes can say: "For nearly 70 years New Holland has been the World's number one producer of agricultural tracked vehicles" I really do not know. Perhaps New Holland bought some company way back but I have, until now, never seen a crawler with New Holland written on it. It would be interesting to hear the basis for the claim.

Yours faithfully
Geoff La wson

16 May 2002
Dear Sir

I AgrE Conf erence: 'Faster by Design'

Could you please extend my thanks to all the speakers at the 'Faster by Design' Conference for their contribution to what I believe was a very valuable day. I was unable to talk to them all before they left.

Please extend my thanks to all the afternoon sessions Chairmen and Chairladies many of whom I did not manage to find during the day.

Alister Taylor and Denis Cartmel were congratulated on the day, for the day, but David White and Graham Higginson, both of the organising group, had a major input to the planning of the conference and deserve recognition for their ideas, dedication and behind the scenes activity.

The contribution of Harper Adams University College who provided financial support and staff time should be recognised

as a major contributor to the continuing vitality of the Agricultural Engineering industry.

Thank you to everyone who made the day such a success and my job so easy.

Yours faithfully
G F D W akeham
Chairman,Conference
Organising Committee

Dr Dan Mitchell, incoming President, with the Geoff Freedman, Immediate Past President (centre left), Professor Wynne Jones (left) Principal of Harper Adams University College, the conference venue, and Geoffrey Wakeham,Principal lecturer in Engineering at Harper Adams(Chairman of the Conference Organising Committee) at the Annual Conference entitled: 'Faster by Design'.

NEWS OF MEMBERS

David Hemstock who is still based in Derbyshire, is now working part-time on golf and sports projects as an Associate Consultant to the Sports Turf Research Institute at Bingley.

I am most grateful to **M J Thakoordin** for the following information on his recent move to Bridgend:
Having returned from Guyana, South America, in 1999, I spent time working in the Research and Vehicle Technology Department at Ford Motor Company. My main task was NVH Engineering for the next generation Ford Focus.The challenge was that my previous job (Agricultural Engineer for the Guyana Sugar Corporation) was very much a self-starters position, with job responsibility straight up to director level,whereas at Ford, everything has to work inside global procedures, which can result in a somewhat mechanical approach. I took the NVH Department through the high-level stages of concept and description of function. Subsequently I moved to my current position - a more applied engineering role - Plant Engineering. This has now taken me to Bridgend, Glamorgan,where we are living - albeit on a temporary basis - for the duration of this assignment.
Currently, we are installing the facility to run over 100 CNC metal cutting machines in a flexible layout. This is different to our usual arrangement of individual machining heads dedicated to one task, positioned astride in-floor trenches and conveyors. Further engineering departures from our usual methods include the use of large diameter overhead pipes for machine services, and more equipment maintainable at floor level - going away from the construction of many platforms and pits.
The challenges at present are to strengthen the floor so that the flexible layout philosophy can be realised both now and in the future, and that the roof is strengthened as necessary to support the increased number of services demanded by the 'flat floor'. Looking further ahead, I envisage issues arising matching new, unproved process machinery designs and similarly new plant engineering concepts.Though it will have very little technical relevance to my work in assembling corrugated steel plate bridges across canals, or designing large capacity pumped drainage schemes on sugar cane plantations, the energy required to root cause some of these problems certainly will!
My family and I are hoping to make the most of our time in the area, so if any Agricultural Engineers are out there in the Bridgend area, feel free to contact me on mthakoor@ford.com. I am looking forward to exploring the local scenery; the flat aspect of cane plantations can be considered a little monotonous!

Michael A Zoebisch was recently appointed Deputy President of the World Association of Soil and Water Conservation (WASWC) for 2002-2004. WASWC is an international non-government organization of hands-on professionals and informed lay persons dedicated to promoting the sustained use of the earth's soil and water resources. WASWC provides a forum through which soil conservationists can keep up-to-date on world-wide developments in their field, obtain information and contact people working on similar problems.
In his capacity as Associate Professor of Integrated Watershed Management at the Asian Institute of Technology (AIT),Bangkok,Thailand, Michael assists in the development and implementation of Master and Doctorate-level curricula in integrated watershed management for professionals in agriculture, natural and water resources management, and regional planning.
Michael also tries to establish research links with institutions in Europe. He can be contacted at:
zoebisch@ait.ac.th

Tony Chestney

Write to Tony with your news! His address is: 32 Beverley Crescent,Bedford MK40 4BY

MEMBERSHIP

Academic Members

Cranfield University
Silsoe
Bedford
MK45 4DT

Duchy College
Rosewarne
Camborne
Cornwall
TR14 0AB

Harper Adams University College
Newport
Shropshire
TF10 8NB

Myerscough College
Myerscough Hall
Bilsborrow
Preston
Lancashire
PR3 0RY

Oatridge Agricultural College
Ecclesmachan
Broxburn
West Lothian
EH52 6NH

Pencoed College
Pencoed
Bridgend
CF35 5LG

Sparsholt College
Sparsholt
Winchester
Hampshire
SO21 2NF

Wiltshire College - Lackham
Lacock
Chippenham
Wiltshire
SN15 2NY

Writtle College
Chelmsford
Essex
CM1 3RR

Commercial Members

Autec Design Ltd
Stockley Road
Heddington
Calne
Wiltshire
SN11 0PS

Douglas Bomford Trust
16 The Oaks
Silsoe
Bedford
MK45 4EL

Bomford Turner Limited
Salford Priors
Evesham
Worcestershire
WR11 5SW

John Deere Ltd
Harby Road
Langar
Nottinghamshire
NG13 9HT

FEC Services
NAC
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2LS

G C Professional Services for land-based and related industries
Highdown Cottage
Compton Down
Winchester
Hampshire
SO21 2AP

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

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

Rotomation Ltd
Summerwood Lane
Halsall
Ormskirk
Lancashire
L39 8RH

White Horse Contractors Ltd
Lodge Hill
Abingdon
Oxfordshire
OX14 2JD

Membership Changes

Admissions

Fellow
J E Moffitt (Northumberland)

Member
D W Ross (Cumbria)
M Sterling (Birmingham)

Associate Member
D J Boorman (Essex)
I J Hamilton (Wiltshire)
S G Minter (Nottinghamshire)

Associate
N C Meehan (Ireland)

Student
E T Askew (Cumbria)
J Eddleston (Lancashire)
M R Hesketh (Lancashire)
D J Hurdman (Northamptonshire)
J R Spurgeon (Lancashire)
A Trow (Lancashire)

Deaths

J Laird (Co Antrim)
J Maughan (South Yorkshire)

Transfers

Member
P W Amos (Edinburgh)
M J Povey (Gloucestershire)
G E Randles (Merseyside)

Engineering Council

Registrations

CEng
S J Dicks (Northamptonshire)
M R Geary (Hampshire)

IEng
S P Irwin (Oxfordshire)
S M Nott (Suffolk)

EngTech
P E Pettifer (Bedfordshire)

Does anyone know the whereabouts?

James Robert Austen
67 Thealby Gardens, Bessacarr,
Doncaster,
South Yorkshire DN4 7EQ

Ravi Vaughn Bhusia
8 Assiniboine Road, Apt 1110,
Toronto, Ontario M3J 1L4,
Canada

Roger Simon Horner,
1 Ballinbreich Cottage,
Newburgh, Cupar,
Fife KY14 6HJ

Stephen Wachole Mwambu
13 Eskmont Ridge,
Upper Norwood SE19 3PZ

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vation based) and realistic action plans that will make them competitive in the increasingly hostile new world order. This is the challenge of the conference.

WASAE

The West African Society for Agricultural Engineering was conceived in Kumasi, Ghana at the 2nd International Conference on Agricultural Engineering, organised by the Ghana Society for Agricultural Engineering (GSAE) in September 2000, and formally inaugurated in Enugu, Nigeria at the 23rd Annual General Meeting and 2nd International Conference of the Nigerian Institution of Agricultural Engineers (NIAE) in September 2001. It is an assemblage of Agricultural Engineers and other professionals engaged in applying engineering and technology to the solution of agricultural problems in Francophone and Anglophone West Africa. The Society has taken up the challenge of serving as a Technical Advisory Committee to ECOWAS in the solution of Food Insecurity and Poverty Alleviation problems in the sub-region.

NIAE

The Nigerian Institution of Agricultural Engineers, a Division of the Nigerian Society of Engineers, has been in the forefront of efforts to promote agricultural mechanization and attendant increased agricultural productivity in Nigeria. The Institution is sure of the competence of its members and believes that the more its members are challenged the more they will demonstrate their competence and commitment to transforming Nigerian agriculture to a state where it will be able to adequately feed the teeming and rapidly growing population as well as provide raw material feedstock for its fledgling industrial sector. The institution is convinced that Nigeria must target the large West African regional market, and invariably, the global market with niche and innovative products in which it has competitive advantage.

Conference overview

The conference will feature the following.

- A full day of plenary sessions to be addressed by globally respected invited speakers.
- Technical presentations of relevant research results.
- Complimentary exhibition of food and industrial products.
- Development of an Action Plan for the Region.
- Attendance by West African Presidents and Heads of Government.
- Participation by International Development Agencies and NGOs.
- Conference Proceedings (Main) will be published ahead of conference.

MORE INFORMATION

The conference is takes place between 29-31 October, 2002 at Ecowas Secretariat, Asokoro, Abuja, Nigeria. For more details including registration fees and exhibition facilities contact: Prof. M O Faborode, International Conference Secretariat, Dept of Agricultural Engineering, Obafemi Awolowo University, Ile-Ife, Nigeria. Tel: +234 36 232775 or 230044 Email: mfaborod@oauife.edu.ng; mfaborod@yahoo.co.uk cc:skagodzo7@usa.net Web: www.oauife.edu.ng/niae-wasae/shame2002

PROFESSION

Institutions have a duty to enforce Codes of Conduct

The UK Engineering Institutions must actively enforce their codes of conduct for their members if they are to avoid the possibility of being sued for negligence, Professor John Uff, Professor of Engineering Law at King's College London, told the Royal Academy of Engineering when he gave the Lloyd's Register Lecture in London.

Engineers have an ethical duty to the public, reflected in their Institutions' codes of conduct. Although it has never happened, an Institution could be held to account by members of the public who suffer damage through the actions of an engineer it had held out as competent to practice. "Institutions do not enjoy any degree of immunity or legal protection and cannot regard their role as being limited to giving advice and encouragement," Professor Uff points out. "Their role must encompass some degree of monitoring and enforcement and they should not wait for the courts to define that role for them."

"Such enforcement procedures are more familiar in other professions, particularly medicine," says Professor Uff. "But there is no such precedent in the UK engineering profession, partly through lack of any body of reported disciplinary proceedings and partly because there are few areas in engineering where professional registration is a requirement of practice." He cautions that enforcement by the UK Institutions must be systematic and inter-Institutional to avoid fragmentation. "Support from both members of the engineering profession and the public will be vital to the establishment of a credible and respected procedure. "Professor Uff will also challenge the Institutions to consider how they can support individual engineers who publish warnings about preventable disasters. The US engineering Institutions helped to pioneer action in support of "whistleblowers" through amicus curiae or intervention proceedings in court actions. This enables an Institution to place material before a court supporting the action of the member in question and upholding the public interest. One of the first such interventions over 20 years ago was by the IEEE on behalf of three engineers sacked for raising concerns about the safety of the San Francisco Bay Area Rapid Transit system. An accident later occurred due to the fault they had identified. IEEE members can now request the Institution to file an amicus brief in cases where ethical questions are raised.

The use of this procedure has increased exponentially in the US and there are strict rules on how it can be used at both federal and state level – amicus briefs were filed in over 85 per cent of all Supreme Court cases between 1985 and 1996. "The UK is still at an early stage in considering the usefulness of amicus briefs in maintaining ethical standards," says Professor Uff. "The US experience indicates that caution will be required when seeking to establish appropriate procedures and that there will be a need to distance true ethical considerations from the interests of pressure groups."

GROUTING IRAN'S LARGEST CONCRETE DAM

Largest concrete dam

'Karun III' will be the largest concrete dam in Iran and one of the largest in the world. It is located on the river of the same name some 415 km upstream from the provincial capital of Ahwaz and 120 km from the 'Karun I' development downstream. Its main function is to produce electricity – but it also incorporates an irrigation system which will provide much needed water for agriculture.

The 205 m high arch dam is located at an altitude of 640 metres and its reservoir will hold some 2,700 million m3 of water. Its underground powerhouse will be the largest in the country, generating 2,000 MW of energy. The overall cost of the project is around $150 million, with completion of the dam expected in about six years. At 613 m long main tunnel diverts the river at the site, which includes spillways, power intakes and tunnels, a switch yard and transmission lines. A spillway tunnel, 536 m long, has also been built above the dam to control heavy flooding and irrigate 1,300 km2 of farmland.

Field specialist and equipment suppliers

Atlas Copco Craelius, the ground engineering specialist which has extensive experience in grouting and stabilisation expertise, has supplied a range of products to reinforce the dam and stabilise the foundations. These include a large number of drill rigs, drill rods, drill bits and grouting equipment consisting of grout recorders, pumps, mixers, compressors and handheld rock drills. The equipment is playing a major role in sealing cracks in the walls of the dam – something that has become the company's speciality. The rigs are being used to drill the main grout curtain and another curtain around the powerhouse and for drilling for consolidation grouting in the dam's foundations and abutments.

The equipment has been purchased by the Iran Water & Power Resources Development Company and the contractor is the 'Sabir Dam Construction and Irrigation Project Co.', the largest water works company in the country.

(SourceMinett Media)

PUBLICATION

The latest edition of the Digest of Engineering Statistics

Every year the Engineering Council produces a Digest of Engineering Statistics and I have received a complimentary copy of the newly-published fifth edition.

Each year more and more data and analysis is added in the areas of education, labour market and economic statistics and this issue is no exception. For example, more information is now available about skills shortages in the profession (Chapter 7) and more data about the numbers of engineers in the engineering universe (Chapter 8) is included. Chart 7.1 showing the median annual earnings of registered engineers and technicians from 1995-2001 is also well worth a look.

A copy of this publication with the detailed statistical and reference material on which it is based appears on the Engineering Council web site at www.engc.org.uk/gteway/4/statsdigest/index.htm

Dr Dan Mitchell

MORE INFORMATION

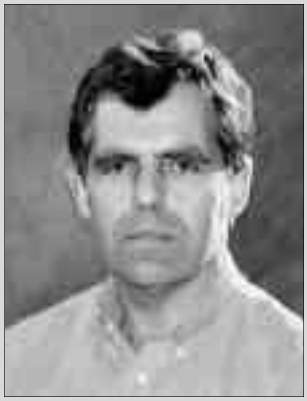
Further copies are available from the Engineering Council at 10 Maltravers Street, London, WC2R 3ER. The discounted cost is £40 (including post and packaging), available to registered engineers, nominated bodies, Professional affiliates and Network members (£70 rrp).

AWARDS

Professor Christopher Wathes wins 2002 RASE Research Medal

Professor Christopher Wathes,Head of Bio-Engineering at Silsoe Research Institute is this year's winner of the RASE Research Medal for his research into environmental management for livestock. Over the last 20 years his research in environmental management has made an important contribution to sustainable livestock production. His innovative science is relevant to many stakeholders including government departments, production companies, equipment manufacturers and animal welfare organisations. He has provided new insights into the interactions between farm animals and their physical environment, thus establishing the scientific principles for environmental design and management of livestock housing.

His current research on environmental perception by farm animals has developed from his earlier research into the environmental preferences



of pigs and poultry for heat, light and air quality. His findings are of great use to welfare organisations such as FAWC and,in some cases, overturn recommendations that were not based on science. His other work on the emissions of aerial pollutants from livestock houses has direct application to the UK livestock industry, now that European and UK legislation has been enacted in the form of the Integrated Pollution Prevention and Control (IPPC) regulations.The emission measurements form a major part of the national inventories of ammonia and dust pollutants from livestock sources and suggest control strategies based upon building management.

Other recent work has been the development of integrated management systems for livestock production. Sustainable livestock production requires that tight product specifications are met profitably, while environmental impact is minimised and welfare promoted.The development of this new technology in the coming years will help livestock producers to overcome many of the problems caused by these conflicting requirements and help them to compete successfully.

Following a PhD in Environmental Physics from the University of Nottingham, Professor Wathes spent 10 years at the School of Veterinary Science in Bristol University. He joined Silsoe Research Institute in 1990 and is currently Head of the Bio-Engineering Division. His primary role is to provide scientific leadership to over 70 scientists, engineers and staff the division has major research programmes in bio-robotics and automation, biomaterials, image analysis, field machinery, livestock engineering and environmental science. His international reputation is demonstrated by invitations to present keynote papers and he has served on a number of research committees, including the BBSRC Agriculture Systems Directorate and the Agri-Food Committee (1994-1998).

Professor Wathes said "I am delighted to receive this award and I would like to acknowledge the contribution of an excellent team of post-doctoral scientists and post-graduate students who have supported me in this research."

PROFESSION

A Qualified Success

The Institution of Highways & Transportation has gained nominated body status from the Engineering Council for the registration of Chartered Engineers (CEng) and Incorporated Engineers (IEng). Suitably qualified candidates in the highways and transportation sector can now register through the IHT.

The IHT presently offers the standard route to qualification, but non-standard routes to qualification, such as the mature candidate route and consideration of individual cases, will be offered soon.

Allan Mowatt, IHT President, said:"The IHT is the only transportation institution able to offer both CEng and IEng registration.This is a further step towards our aim to be a one-stop shop far transportation qualifications. IHT members play a key role in keeping society safely on the move. I am delighted that this is reflected in the qualifications we offer."

Allan Mowatt thanked the British Computer Society, the IHT's mentor, and the Engineering Council for their support.He also acknowledged the efforts of IHT members and staff who have worked tirelessly to achieve this status.

HEALTH & SAFETY

Poor work design and organisation – a contributor to heart disease

Poor work design and organisation a contributor to heart disease says HSE-sponsored research.The Health and Safety Executive (HSE) today published research confirming that a stressful working environment can lead to coronary heart disease.

High job demands,low job control and effort-reward imbalance were related to an increased incidence of coronary heart disease.These effects were not explained by conventional risk factors,such as smoking, being overweight and having high blood pressure. Moreover, when workloads change, resulting in higher demands, less direct control and reduced support,an individual's mental health deteriorated.

The report, from the "Whitehall II "study of the health of more than 10,000 British civil servants looked at the influence of:

- job demands;
- the amount of say people have over how their work is done ("job control");
- support from managers and colleagues;and
- an imbalance in the effort people put into work with the rewards they get from it on physical health.

Such factors are related to how stressful people find their work. However, the results are applicable to a much wider group of workers than just civil servants.

Although previous reports have linked working conditions with self-reported heart disease, this research gives a clearer and more accurate picture as the participants' reports of heart disease were verified against medical records.

Professor Sir Michael Marmot,Director of the Whitehall II study, UCL said: "The results from Whitehall II show how important stress at work is for people's health. There are two points to emphasise. First, stress at work is not simply a matter of having too much to do, but also results from too little control over the work and from insufficient reward for the effort expended. Second,the way work is organised is crucial. The way to address the problem of stress at work is to look hard at the organisation of the work place."

Elizabeth Gyngell,senior policy manager on stress for HSE said:"This research gives us clearer data than ever before on the physical ill health consequences that can arise from not preventing work-related stress. Employers need to realise just how serious the effects of work-related stress can be, and take action to prevent it. HSE has published detailed guidance to help them do this. I urge all employers to read and act on the guidance now."

On a more positive note, the measured work characteristics were not generally associated with incidences of Type 2 diabetes, with the exception of effort-reward imbalance, that can be attributed to an increased incidence of Type 2 diabetes in men.

The report also discusses the contribution of alcohol consumption to work absence through accidents.As expected, alcohol consumption was related to a risk of sickness absence due to injury at moderate levels as well as for 'binge' drinking and alcohol dependency levels.

MORE INFORMATION

HSE Information Services, Caerphilly Business Park, Caerphilly, CF83 3GG. Tel: 08701 545500. Web: www.hse.gov.uk

APPOINTMENT

News appointment to further soil research

Cranfield University at Silsoe is pleased to announce that Karl Ritz has been appointed as Professor in Soil Biology at the University's National Soil Resources Institute. He brings a strong research background in many aspects of soil microbial ecology to the Institute, and will be developing the discipline in terms of research, teaching and consultancy.

Professor Ritz was formerly the Head of the Soil Plant Dynamics Unit at the Scottish Crop Research Institute, Dundee. His research focuses on the structure and function of microbial communities, and how the spatial organisation of soils governs the way they function.

"Soil organisms are the biological engine of the earth,and their actions impinge on all aspects of soil health, underpinning sustainable land-use, restoration ecology, remediation of contaminated land and ecosystem maintenance" says Professor Ritz."Understanding the origins and consequences of soil biodiversity is critical to enable more effective management and protection of our environment.The development of a soil ecology capability in the multidisciplinary scientific culture at Cranfield offers significant and exciting opportunities for developing relevant and innovative solutions to a very wide range of land management issues".

TRAINING

FASTCo bows out

Following extensive negotiations, the trees and timber industries have asked Lantra, the Sector Skills Council for the Environmental and Land-based sector, to assume responsibility for their education and training agenda.

The consequence of this is that FASTCo has transferred its responsibilities in this area to Lantra with immediate effect.

The Forestry Commission has agreed to staff the FASTCo desk for a few weeks after the transfer, to ensure a smooth transition.

Lantra will facilitate their work in this area through a Trees and Timber Industry Group which will advise on and steer priorities. Representative members have been drawn from across the forestry and timber processing sectors and the first meeting of the group has been held to determine the work programme for the first year.

In welcoming the formation of the industry group, Dr Gordon McGlone, Chairman of Lantra said:"This is the culmination of a complex series of negotiations. The government and devolved administrations have charged Lantra with a series of major challenges, which we are excited to take forward, for and on behalf of the forestry and timber processing industries. We look forward to working with the newly formed industry group to address the learning needs of the sector. However, in taking on this new role I must pay tribute to FASTCo for the sterling work it has carried out over the years and upon which we will build. I must particularly thank Trevor Preston,the Chairman who has steered FASTCo through a particularly difficult period and has been instrumental in securing the new arrangements."

Trevor Preston, Chairman of FASTCo said:"It is time to look to the future and the skills needs of the industry, which are paramount. I am sure Lantra will maintain the standards FASTCo has worked so hard to define and instil and I ask everyone to give the new Trees and Timber Group the same high level of commitment and support they gave to FASTCo during its existence."

As part of the handover the FASTCo instructor register is being absorbed into the Lantra Professional Register and instructors have been contacted directly to appraise them of the new arrangements.

MORE INFORMATION

All education and training enquiries relating to forestry and timber processing should now be directed to Lantra Connect. Tel: 0845 707 8007. Email: connect@lantra.co.uk

QUALIFICATIONS

City & Guilds introduces top level Engineering Examinations

City & Guilds, the UK's leading awarding body for vocational qualifications, has added the Engineering Council Examinations to its extensive portfolio of awards,enabling engineers to progress from entry level right through to Chartered Engineer status.

The move follows a reorganisation of the Engineering Council into two separate bodies – the Engineering and Technology Board and the Engineering Council (UK) – prompting a review of the management of its examinations.

The Council's director-general,Andrew Ramsay, confirmed that City & Guilds was considered an ideal successor. "The awarding body has a reputation for delivering top quality courses that meet the needs of today's changing workplace. Their long association with engineering made them an ideal partner to carry forward the Examinations. While the Engineering Council (UK) involvement will ensure the Examinations meet the requirements of today's engineering profession, City & Guilds' marketing and management expertise will ensure wider availability to those most able to benefit from this well-established route to professional recognition,in the UK and overseas."

The Examinations have been recently remodelled to provide candidates with a more flexible route to meeting the academic requirements of entry to Chartered Engineer status. The Certificate is comparable with the completion of the first year of an undergraduate programme; the Diploma is set at the final (third) year of a British BEng (Hons) degree course and the Postgraduate Diploma is set at the final (fourth) year of a British MEng first degree.

The Engineering Council Examinations complement City & Guilds' existing portfolio of NVQ and Vocationally Related Qualifications awards at levels 1-3 in many specialist areas including production and maintenance engineering,technical services, performing manufacturing operations,and computer-aided engineering.

Philip Riseborough, head of higher level qualifications, City & Guilds said:"With the addition of the Engineering Council Examinations to our portfolio and plans to extend our engineering provision in 2003, City & Guilds is well placed to provide employers and engineers with numerous solutions to their training needs. Our comprehensive range of engineering qualifications can help businesses ensure their workforce is skilled and motivated, meets performance targets and improves customer satisfaction while enhancing career progression opportunities for engineers."

MORE INFORMATION

Further details on Engineering Council Examinations can be obtained by calling Engineering Examinations at City & Guilds. Tel: 020 7294 2468. Email: ec_enquiries@city-and-guilds.co.uk

ECO-PARTNERSHIP

HSBC, WWF, BGCI and Earthwatch investing in nature

HSBC, one of the world's largest financial services organisations, is creating a US$50 million eco-partnership over five years to fund conservation projects around the world. By making the largest ever single donations to three charities, WWF, Botanic Gardens Conservation International (BGCI) and Earthwatch, the new Investing in Nature programme will:

• clean up three of the world's major rivers, benefitting 50 million people who depend upon them;
• help save 20,000 rare plant species from extinction;
• train 200 scientists and send 2,000 staff to work on vital conservation research projects worldwide.

"Companies as well as individuals have a responsibility for the stewardship of this planet, which we hold in trust for the future," said HSBC Chairman Sir John Bond, at the launch of Investing in Nature today in London. "If we don't act now, by 2025 over 60 per cent of the world's population could face a water shortage. We are also facing a global extinction crisis with thousands of species and habitats under threat.

"With WWF, BGCI and Earthwatch, Investing in Nature will breathe new life into rivers, protect endangered species, and fund conservation research and education around the world. Our investment is not simply financial – 2,000 staff will take part in fieldwork and become environmental champions within the Group."

The partnership's five year plan is as follows.

• Resuscitate three of the world's major rivers

With HSBC's US$18.4 million funding, WWF will restore 2 million hectares of river basin habitats in the Amazon in Brazil, the Yangtze in China and the Rio Grande in the US, returning the natural flow of rivers, protecting fish and other freshwater species, and securing fresh drinking water for millions. In the UK, WWF will work to protect and restore freshwater habitats in line with new EU legislation and create a public awareness programme about water and water usage.

• Helping to halt global plant extinction

A US$11.6 million donation to Botanic Gardens Conservation International will fund a living gene bank in botanic gardens around the world to protect 20,000 endangered plant species. BGCI will also raise public awareness of the value of plants through its 500 member gardens in 111 countries, revitalising conservation in 16 major gardens in Argentina, Brazil, India, Indonesia, and the Middle East, and funding education programmes in Canada, China, Japan, the UK and the US.

• Deliver a 'century' of environmental research

Some 2,000 HSBC staff will work alongside Earthwatch scientists on conservation projects worldwide, yielding the equivalent of 100 'man years' of critical research. This will create a network of environmental ambassadors in the Group, who will be given grants for local conservation projects when they return to their communities. The US$16 million donation will also be used to train 200 scientists in developing countries.

"WWF believes that, globally, freshwater is a critical environmental issue with perhaps the greatest risk of conflict between peoples. Over 1.2 billion of the world's poorest people don't have access to safe drinking water. We want to help turn this around, and with HSBC's support we can embark on a major new programme to stem the decline in three of the world's key freshwater systems," said Dr Garo Batmanian, Chief Executive of WWF Brazil.

Safeguarding the future: HSBC Bank plc Chief Executive Bill Dalton and Earthwatch's Eve Carpenter unlock HSBC's US$50m eco-partnership.

Dr Peter Wyse Jackson, Secretary General of BGCI, said: "Botanic gardens are like a 'Noah's Ark' for endangered plant life. Our partnership with HSBC will help fill this ark with 20,000 of the rarest plants, helping reverse the current extinction crisis and protecting the world's greatest renewable natural resource for the future. At the same time, this project will raise international awareness of the value of plants and the threats they face in a way never before attempted."

Dr Robert Barrington, Chief Executive of Earthwatch Europe said: "This donation provides the people and the funds to help us continue our long term support of environmental field research, whilst providing a unique opportunity for HSBC employees to get directly involved in conservation issues. We are delighted that HSBC is making such a significant environmental investment and believe that this programme will demonstrate the positive impacts of corporate and NGO partnerships in contributing to a sustainable future for our planet."

HEALTH & SAFETY

RASE launches bold new plan to revitalise Stoneleigh Park headquarters

The Royal Agricultural Society of England (RASE), has launched a project to create a National Centre for Rural Enterprise (NCRE) at its Stoneleigh Park headquarters.

The project – a multi-million pound investment in science, technology and rural development – will transform the Stoneleigh Park campus into an international centre of excellence for all involved with agriculture, land and rural resource management.

Under the ambitious new plan, Stoneleigh Park would continue to host the Royal Show, the Town and Country Festival and a range of other national and international events. However, the new facilities would include:

• Rural Science and Technology Business Park – a facility to create an industry 'cluster' of relevant businesses and organisations who could benefit from the collaboration and synergy of working in proximity with each other;

• International Livestock Centre – providing a technology transfer and training, marketing and technical showcase for everything from breed societies to equipment, systems and technical research;

• International Equine Centre – incorporating a new world-class indoor arena, a full programme of national and international shows and events plus a technical and commercial focus for the whole equine industry;

• Destination Stoncleigh Park – a range of year-round visitor attractions including real and virtual presentations on the Food Chain, The Living Countryside and The World of Plants;

• Rural Education Centre – providing a year-round resource to bring food, farming and the countryside to the heart of the educational system.

Launching the initiative, Mike Calvert, Chief Executive of the RASE said: "We are convinced there is an exciting future for Rural Britain. Foot and mouth, price collapse and rapid rationalisation has reduced morale and caused hundreds of businesses to close, but for those with the will to succeed the opportunities will be there.

"Farming will remain the principal economic driver in rural Britain but the other pillars that support the rural economy – tourism, food businesses, leisure and the rest – will grow in importance. At the same time, the science and technology that drives farming and land management will change radically. By bringing everything within a National Rural Enterprise Centre we can create a dynamic interface between research and commercial implementation and play a major role in helping the sector move forward."

Initial discussions with potential stakeholders from Government, representative organisations, multi-national and regional businesses have all been positive, encouraging RASE to publish their discussion paper. Industry-wide consultation will continue in advance of a more detailed launch of the project at the Royal Show (1st – 4th July 2002).

But Mike Calvert and the Council of RASE are convinced that the NCRE is set to be a major component in Britain's rural recovery programme, outlined in the report of the Food and Farming Commission recently presented by its chairman, Sir Donald Curry.

"The Commission report made it clear that rural Britain must remain driven by technology but it must also explain itself to consumers and other stakeholder groups. It must ensure that the countryside and the food chain are high on the educational agenda.

"The Royal Agricultural Society of England is well placed to provide this impetus. Stoneleigh Park is a natural venue, well connected in the centre of England and with the foundations for the National Centre for Rural Enterprise already in place. This initiative will enable Stoneleigh to fully realise its potential and provide an important national resource for all involved in rural Britain," said Mike Calvert.

CONTACT

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AWARD

BPBHA Scholarship 2001

PhD student Helle Kristensen is delighted to have been awarded the British Poultry Breeders and Hatcheries Association Scholarship for 2001. Miss Kristensen is studying for her PhD, and previously an MSc in Applied Animal Behaviour and Welfare, at Silsoe Research Institute under the supervision of Professor Christopher Wathes and Dr Neville Prescott. The award was presented to her by David Currie MP, Chairman of the Environment, Food and Rural Affairs Committee, at a ceremony in the House of Commons.

In her PhD (at Silsoe Research Institute and the Royal Veterinary and Agricultural University in Copenhagen), Miss Kristensen is looking at light quality and the behaviour and welfare of broiler chickens. Her previous research showed that ammonia, a common pollutant of poultry houses, is aversive to laying hens at the concentrations recorded in poultry houses and this has profound implications for the management of poultry houses and the operation of ventilation systems.

TYRE NAILGUARD

Puncture free hedge cutting

1550 hours of hedge cutting and 220 hours of verge mowing have been achieved by Noel Cowper's Leyland tractor without a single puncture following the fitting of Nailguard tyre liners.The product is a rubber interlay reinforced with tyre cord made from Kevlar and is fitted between the inside circumference of the tyre and the tube. Whilst Nailguard is reusable, immediate benefits are the saving of puncture and downtime costs and an extension of tyre life.

Banbury based and with 30 years of hedge cutting experience in the southern half of Northamptonshire, Noel Cowper thinks there is no greater downtime hazard than thorn punctures.Thorn debris is the inevitable aftermath of hedge cutting and not only do the tyres have to cope with this but also climbing up and down kerbs to deal with verge mowing.


A tractor hedge cutting using tyres fitted with Nailguard tyre liners

Never having had a problem with the water ballasted offside rear tyre, Noel Cowper had Nailguard fitted progressively first to the front wheels in 1997, 1998 and the vulnerable nearside rear in October 1999. "A typical year without Nailguard could easily have cost £1,500 in puncture repairs", said Noel Cowper, "and waiting 2 hours or so for the fitter to arrive would certainly double that."Protecting the three wheels with Nailguard would now cost £374.00.

Customers have advised Moplant that fitting Nailguard has reduced punctures in off road vehicles and plant by over 90% and in some cases has eliminated them completely.

Where the product is employed, a sharp object, which pierces the tyre cover, pushes the liner against the inner tube but does not penetrate it.Nails forced into the tyre are either thrown out over the next few wheel revolutions,or are bent over to lie harmlessly between the cover and the liner. Aside from this direct prevention of punctures, the liner also provides cushioning against the effect of driving over rough ground.

CONTACT

Moplant Limited, Unit 8, Holton Road, Holton Heath Trading Park, Holton Heath, POOLE, Dorset, BH16 6LT. Tel: +44 (0) 1202 632188. Fax: +44 (0) 1202 632566. Email: Moplant@btinternet.com. Website: www.moplant.co.uk.

SOIL TESTING

Soil testing made simple

Water analysis specialist Palintest has developed easy-to-use soil test kits to aid modern agricultural and horticultural management.The kits provide accurate, on-the-spot analysis of everything from pH to soil reaction, major nutrients and important trace elements.

The Palintest kits are quick, economical and very simple to use, with no formal training required to produce reliable results.The tests are based on standard methods of analysis and equate well with results obtained from conventional laboratory tests.Where applicable the results have been experimentally correlated with standard lab methods of analysis so as to provide a basis for using published fertiliser recommendation tables.


A Palintest 'Soiltester' in use

Most of the tests are carried out by firstly extracting nutrients or trace elements from soil using a specific soil extraction tablet.The sample, together with a reagent tablet, is then simply shaken with water in a 'Soiltester'and the resulting colour compared against colour standards.The tests for soil pH and lime requirement are even easier. A soil sample is used, and separate extraction is unnecessary.

For even more accurate assessment over a comprehensive range of soil properties Palintest also produce soil test kits based on the Photometer 5000, an advanced, solid-state digital-readout colorimeter which eliminates any potential inconsistencies in colour comparison due to varying light conditions or user eyesight.This is integrated with the range of soil extraction and reagent tablets and is equally suited for use in the field or in the laboratory.

CONTACT

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BEARINGS

Drop-in replacement bearings suit arduous conditions

The latest range of plain bush bearings available from Euro-Bearings Ltd have been designed as direct drop-in replacements for recirculating ball bushings as manufactured by major Japanese and West European manufacturers. These products offer designers a competitive and more versatile option for OEM installations, with high performance retro-fit replacement bearings for plant, maintenance and service engineers operating in a very wide range of industrial spheres.

Three types of bearings can be supplied including a stainless steel outer shell incorporating a ceramic core which is self lubricating. Variations of these bearings with American FDA/USDA approvals are also available, making them suitable for installations involving food, drugs and pharmaceuticals production. The third range is ceramic coated bearings designed for the harshest operating conditions.

All these bearings are low friction products which offer considerable advantages as well as economy. They can be used for high loads accommodating linear, rotary and even reciprocating movements. They are tough, quiet and resonance-free in operation and do not require lubrication. They can withstand washdown procedures and are also rugged enough for use in dirty or harsh environments. They can even be used with less precise shafting than the hardened stainless steel materials normally required.

Bearings can be supplied as either fully closed or slotted types, with one of these being a self aligning product. Sizes are available to cover imperial shaft sizes from 0.2495 to 3.9988 inches diameter, with metric versions from 5 to 80 mm diameter covering both European and Asian shaft standard sizes.

All bearings are available ex-stock on short delivery and can be supplied either with or without seals. They are designed for use within a temperature range of -400° to +375°F operating on minimum mild steel shaft hardness of RB25. For the ceramic coated bearings, the hardness should be RB35 and the temperature range covered is -200° to +400°F. Materials used for construction also provide high resistance to attack from commonly used industrial chemicals when used at non elevated temperatures.

A complementary range of housings and shafts, together with pillow block bearings in standard and double length variations can also be supplied.

CONTACT

Euro-Bearings Ltd, Units 29-31, Orchard House, Lodge Farm Business Centre, Wolverton Road, Castlethorpe, Milton Keynes MKI9 7ES Tel: 01908 511733. Fax: 01908 511713. E-mail: sales@euro-bearings.com Web-site: www.euro-bearings.com

CULTIVATION EQUIPMENT

Versatile subsoiler adapts to soil conditions

The Wing-Lift subsoiler is the latest addition to Knight Farm Machinery's range of cultivation equipment.

The machine provides effective performance in a wide variety of soil conditions by incorporating a double-beam frame which allows subsoiler legs or other tools to be fitted in either the classic V or a staggered formation. The 2.7 metre model is designed to accept three 800 mm subsoiler legs or five shallower legs, while the four metre model will accept up to five 800 mm legs.

The shape of the subsoiler foot can be easily changed to suit soil conditions by bolting on different fittings. The standard wing unit uses components which are readily available.

The packer unit consists of a single row of closely spaced, award-winning Triple-Press rings, either 600 mm or 700 mm in diameter, with hydraulically operated depth control. The design of the rings, combined with an effective scraper system, enables the machines to work in wetter conditions than a standard packer and produces a better tilth with a weather-proof finish.

CONTACT

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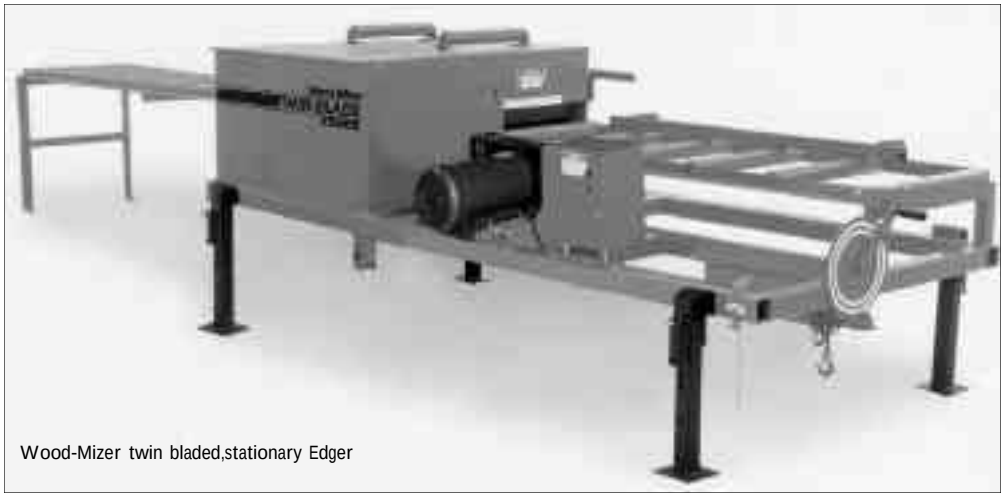
TIMBER PROCESSING

Wood-Mizer unveils 'added-value' products

Wood-Mizer, pioneer of the portable bandsaw concept, revealed several developments aimed at adding value to small timber processing operations,at the recent 'Ligna' forestry and wood industries fair in Hanover.

They include a twin-bladed edger, which was demonstrated in operation with an advanced prototype of an 'industrial' mill that is faster than any existing unit in the range; a bigger sawing head;an extra long frame; improved clamping hydraulics; both remote operation and 'Setworks'added to the all-electric range of mills; a new engine on 'Super Hydraulic' mills; new blade technology; and a range of high-speed moulders.



Wood-Mizer twin bladed,stationary Edger

Edger

A twin bladed,stationary Edger which edges boards 'downstream' of primary breakdown was also unveiled. During operation, one of its tungsten-tipped blades remains fixed while the other is easily moved to select cutting width.The 4 mm x 35 cm x 18-tooth blades are driven by an 11 kW electric motor and fed by six, full-width, knurled-steel rollers.The rugged construction weighs almost 900 kg and incorporates a simple manual dial for selecting the final size of lumber. Wood-Mizer's aim is that material flow in a lumber processing operation is enhanced by the edger's commercial duty in-feed and out-feed rollers.Width of passage is 63 cm and maximum board thickness is 5 cm.

New mill with larger sawing head, extra long frame and new clamping hydraulics

A new. powerful 'industrial' mill,the LT50 (and the LT60 with a longer frame),has longer sawblades to extend their life and ceramic block guides to steady them in knotty material. It has been designed to provide a higher-production version of the widely-used Wood-Mizer LT40 'Super Hydraulic'mills.

The new mill has a longer portable sawmill frame that permits sawing logs up to 8.5 m long and 91 cm in diameter, although it is also available with 6.0 m and 4.8 m cutting lengths. The long frame comes either with or without hydraulic units. It comes with a tandem axle when the trailer version is selected.The patented,cantilever Wood-Mizer sawing head – common to most mills in the range — is powered either by an 18 kW electric or 29 kW diesel motor. Maximum throat width is 71 cm , as is maximum cant width.

A new hydraulic clamping system secures a log at several points and if necessary holds it down to allow for internal stresses.

Remote operation and 'Setworks' for all-electric range

New options amongst Wood-Mizer's all-electric sawmills include a moveable, Remote Operator Station which allows the operator to saw without accompanying the saw carriage. All controls including log handling are on one console, permitting a clear view of cutting which is powered by the 415 volt electric motor standard to all Wood-Mizer electric mills.The Remote Operator Station includes 'Setworks'which provide programmable, automatic board thickness setting and which result from a European product development programme. Different dimensions are easily selected and programmed at will.

New engine on 'Super Hydraulic' mill

Further improvements in engine maintenance are aimed for by the installation of the Lombardini 1404 29 kW engine on all new versions of the Wood-Mizer Super Hydraulic diesel-powered mills. Until the introduction of this option, the largest non-turbo engine available was 23 kW.

New blade technology

Wood-Mizer's demonstrated its new 'DoubleHard' blade technology for band-saw mills, which can effectively increase sharp-life.

The technology is the latest fruit of twelve years of general blade development by Wood-Mizer.The explanation lies in coming up with a way to combine two different metallurgical techniques – induction hardening and low carbon steel – and applying the technique to the teeth,which now offer the same hardness as high speed tool steel.

High speed moulder

Finally, two sizes of five-head moulders, with which Wood-Mizer aims to assist smaller wood-processing operations add value to the timber they sell, were exhibited.

There are now over 28 000 Wood-Mizer portable band sawmills operating around the world, 2600 of them in Europe.

CONTACT

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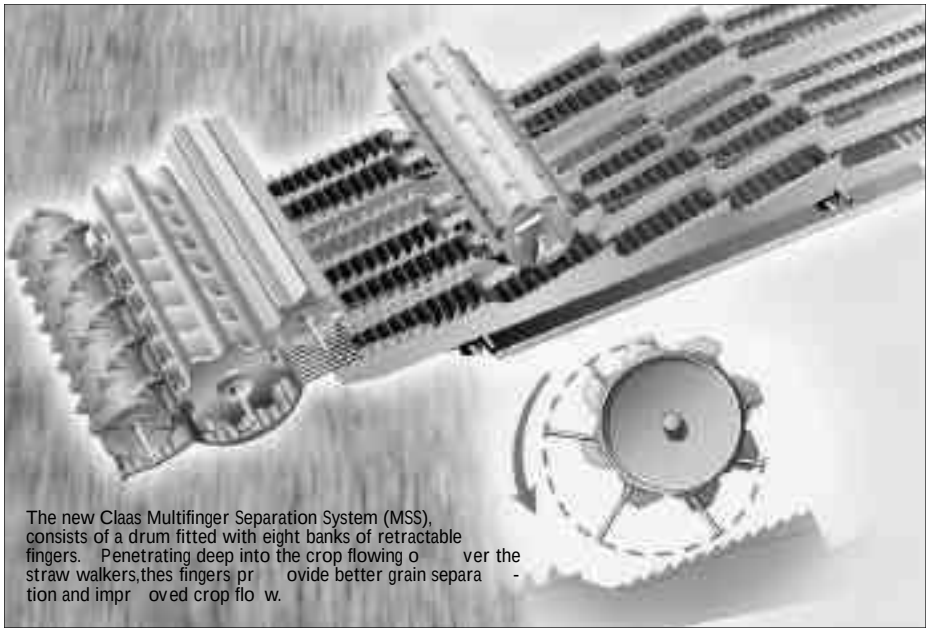
Claas Lexion evolves to increase output and cut costs

Reducing combining costs through increased daily output is a further avenue by which cereal production costs can be cut and profitability increased. Two new additions to the Claas Lexion range offer greater throughput, especially in difficult harvesting conditions.

Higher yielding varieties allied to the delaying effect of strobilurins and wet harvesting conditions often mean that throughput on a straw walker combine is reduced at the secondary separation stage. To overcome this, Claas has developed a new Multifinger Separation System (MSS) to achieve greater throughput at secondary separation and so increase throughput, especially in difficult,testing conditions.

Fitted to two new Lexion models – the 430 Evolution and 460 Evolution,MSS has helped raise output by up to 10% in green straw conditions,compared to the old Lexion 430 and 460 models that they replace. The Evolution 460E model also features a completely new chopping system and both models have more powerful engines.

The new Evolution models retain the well proven Accelerated PreSeparation (APS) drum system, but the Claas Intensive Separation System (ISS) used on other straw walker models is replaced by the new MSS system.



The new Claas Multifinger Separation System (MSS), consists of a drum fitted with eight banks of retractable fingers. Penetrating deep into the crop flowing over the straw walkers,thes fingers provide better grain separation and improved crop flow.

Multifinger Separation System

The new Multifinger Separation System (MSS) fitted to Lexion Evolution models, consists of a drum fitted with eight banks of retractable fingers, giving a total of 35 or 44 fingers on the Lexion 430 and 460 Evolution, respectively, compared to 10 or 12 tines in two rows on the old Lexion 430 and 460.The drum runs at 154 rpm, which is 20% faster than the ISS system.

In addition,the fingers on the MSS drum penetrate 15 mm further into the crop than the ISS tines, which combined with the greater number of fingers ensures increased crop contact for improved secondary separation especially in damp, green strawed crops.

The net result of the faster drum speed, more fingers and greater crop penetration, is that material passes through the secondary separation stage quicker and more effectively, but at the same time straw remains intact and an even flow of material is left for effective chopping or baling.

Full width straw chopper

In addition to the MSS secondary separation system, the Lexion 460 Evolution is also fitted with a new more efficient, lower energy full width straw chopper. This chopper has a fixed body that has enabled further knives to be fitted closer to the outside body of the combine, giving a total of 88 blades on the Lexion 460 Evolution compared to 64 previously. It also utilises a new design of blade that has a cutting edge on the end of the blade in addition to the sides.The combination of greater chopping width and the new three cutting edge blade is that power requirement is reduced, but at the same time the greater flow of material passing through the secondary separation system can be easily handled.

In common with the rest of the Claas Lexion range, Lexion Evolution models are now powered by more powerful, higher torque Caterpillar engines. On the Lexion Evolution models, gross power output has been increased by 15 kW to 254 kW on the 460 Evolution and 207 kW on the 430 Evolution.

Prices for the New Claas Lexion Evolution models are £126,500 for the 430 Evolution and £154,300 for the 460 Evolution.

CONTACT

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BALE WRAPPER

Taarup Bale In One offers higher silage quality at lower cost

The Kverneland Group has increased its Taarup grass machinery range with the revolutionary Bale In One (BIO) - a baler/wrapper which offers considerable cost savings by combining the two jobs on one machine, when compared with traditional baling and wrapping methods.

The ingenuity of the Taarup Bale in One system can be found in its combination of a fixed chamber round baler producing a 1.25 m diameter by 1.22 m wide bale, with that of an integral wrapping system, which seals in the silage quality while the bale remains within the bale chamber.

"With pressures on farmers' and contractors'incomes, the Bale in One makes tremendous economic sense by saving the cost of separate wrapping and baling operations and it seals in the quality before the bale leaves the bale chamber," explains Rob Edwards,the Kverneland Group's Taarup products manager. "It's also a relatively simple, low cost system compared to other combination baler/wrappers already on the market."

With outputs of about 30 bales/h up to 45 bales/h in ideal conditions,the Taarup BIO can compete with the output of balers working alone in silage, and can more than match the capacity of 'in-line'combinations. Physically, the Taarup BIO is not much larger than a standard baler – it weighs just 3,000 kg and is considerably more manoeuvrable than a combination wrapper.

Key to the Taarup BIO output is the speed of film application. Firstly, because the bale is wrapped before unloading, it needs only one and half layers of net.This also saves net wrap costs, with one roll capable of covering about 450 bales.Next, the film is applied using twin satellite arms, which rotate around the bale at 50 rpm, applying, four layers of film in about 12-15 s.

The two 750 mm film dispensers are mounted inside a specially designed,2.5 m diameter ring, which encircles the bale. The ring is driven by two hydraulic motors fitted with nylon drive wheels, which are in contact with a high friction surface on the ring. Friction prevents the drive slipping and helps to quickly accelerate the ring to its working speed, as well as ensuring the dispensers stop in precisely the right position, to cut the film.

During wrapping,the bale is supported on a roller table formed from the lower six rollers in the base of the bale chamber. In the wrapping cycle, these rollers are driven hydraulically. The two hydraulic motors that power the wrapping ring are also connected into the same circuit.This independent hydraulic circuit is necessary to maintain the correct ratio between the speed of the dispensers and the roller table, to deliver a 50% film overlap.

Baler operation is similar to traditional fixed chamber machines, except that the chamber of the Taarup BIO is divided into two parts: 12 rollers in the upper section and six rollers in the lower part.The baling operation is mechanically driven,with a splitter gearbox dividing PTO power to chain drive to rollers on the left-hand side, and the pick-up and rotor on the right-hand side of the machine.

Before grass enters the bale chamber via a 2.10 m wide pick-up, the crop can be cut using 14 knives on an Opticut rotor. A sensor on the chamber monitors baling pressure and when the desired bale pressure is reached, an alarm sounds to inform the operator that baling is complete.

"As soon as the operator stops the tractor and disengages the PTO, the wrapping sequence starts automatically," explains Mr Edwards."On some tractors,the monitor can be connected to the tractor electronics to stop the PTO automatically. The upper roller section of the bale chamber, which is hinged at the front, is raised using two hydraulic rams, allowing the bale to be carried on six rollers in the base of the chamber these rollers form the wrapper turntable."

"Film is applied by the twin dispensers rotating around the bale at up to 50 rpm while the roller table, connected to the same hydraulic circuit,turns the bale around its circumference," he says."After wrapping is complete, the back three rollers lower to form a ramp and the ring lifts up to allow the bale to roll off the back.This entire sequence takes just 12-15 s to apply four layers of film."

An electronic monitor, using the same interface as other Kverneland equipment controllers, provides fully automatic control of the wrapping cycle. Operators can,however, change the wrapping cycle parameters as well as use the machine in semi-automatic or manual modes.The Taarup BIO has completed extensive testing and trials in Norway and the UK and is available for the 2002 season priced at £34,850.

CONTACT

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Massey Ferguson baler upgrades

The MF 185 Series 11 is the first baler from AGCO's Hesston, Kansas factory to benefit from a complete upgrade since AGCO – Massey Ferguson's parent company – took complete control of the facility in May 2000.

This range of significant improvements will further increase performance and reliability of the renowned MF 185 baler. Bale dimensions remain the same at 80 cm wide, 88 cm high and up to 2.50 m long. Improvements include:

· integral knotter fan option
· heavier frame
· single hinge-up side panels
· dual cam-track pick-up with centre bulkhead and heavy duty bearings
· 20 twine bale capacity in sealed boxes
· quick-load 'Autolube' system
· standard 600/50-22.5 tyres

The new integral knotter fan option ensures trouble-free knotter performance. This industry-leading knotter blower supplies a continuous 40 m/s air blast keeping the whole area clear of debris,even clearing out any material pushed into the knotter by the needles.

At the front of the baler the new reversible drawbar provides a wide choice of mounting positions to suit all tractors. This new configuration also increases the clearance between the pick-up and chamber providing an unrestricted crop flow.

A new stronger pick-up with a dual cam track is fitted with a centre bulkhead and larger bearings.This heavy-duty unit ensures trouble-free operation and extends tine life.

Practical, new one-piece, top hinged side guards lift completely clear of both sides, and prevent crop build up, improve service access and reduce cleaning time. Twine capacity, is increased to 20 twine balls – now stored in sealed boxes. Servicing is further improved by a simple quick-load 'Autolube' system that can be filled with a whole tube of grease in one shot.

MF engineers have strengthened or uprated a wide range of components on the MF 185 Series 11 balers.These include: heavier duty main frame and gearbox mountings; uprated packer; pick-up and stuffer drive chains with polyethylene guides;and a new square rod stuffer arm which is now fitted to a stronger support bracket mounted in a larger bearing.

Fitted as standard, to a stronger axle with uprated spindles, are 600/50-22.5 tyres. As well as providing increased flotation, replacement tyres are more readily available in Europe.

MF 187 baler

MF 187 big balers now come with the option of a factory-installed cutter that makes higher density bales. Chopped silage bales are more easily handled by complete diet feeder wagons, and the shorter chopped material improves food conversion ration in livestock.

Tested during the past three seasons in Europe and the USA,the new cutter option provides three set chop lengths of 48 mm, 96 mm or 156 mm. These are selected by simply inserting a rod into one of three positions in the knife bed. Operators can also manually select their own knife combinations,providing maximum flexibility.

A large diameter cutter rotor is fitted between the pick-up and packer and is powered by heavy-duty driveline with slip clutch protection.The rotor pulls the crop through the knives, with a rotor lobe passing either side of each knife, ensuring positive cutting. The knife bed is hydraulically operated, providing simple access to adjust chop length and service the knives.The factory fitted cutter option cannot be fitted to existing balers.

MF 190 baler

The MF 190 baler – which sets the industry standard for output and reliability now features extensive modifications to further improve its phenomenal performance. Agco's Hesston,Kansas baler facility is the only factory in the world making balers that produce bales with dimensions up to 1 8 m x 1.27 m.

Gearbox and lower knife mounting points on the main frame have been reinforced, providing even longer frame life in these high stress areas.The Dual cam track pick-up, similar to the MF 185 Series 11 and MF 187, uses a centre bulkhead and larger bearings.These help prevent the tine bars twisting, and extend bearing and tine life. New stronger packer drive chain (RC 100 grade) ensures the chain and sprockets will last longer.

Hydraulic reliability is improved by fitting a new check valve in the hydraulic manifold.This now eliminates any problems caused by attaching the baler incorrectly. A new needle safety lock-out stops the knotter drive from engaging when servicing the baler, reducing the chance of accidental damage. Ease of maintenance is further enhanced with the quick-load 'Autolube'gun system.

CONTACT

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