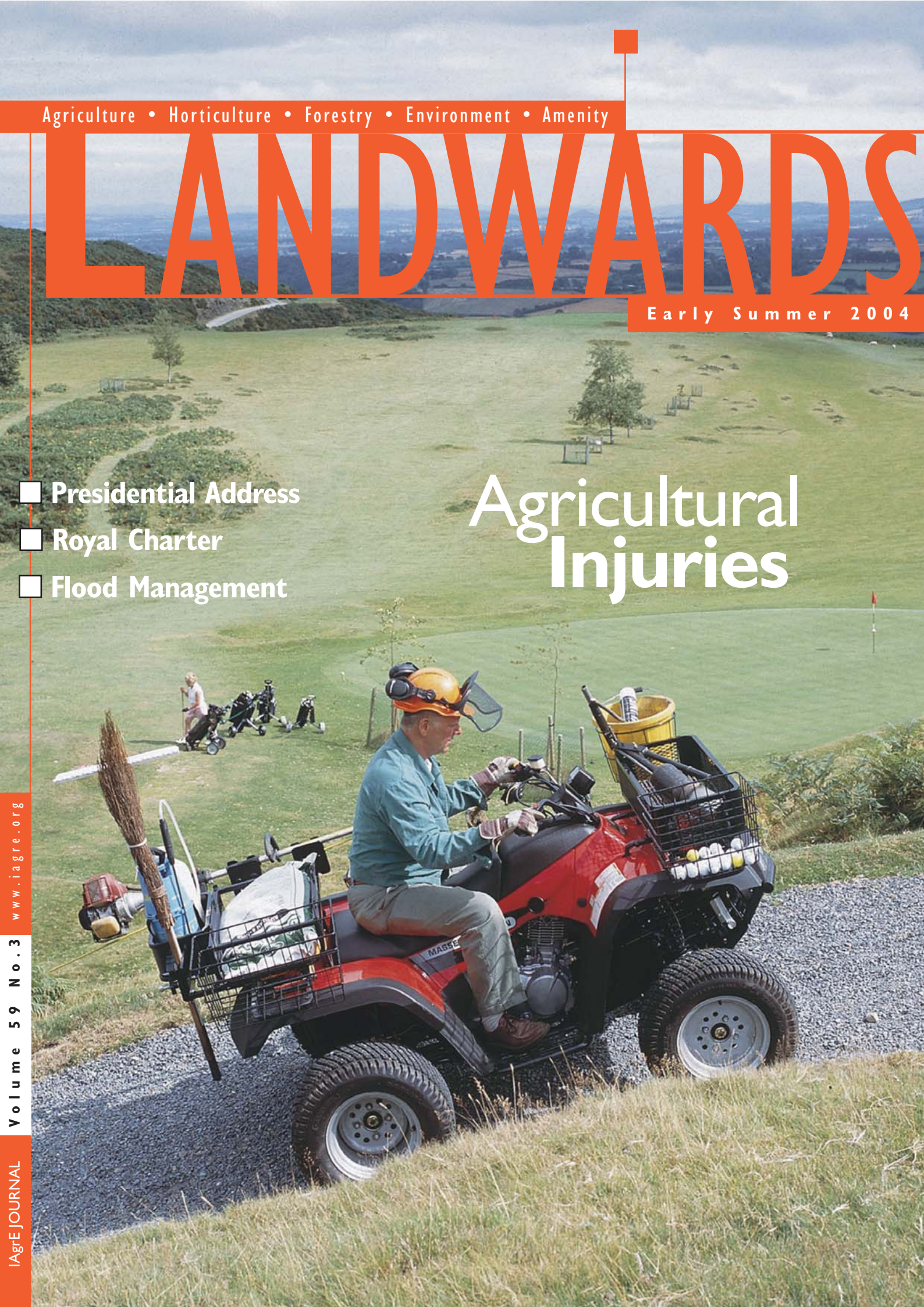
Agriculture • Horticulture • Forestry • Environment • Amenity

LANDWARDS

Early Summer 2004

- Presidential Address
- Royal Charter
- Flood Management

Agricultural Injuries



IAgrE JOURNAL Volume 59 No.3 www.iagre.org

IAgrE - Moving with the times

British agriculture is the staple industry of our Institution but has it got a future? The answer is emphatically yes - and that future will be based on more than such geographical considerations as food security and food miles.

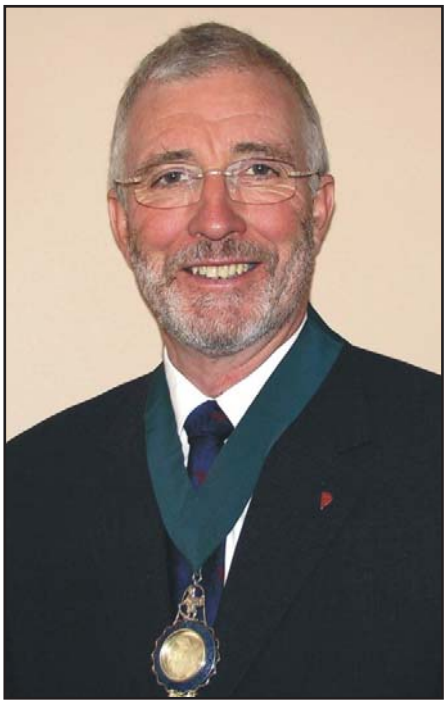
With the benefit of the experience arising from the traumas of multiple food scares and animal disease epidemics, with the realisation of its responsibilities for the environment and animal welfare and with the recognition that production must be matched to the needs of the consumer, British Agriculture is all set to be the premier producer.

Of course there are challenges, and they are formidable: not least, realising the ability of producers to take their rightful share of the value in the food chain, securing a 'British' brand, implementing an effective means for rewarding public good and minimising state intervention.

As IAgrE has recognised, however, there is more to agriculture than food production. It embraces all those activities and enterprises that are based on the land. Demarcation is dangerous, they are all connected – food and non-food production, making provision for amenity and wildlife, managing land and water.

All of those involved in using the land now have much wider responsibilities. As their activities impact directly on the natural resources of land, water, wildlife and the landscape, they have a particular role in achieving sustainable development that meets environmental and social, as well as economic, objectives.

The application of technology that is informed by science and delivered through professional practice will be the key to taking all these issues forward. Invariably, it is engineers that bring all the interests and disciplines together to provide solutions. IAgrE has the potential to be the organisation



that connects all these professionals, it is the means by which members can enhance and demonstrate their professionalism.

The objectives of the Institution set out in the Articles of Association in 1959 are even more relevant today. As some of the foundations of agricultural engineering in the UK continue to be undermined, IAgrE must take up a more central role.

So how should the Institution respond to these challenges? All of its roles will be increasingly important but three areas deserve particular attention:

- connecting people and information including all the communities within our profession;
- developing and demonstrating professionalism through registration and Continuing Professional Development (CPD); and
- interpreting and applying the principles of sustainable development in all that we do.

Many of IAgrE's activities are about connecting people and information. The Technical Groups must now be at the heart of the Institution and become the drivers and focus on technical issues. All of the many facets of the industry must be included in our activities from maintenance through to research. With the breadth of our interests, IAgrE is well placed to be the 'honest broker' on industry wide issues. We must take up this role as issues arise just as we did by initiating the 'Skills shortage' project. Education is the next item on this agenda.

Professional registration and documented CPD are now 'career essentials'. We must retain our status as a licensed body within the Engineering Technology Board that understands our industry and continue to support the process by providing access to experienced mentors and develop systems and attitudes so that CPD becomes the norm.

Our commitment to the emerging Society for the Environment (SocEnv) brings the opportunity for suitably qualified members to register as Chartered Environmentalists and importantly connect with fellow professionals in developing an understanding of the principles and practice of sustainable development.

None of this can be achieved without the active engagement of you, the members, so please look for the win/win opportunity that will allow you to be involved. We have considered the alternatives and the reality is that we can only maintain essential revenue through subscriptions: we need to attract more members. This should be at the forefront of all our thinking.

In conclusion, I commend to you all the words of Abraham Lincoln that are carved into the USDA building in Washington DC. "No other human occupation opens so wide a field for the profitable and agreeable combination of labor with cultivated thought as does agriculture". For agriculture read Agricultural Engineering.

Peter L Redman
President

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Editor
Eur Ing Prof Brian D Witney
PhD CEng FIMechE HonFIAgrE MemASAE FFCS
LAND TECHNOLOGY LTD
33 South Barnton Ave,
Edinburgh, EH4 6AN
Tel/Fax: +44 (0)131 336 3129
E-mail: landwards@landtec.co.uk
Website: http://www.landtec.co.uk

Advertising
All enquiries to IAgrE
Tel: +44 (0)1525 861096
Fax: +44 (0)1525 861660

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West End Road, Silsoe,
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Tel: +44 (0)1525 861096
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E-mail: secretary@iagre.org
Website: http://www.iagre.org

President
Peter L Redman
BSc(Hons) FIAgrE

Chief Executive & Secretary
Christopher R Whetnall
IEng FIAgrE MemASAE

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Front cover: *Amenity operations by quad bike (Courtesy: AGCO)*

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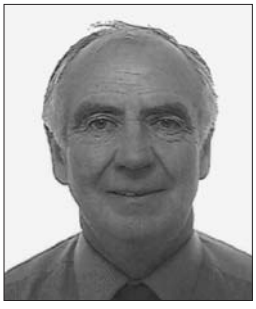
SURVEY OF MID WALES FARM ACCIDENTS LEADING TO HOSPITAL VISITS

John Matthews and Brian Boyle

Summary

The injuries arising from farm accidents in an area of Mid and West Wales over a ten year period were analysed to classify causes, victim age, gender and employment category and other factors. In this relatively hilly grassland area, dominated by livestock farms, approximately one third of injuries were related to animals and another third to vehicles, machinery and hand tools. Accident rates were relatively independent of the season, occurred throughout the 24 hours and peaked on a Saturday. Ten per cent of the injuries encountered were to children and youths. The study suggests education for safety must begin in primary schools; training needs to concentrate on the use of hand operated tools, the safe handling of animals and the driving of tractors and 'quad bikes'. In addition, ambulance crews need help to rapidly locate accident victims.



BIO NOTE

Professor John Matthews, CBE, Past President of IAgrE and Director of NIAE (now SRI), was a Non Executive Director and Vice-Chairman of Ceredigion and Mid Wales NHS Trust, 1993 - 2003. His research at Silsoe was largely based on ergonomics applied to agriculture and, among other posts, he chaired the International Standards Organisation Committee on Safety and Comfort of Farm Workers. He may be contacted at Carron, Aberporth, Cardigan, SA43 2DA.

Brian Boyle trained as a General and Psychiatric Nurse in the 1960s. He worked for a number of years on copper mines, construction, exploration drilling off and onshore and sugar plantations in Zambia, Algeria, Norway, Libya, Egypt and the Sudan. For the last 20 years he has worked for Ceredigion and Mid Wales NHS Trust in a variety of nursing and generic management posts. During the last 10 years whilst managing three community hospitals, he has been coordinating research in ten participating casualty departments on agricultural accidents. He can be contacted at Pencraig, Glanmor Terrace, New Quay, Ceredigion, SA45 9PS. Tel: +44 (0)1545 560734

Introduction

Most analyses of accidents in agriculture have been carried out in areas with larger arable farms showing a tendency for injuries to be greatest in equipment operation (Lunquist, 1992; Morgan, 1992; Carstensen, 1995). To help prioritise education, training and safety advice, as well as to inform accident and emergency (A & E) services in the UK, specifically in the area of smaller largely livestock and hilly or mountainous farms, a survey has been made of injuries on farms in Mid and West Wales. The agriculture in this region is likely to be similar to that in the South West Region and Lake District of England and Highland areas of Scotland.

The information has been collected from attendance over a ten year period (1993 - 2003) at A & E and small injury units at hospitals in Ceredigion, Powys and Gwynedd, using a reporting *pro forma* designed to indicate the cause and the seriousness of injury as well as victim details. In all more than 1000 injuries have been analysed.

Methodology

Relevant nursing staff in Bronglais General Hospital in Aberystwyth and in six Community Hospitals in Ceredigion, South Gwynedd and North Powys were trained in 1993 to complete accident reports on all patients reporting with an injury sustained in agriculture, horticulture or forestry. The interest, motivation and skill in completing these reports were maintained by regular seminars throughout the ten year period of data collection.

Details collected allowed classification of the injured party's sex, age and employment status, of the seriousness of the injury and of the activity, the animals involved, or the equipment in use at the time of the accident. In practice the bulk of the accidents were from agricultural activities.

It has to be realised that a significant proportion of those

sustaining injuries would report to general practitioners (GP) rather than hospitals for treatment. The information collected is therefore more relevant in terms of the proportions of accident types rather than in absolute numbers. A distorting factor, again influencing absolute numbers rather than proportions, was the outbreak of Foot and Mouth Disease in 2001, leading to a clear drop in injury reporting.

Some changes were made to the reporting *pro forma* during the ten year period. These resulted from experience gained in form completion, from further queries arising following early analyses or from external advice. The main source of external advice was a steering group including representatives of the :

- Health and Safety Executive;
- Agricultural Unions in Wales;
- Wales NHS Ambulance Trust;
- Community Health Council;
- Institute of Rural Affairs in Aberystwyth; and
- Research and Development Officers of the Ceredigion and Mid Wales NHS Trust.

Table 1 Summary of total numbers, severity, gender, age grouping and employment categories

Description	*1993 - 94*	*1994 -95*	*1995 - 96*	*1996 - 97*	*1997 - 98*	*1998 - 99*	*1999 - 00*	*2000 - 01*	*2001 - 02*	*2002 - 03*	*10 yr total*
Total injuries	**135**	**150**	**159**	**129**	**104**	**84**	**104**	**80**	**32**	**38**	**1015**
Age groups											
Under 16	17	18	10	9	8	5	9	6	6	1	89
16 - 64	105	116	134	108	81	71	86	64	24	32	821
65+	13	14	14	9	10	5	9	7	2	5	88
Unknown	0	2	1	3	5	3	0	3	0	0	17
Gender											
Males	114	120	131	105	85	77	83	66	27	32	840
Females	21	30	28	24	18	6	21	14	5	6	173
Unknown	0	0	0	0	1	1	0	0	0	0	2
Severity											
Minor	77	105	105	83	77	69	57	43	19	26	661
4 days+	n/a	13	23	32	13	10	31	29	6	6	163
Major	58	32	31	14	14	5	16	8	7	6	191
Status											
Farmer	n/a	n/a	63	33	30	15	58	32	14	24	269
Family	n/a	n/a	10	7	11	7	19	15	3	4	76
Employee	n/a	n/a	38	21	15	14	10	13	5	5	121
Contractor	n/a	n/a	35	56	38	24	7	6	1	2	169
General public	n/a	n/a	13	10	10	1	5	7	3	3	52
Unknown	n/a	n/a	0	2	0	23	5	7	6	0	43

n/a, not available.
Severity of injury is assessed on criteria used by HSE.
'Minor' denotes a range from no loss of working time up to a loss of three days.
'4 day+' describes casualties with a loss of four working days or more but do not meet criteria for major.
'Major' describes those who fit specific criteria set by HSE, *e.g.* hospital admission, bone fractures, *etc.*

Table 2 Types of accidents over a ten year period from 1993 to 2003

Cause of injury	*Number of injuries*										
	1993 - 94	*1994 - 95*	*1995 - 96*	*1996 - 97*	*1997 - 98*	*1998 - 99*	*1999 - 00*	*2000 - 01*	*2001 - 02*	*2002 - 03*	*10 yr total*
Machine	9	10	7	5	6	5	6	7	0	3	58
Vehicle	25	19	28	20	7	11	15	18	11	7	161
Tool	12	24	23	15	15	14	17	7	6	7	140
Animal	41	38	48	46	42	25	33	29	12	16	330
Fall from height	15	20	12	5	4	2	0	3	0	3	64
Slip/Fall	n/a	n/a	16	7	5	0	10	3	0	1	42
Blackthorn	6	1	3	4	0	5	2	0	0	0	21
Zoonoses	3	4	1	0	1	0	0	0	0	0	9
Chemical	2	0	1	2	2	1	2	0	0	0	10
Barn door	0	2	2	1	0	0	0	1	0	0	6
Penetrating wound	3	5	2	4	1	0	3	4	1	0	23
Gate/Fence	0	10	2	11	1	7	3	1	0	0	35
Falling object	5	3	1	1	6	3	6	0	0	0	25
Lifting	0	2	1	1	0	0	0	1	0	0	5
Self injection	n/a	n/a	3	3	6	7	4	1	0	0	24
Other	14	12	9	4	8	4	3	5	2	1	62
Total	135	150	159	129	104	84	104	80	32	38	1015

n/a, not available

Results

General

Early in the ten year period and before the majority of the injury data were collected and analysed, it became evident that one factor liable to exacerbate the effect of serious injuries was the inability of ambulance crews to locate the victim. This issue may be more critical in Wales than in the remainder of the UK due to the frequency of farms and even villages sharing the same name, together with the greater distances to hospitals and from ambulance stations. As a result of this finding, the relevant authorities have mounted a campaign to make farmers aware of the Ordnance Survey map reference of their holding and to ensure ambulances can respond to this unique locator. More recently, one County Authority had begun to send out these map references to each holding and isolated residence in the County.

Injuries and trends

Table 1 shows the total number of injuries reported over the ten years and classifies their severity. It also shows the sex and employment category of the victims.

The large decrease

in injuries reported in 2001/2 is almost certainly due to the Foot and Mouth Disease crisis, reducing farm activity and, probably more significantly, curtailing travel off farms. Nevertheless there is some evidence that there was a real decrease over the period encompassing the fall in numbers over previous years as well as the last two. In addition, there is some weak evidence of a decrease in average severity of injuries. Increased publicity for safety, awareness of this work and specific targeting of primary schools have probably all contributed.

Due to some changes in definition, any apparent trends in employment category are unreliable, but the absolute figures do show the significant involvement of family, contractors and the general public on these types of farms. The age data show the very wide range of ages of victims. No real trends with time are discernible.

Activity leading to injuries

In Table 2, the injuries have been classified in terms of the causal circumstance, for example when using a vehicle, equipment or tool; when dealing with animals or when suffering from a fall or encountering a falling object. Other injuries include accidents with chemicals, skin penetration – including accidental self-injection – and lifting strains.

Injuries involving machinery account for 35% of the total and those involving animals 33%. Falls amount to 10% and skin penetration nearly 7%. The proportions stayed reasonably consistent over the ten year period.

Equipment injuries

Figure 1 categorises tractor accidents, with evidence of a comparatively high risk in mounting and dismounting including injuries caused by doors. Attaching implements

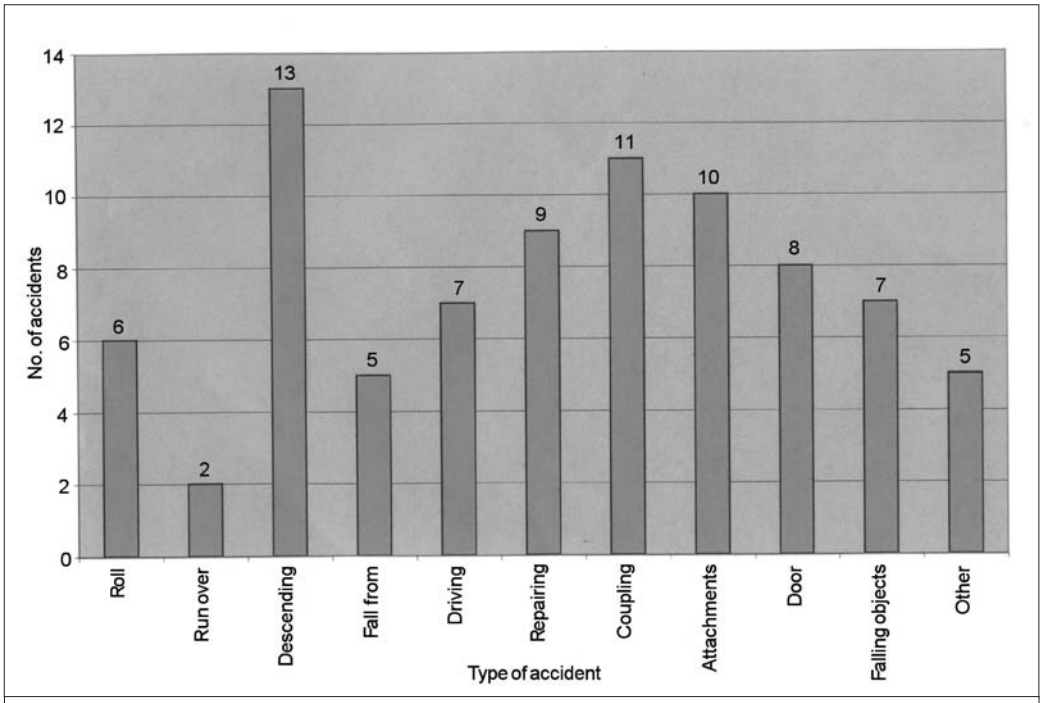


Fig. 1 Tractor accidents

can also be a hazardous activity. With six (8%) of the tractor injuries to children, the case is strong for keeping them away from tractors altogether.

Figure 2 categorises hand tool accidents, demonstrating the risks of shearing and treating feet of sheep, particularly when the animal can move. The chain saw can also be seen to be hazardous.

Approximately 25% of injuries relating to vehicles occurred when riding four-wheel motorised scooters otherwise known as 'Quad-bikes' (Fig. 3), although almost one third of these were thought to be on vehicles rented out for leisure purposes. Despite most of these leisure ride injuries being of a minor nature, this is not the case in their use for agricultural work where greater care and control of the activity is definitely required as a necessity.

Animal associated injuries

Table 3 summarises accidents involving animals as a primary cause. Of the four hundred encountered, approximately 40% involved cattle and a similar number involved sheep. Horses were the cause of 15% of the injuries, in all cases during leisure riding.

With cattle, the wide range of injurious incidents is demonstrated. Almost all the crush injuries occurred within build-

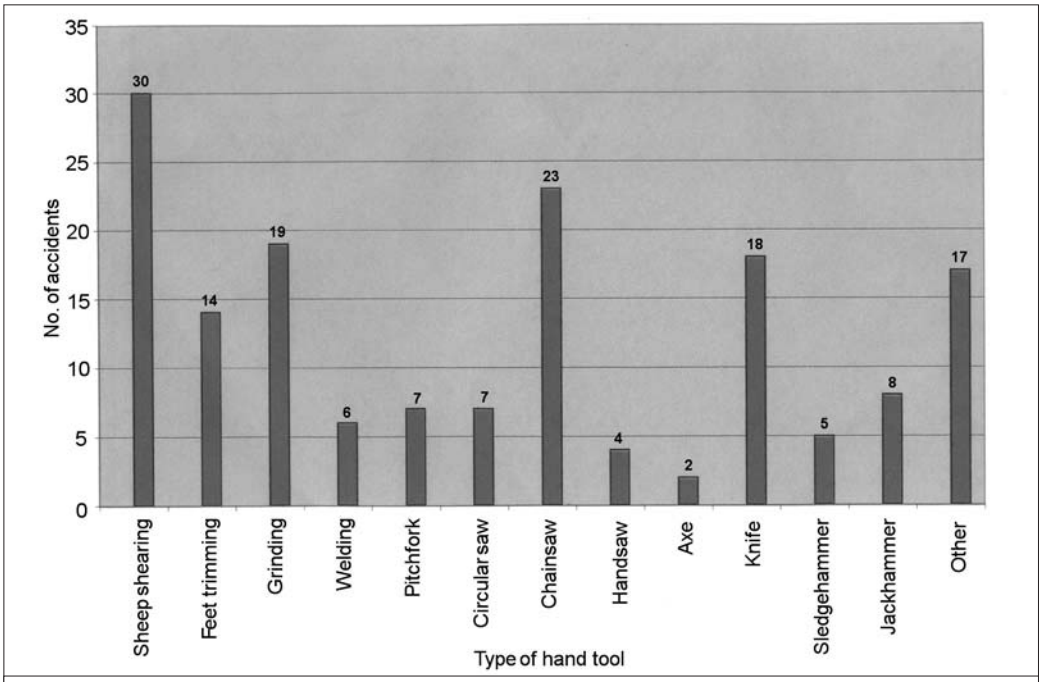


Fig. 2 Hand-tool accidents

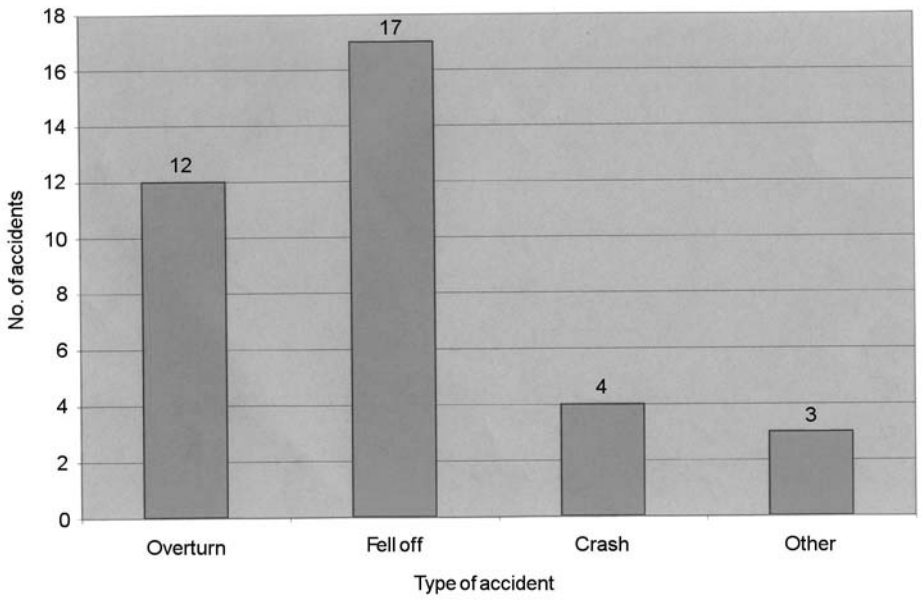


Fig. 3 Quad bike accidents

Table 3 Animals involved in accidents

Animal	*Type of accident*	*No. of injuries*		*Total*
		Cows (119)	Bulls (32)	
Cattle				**151**
	Kick	52	9	
	Crush	28	8	
	Butt	10	9	
	Knock over	5	2	
	Trample	3	2	
	Contact	11	2	
	Stand on	10	0	
Sheep				**154**
	Husbandry shearing activity	27		
	Clip feet	17		
	Self injury	26		
	Handling	18		
	Herding (falls)	10		
	Herding (other)	7		
	Unprovoked butts	20		
	Kicks	14		
	Knock over	8		
	Crush	4		
	Bite	3		
Horses				**67**
	Fall	19		
	Thrown	10		
	Kick	26		
	Trod on	5		
	Other	7		
Dogs				**21**
	Bites	20		
	Knock over	1		
Other animals				**6**
	Fox	2		
	Cockerel	2		
	Donkey	1		
	Pig	1		

ings. A large number of injuries caused by kicking or cattle standing on the victim occurred in milking parlours.

The large number of sheep-related accidents was some surprise as the animal is so much smaller and lighter than cattle. However, it is clear that the majority was caused in manually handling the animals for shearing, foot treatment or veterinary purposes.

Temporal factors

Table 4 categorises injuries by month, season, day of the week and hour of the day.

Whilst the busier summer months – the silage season – are marked by higher numbers and most of the winter months reflect the lower activity, the high figures in January are surprising. They may reflect the more severe weather conditions together with the onset of lambing. It is perhaps surprising that the highest daily figure is on Saturday. This may however be related to children home from school, students away from college, more members of the public on farms, plus an urge to 'catch up' to permit more leisure on Sunday.

The figures by hour of day do not indicate more fatigued periods during normal working hours to give more injuries. They do however show the long farming day and, bearing in mind the seasonal nature of evening working limiting it to part of the year only, the relatively high risk during evenings when fatigue may be a factor.

Accidents to children and youths

We have classified the ages of younger victims (Fig. 4) but do not feel able to draw any conclusions other than to re-emphasise that they account for 10% of the total despite, in most cases, their incidental rather than purposeful presence on the farm.

Conclusions

The following broad conclusions can be drawn.

- An identified weakness in Mid Wales (and probably elsewhere) was the difficulty faced by ambulance crews to uniquely locate the holding with the reported injury. A solution was for farming unions to publicise and NHS Ambulance Trusts to use Ordnance Survey map references. This could usefully spread beyond farming to other isolated rural communities.
- Equipment and animals are the two dominant causes of injuries, accounting between them for more than two-thirds. The safe handling of machinery, hand tools and farm animals all need to feature strongly in educational curricula and in advisory campaigns.
- Tractor related injuries show a large proportion to be related to mounting and leaving the vehicle. These exceed to more traditionally accepted risks of implement coupling and of tractor roll. Trapped fingers in doors and windows are particularly common.
- Although some injuries

Table 4 Distribution of accidents by time, day, month and season

Distribution by time of day 1994 - 2003 (total of 787 accidents over period of 9 years)

Time of day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
No. of accidents	1	1	-	3	2	3	4	27	47	46	82	70	69	77	88	77	60	50	41	19	14	3	1	2

Distribution by days of the week 1993 – 2003 (total of 1015 accidents)

Day of week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
No. of accidents	136	157	139	136	156	163	128

Distribution by months of the year 1993 – 2003 (total of 1015 accidents)

Month of year	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May
No. of accidents	110	97	75	96	75	69	64	92	74	94	83	86

Distribution of accidents by season 1993 –2003 (total of 1015 accidents)

Season of year	Summer	Autumn	Winter	Spring
No. of accidents	261	254	236	264

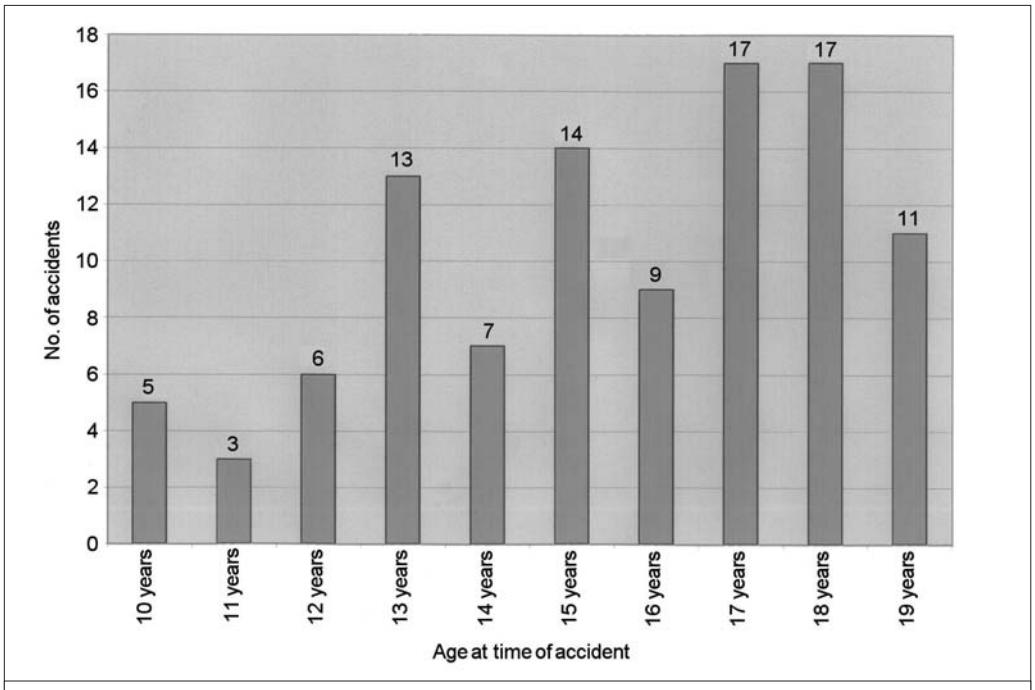


Fig. 4 Accidents between ages 10 and 19

were recorded from many workshop tools, hand tools used to shear and trim sheep led to more injuries. This area must be another high priority one for education and publicity, requiring a high level of skill to restrain the animal and safely employ the tool simultaneously.

- Further analysis of animal related injuries demonstrate the risk of crushing, kicking and being trodden on in farm buildings, particularly milking parlours. More detailed study of doorway, walkway and parlour standing design could be productive.
- Reducing injuries sustained whilst handling sheep is largely a challenge of farm worker training. Many attempts have been made to design mechanical aids to manual handling, particularly inversion of sheep but with limited success.
- The time distribution of injuries is wide with evidence of some peaks and troughs related to activity levels on farms, but month to month variations are such that no month varies by more than 25% from the mean. A similar situation exists between days of the week. The data showing injuries in all but one of the 24 hours of the day demonstrate the importance of 'round the clock' Accident and Emergency Departments and Ambulance Services.
- Injuries to children and youths, representing 10% of the whole, show the continuing importance of education and publicity. The age range recorded emphasises that this must encompass junior schools.
- Diversification of agricultural enterprises clearly brings significant risks. Trekking with 'Quad-bikes' was shown to lead to a high number of injuries whilst horse riding carries, not only its traditional risks at falls, but significant risks from kicking or being trodden on.

Acknowledgements

The authors acknowledge the vital part played by the staff of the A & E Department, Bonglais Hospital and of six Community Hospitals, in carefully recording the injury details and the accident circumstances. Thanks are also due to the representatives of the Farmers' Union of Wales, National Farmers' Union, Health and Safety Executive and Wales' NHS Ambulance Trust who have led an Advisory Group to guide the work.

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From fast food to fast cars…

A major new £15 million Biodiesel Plant at Newarthill, near Motherwell was given the official seal of approval as Jim Wallace, Minister for Enterprise and Lifelong Learning oversaw the beginning of construction on the world-first development. The ceremony highlighted Argent Energy's commitment to building the nation's first large-scale biodiesel production plant, fuelling the UK's renewable energy drive.

The new plant, which will be capable of producing 50 million litres of biodiesel annually and provide nearly 5% of Scotland's diesel needs, will open its doors in early Spring 2005. It will provide a safe and effective means of disposing of used cooking oils, such as those produced by the UK's fast food and catering industries and convert them into biodiesel. The plant will also provide a waste disposal solution to the imminent EU ban on using used cooking oils (UCO) in animal feeds, which will become fully effective in 2005. The new plant will also be capable of converting animal fats (tallow), and this will ensure a disposal route for this material which may help put some value back into the agricultural supply chain.

Argent Energy has worked over the last three years to secure the clean, green, fuel project for Lanarkshire and has been assisted with development funding from Bank of Scotland Corporate Banking. The first European funding grant of its kind – of 3.15 million (approximately £2 million) – has also been obtained to assist in the research and development of biodiesel and its co-products from the European Commission.

Argent Energy has also received a Regional Select Assistance Grant of £1.2 million from the Scottish Executive. This was followed by the signing of a £7 million contract with Mowlem to build the plant. Andy Hunter, Director of Argent Energy said: "We are delighted that work has finally began on the first biodiesel plant in Scotland, and possibly, the largest facility of its kind anywhere in the world. The plant will be capable of processing most used cooking oils and fats, whether saturated or unsaturated, into biodiesel, with an expected output of 50 million litres per year.

"Biodiesel is renewable, sustainable and environmentally friendly. It has been proven to be less toxic than salt, and as biodegradable as sugar. What's more it has the ability to be used on its own or mixed with mineral diesel and even improves fossil fuels' biodegradability. This means that it could also be added at refinery stage to improve fuel characteristics creating a win-win, environmentally-friendly situation for everyone which is good for the environment and good for business."

Jim Wallace, Minister for Enterprise and Lifelong Learning, added: "I am delighted to see that work has begun on Argent Energy's new Biodiesel Plant, and welcome this investment in Newarthill. I am pleased to announce that the Executive has supported this project with a Regional Selective Assistance Grant of £1.2 million. The plant will contribute to a number of EU energy related objectives to increase the amount of renewable energy. Indeed, implementing the energy conversion process via the plant will reduce greenhouse gas emissions, as biodiesel can become a substitute for fossil fuel, providing an alternative source of fuel for transport. This is an exciting initiative which can have benefits for both our environment and our economy."

A major subcontractor providing the technology for the Argent Energy plant is Austrian firm Biodiesel International (BDI), the world leader in this technology, and one of the few companies in the world that produces the technology for the conversion of oils, saturated and unsaturated fats, into Biodiesel.

Argent Energy is also leading a partnership with two universities in Graz, Austria, including The University of Graz's Institute of Chemistry – a leading academic authority on biodiesel research with extensive experience in the field of chemistry and renewable resources. The Technical University of Graz's Institute of Biotechnology, is looking at the life-cycle analysis (LCA) of biodiesel, and the Institute of Chemical Engineering is researching the co-products and added value products that could be gained from biodiesel.

MATERIALS & MINERALS

Six new Materials Foresight Reports launched

The Institute of Materials, Minerals and Mining has launched a series of six new Foresight reports for the materials sector.

The Foresight Materials Panel, with the administrative and secretarial support of the Institute of Materials, Minerals and Mining, has reviewed a number of specific areas where materials developments are pivoted to wealth creation in the UK. The six new reports combine to provide specific reference points for Biomaterials, Fuel Cells, Functional Materials, and Smart Materials. Separate reports have also been produced to highlight issues affecting the initiation and growth of spin out business in the materials sector and an overview of Technology Road Maps for a number of important materials sectors.

MORE INFORMATION

The Institute of Materials, Minerals and Mining, 1 Carlton House Terrace, London SW1Y 5DB. Tel: +44 (0) 20 7451 7320. Fax: +44 (0) 20 7839 1702. E-mail: Frances.Perry@iom3.org Web: www.iom3.org
The reports are available through the Institute's Library and Information Services. Single reports are available free of charge. Additional copies are priced at £3.00 each plus postage and packing.

AMENITY DEVELOPMENT

New project manager to develop Severn walking trail

Forestry Commission Wales has appointed a new member of staff to drive forward the improvements scheduled for the Source of the Severn footpath project on the Severn Way walking trail in the Hafren forest, in a bid to boost the Mid Wales tourist industry. The new Upland Footpath Works Manager, Adrian Davies, will oversee the completion of this £200,000 major partnership project to extend the current spectacular walking route along the 210 mile Severn Way, Britain's longest riverside walk, to the source of Wales' longest river, the Severn, by one kilometre and improve access.

The project's remit is to construct a walkway from the upper edge of Hafren Forest to the Source of the Severn across a Site of Specific Scientific Interest (SSSI), designated due to the rare species of vegetation that grow wild there. The path will be 1185 m long, rising to 550 m above sea level at the forest edge. New drainage and reconstruction of weak areas of the existing pathway will also be implemented and a durable low maintenance surface provided. An additional, all ability car park, picnic site and refurbished toilet facilities for visitors accessing the Severn Way walk and the Wye Valley walk at Rhyd y Benwch, Hafren Forest will also be built.

As the recently appointed manager of this project, Adrian Davies said, "I am delighted to be taking up this exciting post, and aim to maximise the benefits to visitors and countryside alike with improvements to the Severn river trail, with the new project helping to generate income for the local economy."

"Controlling erosion in the SSSI and providing a more stable path for walkers are of paramount importance. Three shelters will also be built along the Severn walk in Hafren Forest to improve the experience for all visitors and to cater for educational groups. Improved signage, interpretation boards and wooden sculptures will facilitate the car park location as the start of the walk and provide a link to Llanidloes town."

The project, backed by community regeneration group Llanidloes Ltd and partners, will provide significant additional facilities to support local tourism and diversification opportunities for the local agricultural industry. The partners include the Welsh Development Agency, Welsh Assembly Government, Powys County Council, Environment Agency, Wales Tourist Board and Llanidloes Town Council amongst others.

Adrian said, "This project aims to improve the attraction of Powys as a tourist destination in order to generate economic, and tourist benefits. These improvements will generate a sense of welcome to rural areas and attractions, and encourage visitor relaxation, enjoyment and purchasing of local products, goods and services."

The route for the new trail starts at the Hafren Forest Car Park and picnic area, near Llanidloes at the source of the Severn river and forms a circular route through the forest. The return leg along the river Hore forms the beginning of the extended 136 mile Wye Valley Walk and links up with the 210 mile Severn Way, Britain's longest riverside walk.
The Wye Valley Walk is 136 miles long, and follows the river valley from Chepstow in Monmouthshire to the slopes of Plynlimon in Powys, criss-crossing the border between England and Wales. The walk is suitable for any reasonably fit walker who wishes to enjoy the varied landscapes and natural history of this delightful area, passing through the market towns of Builth Wells and Rhayader. Llanidloes town is a close stopping off point for the Wye Valley Walk.

MORE INFORMATION

More information on the woodlands of Wales can also be found on the Forestry Commission's website. Web: www.forestry.gov.uk

UK organic food & drinks spending to grow by 75%

A new report from independent market analyst Datamonitor (DTM.L) reveals that the organic food and drinks market in the UK is set to grow by almost 75% between 2002 and 2007, when it will be worth £1.6bn. Natural food & drinks includes detailed analysis of seven leading country markets from 2002-2007: France, Germany, Italy, The Netherlands, Spain, Sweden and the UK. The European natural food and drinks market, driven by extremely strong growth in certain sectors will surpass the €20 billion mark between 2002 and 2007. In excess of 50% of the natural market is accounted for by organic food, sales of which are forecast to grow at an annual average rate of 10.4% over the same period.

The UK is the second biggest organic market in Europe but it is still a long way behind Germany (£2.1bn in 2002). However, evidence that higher prices remain the most prominent barrier to consumer acceptance of natural and organic food and drinks is all apparent. "This suggests that, whilst opportunities are open to manufacturers and retailers, educating consumers on the benefits of organic and natural food and drinks is vital. Otherwise, marketers are going to find it increasingly difficult to justify the current price premiums in existence" comments Daniel Bone, Datamonitor consumer markets analyst and author of the report.

The number of UK loyal users of organic products – consumers who adopt an organic 'ethos' and buy organic food and drinks from a range of product categories on a weekly basis – is set to grow from 2.4 million in 2002 to 11.4 million in 2007.

Organic market value in € billion and growth rates, by country, 2002-2007

Country	Organic market value, € billion		Compound annual growth rate 2002-07, %
	2002	2007	
France	1.2	1.9	8.6
Germany	3.3	5.4	10.3
Italy	0.7	0.8	4.5
Netherlands	0.4	0.6	9.7
Spain	0.2	0.6	19.2
Sweden	0.3	0.6	17.2
UK	1.5	2.6	12.0
Other Europe	1.5	2.6	10.9
Overall Europe	**9.1**	**15.1**	**10.6**

Organic meat is set to have the largest gains and the market is predicted to more than double, from £152m in 2002 to £351m in 2007. Organic ready meals are forecast to grow at an annual compound growth rate of almost 17% over the same period.

Natural foods & market growth

Consumer demand for better quality and tasting food and drinks has also lead to steady growth in the UK fresh foods market, which will grow to exceed £25bn between 2002 and 2007. Fresh produce must be 'recently' prepared for the market showing no visible signs of maturation or undue processing, be in a raw state and be natural in taste and smell. Products must not have been frozen, dried, canned or preserved in vinegar and other liquids or sugar and other vacuum packages (e.g. peanuts). The term does not include dried fruit and vegetables.

Loss of trust and confidence in the food industry has been a great growth factor. Consumers are increasingly conscious about safety of foodstuffs, methods of production and the ingredients used. The bulk of consumers of organic products are mainly between the ages of 25 and 55, peaking between 36 and 45. Other key life events, such as childbirth, menopause, empty nesthood and senior lifestyles, are also 'trigger points' for natural food adoption.

"Research indicating that over 50% of consumers trust organic and natural products more so than conventional food and drinks suggests that this has contributed to the positive development of the natural, and fresh, food and drink markets and provides a rationale for marketers continuing their activities in this area", comments Bone.

High price premiums are limiting demand

Overall, the UK organic market is showing impressive growth but high prices are limiting demand. Price premiums associated with organic food and drinks represent one of the most important deterrents for buying organic foods, and although consumers have an interest in foods produced in an ecologically sound manner they are equally not willing or able to pay the current prices for these products. Datamonitor advice to manufacturers and retailers is to seek a price premium of 10-20% above conventional food counterparts, something which would be deemed acceptable to occasional and non-users of organic products.

Another obstacle to market growth is that consumer perception of improved taste and quality of such products varies considerably. The view that organic produce is more tasty than conventional food and drinks is not widely proved in the eyes of consumers. A clearer understanding of nutritional and health benefits would also increase their consumption of natural food and drinks.

Consumer education is vital

"Consumers need to be more fully educated about organic and its benefits both to health and to the environment. Only this will impact on perceptions of and attitudes towards the current high price and may help present an argument that consumers are getting a good deal when all of their effects on human, animal and environmental health are factored in. Effective imagery and branding will become vital, especially in attracting new consumers", comments Bone. "The onus is with manufacturers and retailers to develop more sophisticated product offerings that actually fulfil consumer expectations," he concludes.

HORTICULTURE

Lord Whitty launches horticulture centres of excellence

Following restructuring, Horticulture Research International (HRI) is now to operate as two independent organisations – Warwick-HRI, part of the University of Warwick, and East Malling Research in Kent – creating new centres of excellence for horticulture research in the UK. The Department for the Environment, Food and Rural Affairs (Defra) is investing over £50 million in the new organisations which includes:

£36.2 million for Warwick-HRI over eight years for research and development;

£1.3 million for Warwick-HRI over five years to maintain the Vegetable Gene Bank at Wellesbourne; and

£12.3 million for East Malling Research over six years for research and development.

Lord Whitty, who signed the agreements for the change, said: "This will provide a secure platform for research and development to benefit the UK horticulture industry. HRI can now look forward to a stable future, and concentrate on what it does best – delivering high quality science for the benefit of the horticulture industry and others. The new HRI will be better placed to exploit new opportunities, forge new alliances, and respond to the needs of industry."

RENEWABLE ENERGY

UK to lead the way in marine energy

A major new development in marine energy in the UK was announced at the British Wave Energy Association (BWEA) Wave and Marine Energy conference in Bristol. The Marine Energy Challenge from the Carbon Trust is a major new programme to assess the potential for marine energy devices to achieve a competitive cost of electricity generation against other renewables and fossil fuelled power generation.

The Carbon Trust will be working with eight developers: Clearpower Technologies (WaveBob); Ocean Power Delivery (Pelamis); SeaVolt Technologies (Wave Rider); AquaEnergy (AquaBuOY); Lancaster University (PS Frog); Evelop (Wave Rotor); Embley Energy (Sperboy); Wave Dragon (Wave Dragon). The Carbon Trust also plans to carry out discrete work packages such as shoreline OWC, tidal stream, and marine energy design codes and standards, to supplement the direct technology assessment.

Tom Delay, Chief Executive of the Carbon Trust, comments, "As yet no country has taken a leading position in marine energy. A relatively small investment now could make a significant impact to the UK's competitive position due to the early-stage of technology development."

Recent research by the Carbon Trust highlighted the potential for the UK to become a global leader in marine energy. The UK is ideally placed because of its huge exploitable natural resources; a high concentration of early-stage developers; and significant indigenous human capital applicable to the development of marine energy.

Tom Delay, Chief Executive of the Carbon Trust, adds, "The Marine Energy Challenge will really show whether there is potential for marine energy development – and, if there is, put the UK at its forefront. The main barrier to the UK achieving such a position is confirmation that the emerging marine energy devices could become cost-competitive against other renewables and ultimately base-load fossil fuelled power generation. The Marine Energy Challenge will answer this question as well as accelerate development of technologies. The Carbon Trust already provides significant support to the marine energy industry at every stage of development. Our technological and commercial capabilities combined with our independence and flexibility means we can really help drive the industry forward."

The objectives of the Marine Energy Challenge are to:

- review devices and device concepts in order to establish the potential of wave and tidal devices to become cost-competitive;
- engage engineering design companies to produce detailed engineering reports, including design drawings, in order to assess wave and tidal viability to a higher degree of accuracy than has been done in the past; and in so doing,
- confirm whether electricity generation costs can be reduced, and if so, to transfer technology, build capacity in the industry, and move device development forward.

In addition, the Marine Energy Challenge will:

- provide a clearer picture of the cost and performance of the types of device and the fundamentally different methods employed to extract energy from the waves and tides;
- help to clarify other barriers to commercialisation; and
- allow an assessment of the UK's competitive position as a technology supplier.

To deliver the projects, the Carbon Trust is working with the following engineering organisations and consortiums: WS Atkins Consultants; Black & Veatch Consulting; Halcrow Group; Ove Arup/ Power Technology; Det Norske Veritas and Mott MacDonald.

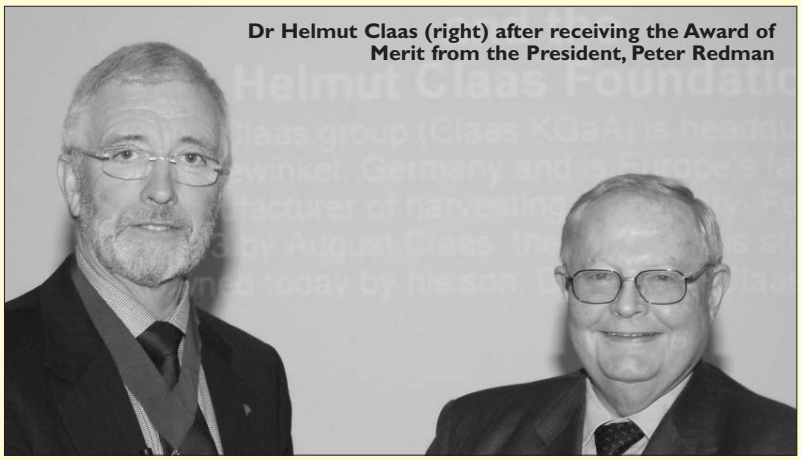
MORE INFORMATION

Jo White, the Carbon Trust.
Tel: +44 (0)20 7170 7075. E-mail: jo.white@thecarbontrust.co.uk

Bimonthly EARLY SUMMER 2004

MEMBERSHIP MATTERS

THE NEWSLETTER OF THE INSTITUTION OF AGRICULTURAL ENGINEERS



Dr Helmut Claas (right) after receiving the Award of Merit from the President, Peter Redman

AWARD OF MERIT FOR DR HELMUT CLAAS

Helmut Claas, a successful entrepreneur whose roots are in agriculture, has built up the family firm founded by his father into a business which is respected world-wide, employing 8,600 staff with net sales of 1,496 million Euros.

Born in Harsewinkel on 16th July 1926, Helmut had a practical training in machine fitting, metalworking and casting. He then took a mechanical engineering degree at Hanover Technical University followed by further agricultural studies at the University of Vienna and the Grande Ecole Nationale d'Agriculture in Paris.

His first official post with Claas was also in France where he took over responsibility for planning and setting up a Claas marketing company. In 1958 Helmut Claas joined his parents' family business in Harsewinkel devoting himself initially to his specialist field, engineering. Appointed manager in 1962, he became a full partner in 1978. In 1996, he moved from the post of Managing Partner to that of Chairman of the Supervisory Board and Chairman of the Shareholders' Committee.

His particular interest has always been the development of forward looking products and mass producing them cost effectively. A whole series of innovations which have set standards in the area of agricultural engineering were initiated and jointly shaped by him, including:

- the Dominator combine - the most successful combine harvester model of all time, now on sale world-wide for over 30 years; and
- the Lexion 480, now rated the most powerful combine harvester in the world.

This development has involved the commissioning of new plant in Omaha, Nebraska for its production for the North American and Australian markets.

However, Claas is not just a grain harvesting specialist. Under the technical control of Helmut Claas, it has also become the world leader in forage harvesting where the Claas Jaguar is synonymous with productivity.

Recent developments have seen Claas acquiring a majority stake in Renault Agriculture which enables a full range of tractors to be added to the product line.

Helmut Claas has received many personal distinctions such as honorary citizenship of his home town of Harsewinkel, the Distinguished Service Medal of the State of Baden-Wurttemberg, the Order of Merit awarded by the French Agricultural Minister, and Honorary Doctorates from the Goedoelloe University in Hungary, Cranfield University in England and University of Stuttgart-Hohenheim in Germany.

Helmut has attempted to 'put something back into the universities' by encouraging the training of agricultural engineers and the formation of the Helmut Claas Foundation in 1999 has provided numerous financial awards to top class European students (including many from the UK).

With more than 45 years of service to the company that bears his name and to the world of agriculture in general, Helmut Claas has earned his reputation as a son of the soil, with a passion for engineering excellence and for the people whose skill and knowledge help feed the world. He is well deserving of the Award of Merit of the Institution of Agricultural Engineers.

OBITUARY

Tim Wilder HonFIAgrE President 1965-67 - An Appreciation

J.H.W. Wilder, CBE, BA, CEng, HonFIAgrE, FRAgS, always known as Tim since his childhood days, died at his home in Wallingford, Berkshire on 13th April 2004, at the age of 83. A most distinguished President and supporter of the Institution of Agricultural Engineers, he occupied a number of important and influential positions in the Agricultural Engineering industry, in addition to his long career with the family firm of John Wilder (Engineering) Ltd, of Wallingford, of which he was Managing Director/Chairman from 1949-86. This innovative firm was prominent in the design and production of grass harvesting equipment, especially at the time when silage began to overtake hay as the major technique for grass conservation in the UK, and also grain drying machinery and, among other machines, an unusual weed-cutting boat designed in collaboration with the late Theo Sherwen for clearing weed growth from inland waterways.

A past Chairman of the Governors of the National Institute of Agricultural Engineering (NIAE, as it was then), and of the Engineering Committee of the government Joint Consultative Organisation, he was also a past President of the Agricultural Engineers Association and in 1970 he was Chairman of the Oxford Farming Conference. Awarded the CBE in 1969, he was made an Honorary Fellow of the Institution in 1973, and in 1970 he was appointed a Foundation Fellow of the Council of Fellows of Royal Agricultural Societies. He was also much involved with the Wallingford Regatta and other organisations in his home town.

Within the Institution, Tim devoted his Presidential Address in 1965 to analysing the potential career opportunities for professional Agricultural Engineers, noting that at that time the first group of graduates had recently completed their Associateship (subsequently BSc) degrees at the National College of Agricultural Engineering, and that the University of Newcastle was about to introduce its BSc(Hons) course in the same subject. The subjects of his technical contributions to IAgrE and to the International Commission for Agricultural Engineering (CIGR) conferences included forage harvesting, and the task of finding and exploiting new products in a small company.

He was also involved in the background discussions which eventually led to the Institution's recognition by the Council of Engineering Institutions and the Engineers Registration Board, the forerunners of the Engineering Council, as a qualifying body for the award of registration as IEng, EngTech and, in due course, CEng registration. It was typical of Tim's enthusiastic support for Agricultural Engineering as an engineering discipline that he was content to wait for his own registration as a Chartered Engineer until July 1979, as he was one of the first 13 IAgrE members to be thus registered - with his engineering degree and responsibilities, he could well have achieved CEng registration much earlier through one of the older Institutions.

So much for the dry facts. For those who knew and worked with him, the outstanding memory is of a man of great courtesy, charm and kindness, and a most able public speaker, whether in the conference hall or at the Institution's Annual Dinners or Luncheons. He was truly one of the Institution's great Presidents. To Mrs. Wilder and her family we send our very sincere condolences on their sad loss.

JACG

AWARDS

MICHAEL DWYER MEMORIAL PRIZE 2003 AWARDED TO RICHARD EARL

Richard Earl, who is now 42 years of age, began his career in agricultural engineering by taking an HND course at Harper Adams Agricultural College qualifying in 1983. He then progressed to an MSc (Soil and Water Engineering) at Silsoe in 1985 and a PhD on Soil Compaction in 1993.

Whilst researching his PhD, Richard was working as a Research Officer at Silsoe being promoted to Lecturer in 1990. He continued in this role until 2002 with various additional responsibilities of both an academic and managerial nature.

The Prize to a mid-career engineer who has made outstanding progress in the agricultural engineering industry was presented to Dr Richard Earl by Mrs Brenda Dwyer

In addition to his academic work, Richard has also been active in running a small company manufacturing soil moisture measuring instruments.

In 2002 Richard moved fully into the commercial world as Technical Director of TurfTrax GMS Ltd, a company specialising in the drainage and renovation of sports surfaces such as football pitches, race and golf courses where effective drainage and the ability to resist wear is essential.

His role in TurfTrax is to apply the scientific knowledge acquired in recent years into practical schemes to solve the intractable drainage problems found on many sites. Richard has recently been promoted to the post of Managing Director.

In a period of twenty years, Richard has been successful in an academic and research career and has now also bridged the gap into an industrial/commercial role at high level.

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 *Biosystems Engineering*. 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: IAgrE members Professor Richard J Godwin, Dr Richard Earl, Dr John C Taylor and Dr Iain T James of Cranfield University at Silsoe, Professor Paul C H Miller of Silsoe Research Institute and Professor Simon Blackmore of the Royal Agricultural and Veterinary University, Taastrup, Denmark; and to their co-authors, five of whom were at Cranfield University whilst the work was in progress, one at the Arable Research Centre, Shuttleworth, and one in Taastrup, Denmark.

The study addresses an important aspect of Precision Agriculture, namely, Managing Soil and Crop Variability for Cereals and was published in a Special Issue of *Biosystems Engineering* with 10 Research Papers summarised in a Review Paper. In addition to his research participation, Dr Gavin A Wood was extensively involved with the revision of many of the papers to meet the scientific and presentational requirements of the text and graphics for publication in the Journal. It is a pleasure that he was accorded the richly deserved privilege to receive the Douglas Bomford Paper Award on behalf of all the authors.

Dr Gavin Wood (centre) received the Douglas Bomford Paper Award from Jonathan Bomford, Chairman of the Trust, with the Project Leader, Professor Richard Godwin (left), representing all the authors associated with the papers in the Special Issue of Biosystems Engineering

Godwin R J; Wood G A; Taylor J C; Knight S M; Welsh J P (2003). Precision farming of cereal crops: a review of a six year experiment to develop management guidelines. Biosystems Engineering, **84**(4), 375-391

Godwin R J; Miller P C H (2003). A review of the technologies for mapping within-field variability. Biosystems Engineering, **84**(4), 393-407

Wood G A; Taylor J C; Godwin R J (2003). Calibration methodology for mapping within-field crop variability using remote sensing. Biosystems Engineering, **84**(4), 409-423

Earl R; Taylor J C; Wood G A; Bradley I; James I T; Waine T; Welsh J P; Godwin R J; Knight S M (2003). Soil factors and their influence on within-field crop variability, part I: field observation of soil variation. Biosystems Engineering, **84**(4), 425-440

Taylor J C; Wood G A; Earl R; Godwin R J (2003). Soil factors and their influence on within-field crop variability, part II: spatial analysis and determination of management zones. Biosystems Engineering, **84**(4), 441-453

Blackmore S; Godwin R J; Fountas S (2003). The analysis of spatial and temporal trends in yield map data over six years. Biosystems Engineering, **84**(4), 455-466

James I T; Godwin R J (2003). Soil, water and yield relationships in developing strategies for the precision application of nitrogen fertiliser to winter barley. Biosystems Engineering, **84**(4), 467-480

Welsh J P; Wood G A; Godwin R J; Taylor J C; Earl R; Blackmore S; Knight S M (2003). Developing strategies for spatially variable nitrogen application in cereals, part I: winter barley. Biosystems Engineering, **84**(4), 481-494

Welsh J P; Wood G A; Godwin R J; Taylor J C; Earl R; Blackmore S; Knight S M (2003). Developing strategies for spatially variable nitrogen application in cereals, part II: wheat. Biosystems Engineering, **84**(4), 495-511

Wood G A; Welsh J P; Godwin R J; Taylor J C; Earl R; Knight S M (2003). Real-time measures of canopy size as a basis for spatially varying nitrogen applications to winter wheat sown at different seed rates. Biosystems Engineering, **84**(4), 512-531

Godwin R J; Richards T E; Wood G A; Welsh J P; Knight S M (2003). An economic analysis of the potential for precision farming in UK cereal production. Biosystems Engineering, **84**(4), 533-545

LONG SERVICE CERTIFICATES

Name	*Grade*	*Date of Anniversary*
35 years		
Kenneth Anthony **Pollock**	IEng MIAgrE	19 Jun 2004
25 years		
David James **Hilton**	CEng FIAgrE	8 May 2004
Ernest George **Benfield**	FIAgrE	8 May 2004
David **Green**	IEng MIAgrE	23 May 2004
William **Charnley**	EngTech MIAgrE	14 Jun 2004
Wynford John Samuel **Marks**	IEng MIAgrE	19 Jun 2004

AWARDS

BRANCH MERITORIOUS AWARDS 2003

The award is made to a person who has consistently rendered outstanding service to a Branch of the Institution over a number of years.

Richard Robinson is an ideal recipient for this Award for his long and hard work in promoting the Western Branch. His active encouragement of new members and dynamic enthusiasm at Branch meetings has been quite inspirational.

Although Richard stepped down as Chairman two years ago he has continually provided help, support and guidance that has been much appreciated. Moreover, it should be remembered that all that he has done in making the Western Branch more active has been achieved whilst running his own busy and successful company Autoguide Equipment Ltd.

This Award recognises Richard for his hard work. It should also be a reminder that he is appreciated by both Western Branch members and the Institution that he has served for so long. His passion in promoting the values of the Institution and the importance of the industry he represents is an inspiration to us all.

Richard's work within the Institution is well known to many of you and it would be presumptuous to reiterate this. However, his work off the pitch, so to speak, has been just as important in upholding the Institution's values and inspiring others in the art of agricultural engineering. He is an active member of the Industrial Liaison Committee at Wiltshire College – Lackham and provides resources enabling students to carry out their studies. He gives his time freely and students who visit Autoguide always come away motivated and impressed.

Richard is an entrepreneur who enjoys inventing and developing ideas. He is undoubtedly good at his job and justly proud of the organisation that he has built up. However, he is perhaps not so well aware of the high regard he is held in by his peers.

In the past Richard has never failed to highlight and applaud the strengths and achievements of others. By making this award, the Institution recognises one of its own staunchest supporters and ambassadors.

Richard Robinson (right) following receipt of his Branch Meritorious Award from the President, Peter Redman

Alan Plom, who is an employee of the Health and Safety Executive and a long standing Member of the Institution (he received his 25 year Certificate in 2000), moved into the Branch area in 1991.

He immediately became an active member regularly attending meetings and joining the Committee at an early stage.

He was elected to the post of Vice-chairman for 1995-96 and became a successful Branch Chairman for two years from 1996-1998.

Since his chairmanship he has remained on the Committee, being particularly active in organising technical visits and social events.

His efforts have been much appreciated by the South East Midlands Committee and members and he fully deserves recognition.

Alan Plom (right) receiving his Branch Meritorious Award from the President, Peter Redman

In February 1977, **Bertie Hunter** was one of five people co-opted on to a Committee to run the Institution activities in Northern Ireland. It proved to be an inspired choice.

He went on to become the Press Officer and then, in March 1979, when the Branch was formally constituted, by the then President John Weeks, Bertie was duly elected to the Committee and has been a core member ever since. This constitutes an unbroken record of service to the

Urban Curson (centre) and Brian Bell (right) with their Branch Meritorious Awards which were presented to them by the Chief Executive Chris Whetnall at the East Anglia Branch AGM

Institution in Northern Ireland of 27 years.

Serving for many years as Press Officer, Bertie has also been closely involved with the Farm Invention Competition since it was first run by the Branch in 1982. With his sound understanding of the commercial realities of the Northern Ireland market and extensive knowledge and genuine concern for the well being of farmers and their families, he has taken a particular interest in providing feedback to the participants on the safety and marketing of their product. In recent years Bertie has also acted as the Institution's representative and public spokesman on this competition, which has helped to increase the profile of the organisation in the area.

His sound judgement and advice, always offered with quiet good humour, have been invaluable over the years in helping the Branch grow and develop into a small but viable and enthusiastic organisation. His integrity and humour have also helped set the culture of the Branch over the last 26 years and ensured that meetings are both informative and enjoyable.

Outside the Branch activities Bertie continues to run W R Hunter (Equipment) which, although initially manufacturing trailers and forklifts, now concentrates selling and installing a range of crop storage equipment throughout Ireland – North and South. He is highly respected both in the industry and his local community, where he plays an active role.

Bertie Hunter was unable to attend due to illness, so David Morris accepted the Branch Meritorious Award on his behalf from the President, Peter Redman.

Brian Bell has been a loyal and active member of the Institution since 1952 when he joined as a Student Member. Brian has served the East Anglia Branch since 1960 as a committee member. He has served as Branch Chairman 1972-74, again in 1976-78. In 1980-81, he served as Branch Secretary and, in 1987, he took over the chairmanship again when the Branch was going through a major crisis. Brian currently serves the Branch as Secretary from which he is retiring at the 2004 AGM.

During the 1980s, Brian was greatly involved in the running of some very successful branch conferences. One in particular that should be recalled is the conference at Manns of Saxham in 1988: 'Men, money and machines' where the Minister of Agriculture gave the keynote address.

Brian has not only contributed to the success of East Anglia Branch over the years but also in his professional life as a lecturer in agricultural engineering and as a writer of books on farm machinery and related subjects, where he has contributed much to the education of numerous agricultural engineers.

The East Anglia Branch wishes to acknowledge Brian's contribution by commending him for the Branch Meritorious Award.

Urban Curson has been a loyal and active member of the Institution since 1962 when he joined as an Associate Member. Urban has served the East Anglia Branch since 1978 as Treasurer from which he will be retiring at the 2004 AGM.

During the 1980s, Urban was greatly involved in the running of some very successful branch conferences. One in particular that should be recalled is the conference at Manns of Saxham in 1988: 'Men, money and machines' where the Minister of Agriculture gave the keynote address.

Urban has not only contributed to the success of East Anglia Branch over the years, but also in his professional life as a Director of Ben Burgess & Co, where he has contributed much to East Anglian agriculture through the design and construction of many crop drying and storage projects undertaken by Ben Burgess & Co.

The East Anglia Branch wishes to acknowledge Urban's contribution by commending him for the Branch Meritorious Award.

SOUTHERN BRANCH DINNER

William Helen, Branch Chairman, and his wife (centre) at the IAgrE Southern Branch AGM and Annual Dinner earlier this year with Professor Paul Miller, President's representative (right), and Oliver Statham, Branch Secretary/Treasurer, included by a head (left)

DESIGN SKILLS

REPORT ON THE YOUNG ENGINEERS COMPETITION 2004

Winning team from Plumpton College – with their entry, *'Toolbox'* – receiving a cheque for £600 from the competition sponsor Richard Robinson of Autoguide Equipment

March 9th 2004, 05:00 h. Somewhere in East Sussex – a small group of Plumpton College students gather, breath visible in the cold morning air. Part of the agricultural course on the morning milking roster? No. These are land based engineering students waiting for the College mini bus to take them yyy miles to the JCB Compact Products factory at Cheadle in Staffordshire for the 2004 IAgrE Young Engineers Competition.

Elsewhere, but later, much later, similar groups from Harper Adams University College (HAUC), Herefordshire College of Technology and Brooksby Melton College gather for their shorter journeys.

All groups have one thing in common, a desire to demonstrate their design and build skills by competing with their electrically propelled vehicles to a set of rules written by Richard Robinson and Andy Scarlett – both IAgrE stalwarts. More about the rules and vehicles later.

Meanwhile, Richard Robinson and Chris Whetnall are the IAgrE contingent, also en route for Cheadle, Richard, driving up from Wiltshire with a trailer loaded with the competition ramp and Chris with the IAgrE banners, name badges and paperwork. Awaiting them at JCB is Chris Knowles, Learning and Development Adviser – Engineering, part of the Human Resources team based at the main JCB Plant at Rocester.

Generously sponsored by Autoguide Equipment (Richard Robinson by another name), the reasoning behind the competition is simple. Whilst good at engaging the older members of the profession, IAgrE has not been good at engaging the future members of the Institution – *i.e.* the students in land based engineering subjects. So, as part of the 'raising the profile' campaign being run by IAgrE, this competition is designed to attract young land based engineering students into an IAgrE run event. This event aims not only to be fun, but also sets out to expose the students to the vibrant industry that is land based engineering – hence the venue courtesy of JCB Ltd.

The rules are simple really. Design and build an electrically powered vehicle, using wheels and battery provided, to climb as far up a (specified) curved ramp as possible with cash prizes for the first four place winners of £600, £400, £200 and £100 (prizes donated by Autoguide).

As you can imagine, in the months running up to the event, there is a flurry of e-mails from the colleges trying to circumvent the rules (attempting to cheat in other words) and these get the fairly common response of 'keep within the spirit of the rules or risk getting disqualified on the day'. It's all good fun and the organisers can't wait to see the outcome.

And the vehicles themselves?

All teams arrive by the appointed hour with Harper students (the closest) arriving in dribs and drabs due to last minute design and serviceability problems with one of the teams *i.e.* it isn't working! After some initial coyness, the teams unveil their 'vehicles'. The author uses this term advisedly as there is some doubt about one of the HAUC designs – two wheels only with manual intervention required to maintain stability.

Lots are drawn and the first to go is the questionable 'vehicle' named *'Bodge Job'*. The judges (who are also the scrutineers) decide to let it 'run' before disqualifying it. The rules state 'remote or radio controlled' and the judges consider that a length of threaded bar connected to a two wheeled device with skid is not considered remote enough to qualify. Good try though!

Second up should have been a HAUC team named *'Half'*. There were frantic (and noisy) attempts to get this running which somewhat surprised the judges as there was no scope for the use of anything other than the battery supplied for motive power. With much smoke and occasional bursts of noise which suggested an engine start, the Judges hastily convened to decide what to do. In the event, the machine did not run and was withdrawn. This was just as well as it would no doubt have been banned on a Judge's whim. (N.B. Must ensure rules are tightened up for next year.) It would have been fun to have seen whether or not the electrically powered ground effect fan would have made any difference on the peg board ramp!

The entry from Brooksby Melton College – *'Bendy'* competed next. This did well although its progress was more like that of a skid steer loader.

Hereford College of Technology came next with their entry – *'Minimalist'*. An ingenious use of materials here with an elastic band to hold the battery in position and an adjustable steering drag link. The team was spotted judiciously applying a junior hacksaw to the spinning tyres in an attempt to improve their coefficient of friction. The

Winning vehicle *'Toolbox'* (left) from Plumpton College; and third prize winner 'Scorch' (right) from Harper Adams University College

reason for this became evident when the next entrant came to the ramp. No great excitement with this entry, but a valiant effort.

Next to run was *'Toolbox'*, the entry from Plumpton College. Shaped like a barn-type toolbox, the reason for the name was evident. This entry was more substantial than previous vehicles with four electric drill motors strapped on with yards of gaffer tape. *'Toolbox'* also sported a ground effect device in the shape of a rear spoiler. About as useful as the spoiler on my old diesel Citroen but impressive to look at nonetheless. The first run seemed to be rather too good and on close inspection it was found to have 'sticky wheels'. After threat of disqualification, the team went off to remove the 'sticky' compound and re-entered to complete the second run. Still pretty effective though due largely to the greater mass of this unit.

Final run was from HAUC with *'Scorch'*. Its independent suspension let this vehicle down. Insufficent mass meant that the wheels were not contacting the ramp across the full width of the tread, thus reducing the effective tractive area. This notwithstanding, it still gave an impressive performance.

The scrutineers (messrs Robinson, Whetnall and Knowles) gathered into a huddle to determine what other transgressions had taken place and then announced the winners.

First were the Plumpton crew with *'Toolbox'*
Second – Brooksby Melton with *'Bendy'*
Third – HAUC with *'Scorch'*
Fourth – Hereford College of Technology with *'Minimalist'*

The prizes were duly awarded and accompanied by a homily from Richard Robinson on the deviousness of candidates taking an aptitude test. This clearly went down well with those teams who had used such an approach in their design concepts.

Then followed a discussion on how the rules should be amended for next year. What was evident was that all felt the competition had not only been fun but a useful design exercise and there was definite support for IAgrE to run a similar event next year. This was noted and will happen. Any potential sponsors out there??

After a lunch generously provided by JCB, the group assembled throng split into groups for tours of both the JCB Landpower (Fastrac) plant as well as the JCB Compact Products plant. The cross over point was the helicopter pad by the test track and a few were lucky enough to get a ride in the Fastrac as it reached 40 mph in the dip. The rest of us made a note to wear winter gear next time.

There was a good deal to see and it was inspiring to see that British manufacturing is alive and well.

Thanks go to all who took part, to the organisers (Richard Robinson, Dr Andy Scarlett and the IAgrE HQ team) and to Chris Knowles and the JCB Human Resource team for hosting the event.

CRW

JCB Principal Engineer Ian Pettifor (partially hidden behind bulkhead) showing group of competition participants (including Jim Loynes of Harpers Adams University College) the finer points of Fastrac hydraulics

Group of all attendees with Peter Redman, then President Elect (far left)

IAGRE AND THE BAGMA/AEA CAREERS PROJECT

In March 2003, IAgrE hosted a conference to bring together dealers, manufacturers, importers and the colleges to deal with the technician level manpower crisis in the dealerships.

It was emphasised at that conference that there needed to be a lift in the professional profile of our industry.

Out of that conference came the BAGMA/AEA Careers Project – a project to raise £100,000 industry-wide (£50k from the dealers and a matching amount from the manufacturers/importers) with the object of creating eye catching and informative careers information for use in recruitment at the dealer level.

In February this year, a follow up conference was held to ensure that all sides of the industry had bought in to the project. It was particularly felt that dealers would need to be encouraged to contribute to the BAGMA half of the equation. In the event, it was evident from the level of contributions so far that the dealers interest was there without the need for a further conference but it went ahead anyway.

One of the presentations was of research data commissioned to show the true cost of service. This further confirmed the IAgrE position that the value to customers of timely repairs and service could be substantially more than many realise. The Douglas Bomford Trust generously contributed towards the cost of this research carried out by Cranfield University – Silsoe.

Further industry players attended who had not been at the first event and the IAgrE position on recognising professionalism was re-iterated.

IAgrE's position in all this has been to emphasise the need for a quality loop, quality service from quality staff with a quality invoice to boot! Without decent pay scales, there will be difficulty recruiting into the sector.

One result of this raising of the profile of those working in the service sector is the appearance now of dealer service vans sign written with the technician's name and designatory letters to show that they are registered engineering technicians.

It is pleasing to see that the BAGMA £50k target has now been passed and that the AEA funds are rolling in.

It will now be incumbent on a working group from all sides of industry including BAGMA, AEA, LANTRA and others to ensure that the funds are managed and used effectively.

Raising the profile

LETTER TO THE PRESIDENT

ERRATUM

The Editor deeply regrets the incorrect style sheet 'flag' attached to 'The Letter to the President' in the Late Spring issue 59(2) and apologises unreservedly to Mr Armitage for any inconvenience or misunderstanding so caused.

Dear Dr Mitchell

Long Service Certificate

Let me express my heartfelt gratitude for issuing the Certificate in recognition of my long membership in your organisation. I was delighted to receive that and am proud to consider myself being included in this elite group. As you have requested by your letter dated 12th January 2004, I would like to provide the following summary of my experiences and achievements during this period of membership of this esteemed Institution.

I commenced my career as an apprentice at Brown & Co. Ltd who were the sole Agents for Massey Ferguson Tractors in Sri Lanka at that time. Thereafter, I joined the Gal Oya Valley Development Board as a Field Officer and was promoted to the position of an Engineering Assistant. Having been at this large development project in the Eastern part of our Country from 1951 to 1959, I ended up as the Superintendent in charge of the Agriculture and Land Development Division of it.

From 1959 to 1970, I served Brown & Co. Ltd again, having joined as the Senior Executive in charge of the Farm and Construction Machinery Division. Thereafter, I worked in the capacities of Chief Instructor of the School of Farm Mechanisation and Construction Machinery. I served this organisation in the

capacities of Works Engineer and Regional Manager of the Northern Division of the country. During my tenure of office at Brown's, I was instrumental in developing the cage wheels for tractors to be used in ploughing the wet paddy fields.

In 1971, I was appointed as the founder Chairman of Sri Lanka State Trading Tractor Corporation. During this period, this organisation became the main importer of all types of tractors, tractor spares and heavy earthmoving machinery through the existing distributors.

In 1978, I got the opportunity of working for an international organisation. Having being employed under a World Bank Technical Services Contract, I worked as the Senior Mechanical Engineer of the Lafia Agricultural Development Project in Plateau State Nigeria from 1978 to 1984. In 1984 I was promoted to the post of Chief Engineer of this Project. During this period, I had to co-ordinate the different Departments of the Engineering division, *i.e.*: the Rural Road Construction Division, Building Construction and Maintenance Division, Rural Water Supply Division and the Mechanical Services Division. I was in charge of numerous road construction programmes and introducing boreholes for rural water supply schemes. I worked in this capacity for a period of about 4 years. During this period, I got the opportunity to attend a study programme on Rehabilitation of Agricultural Machinery and Water Supply conducted under the sponsorship of the Commonwealth Development Corporation in Morocco and Mozambique.

In 1988, I was promoted as the Director of Engineering Services. I was entrusted with the co-ordination and overall supervision of several divisions of the project such as the Engineering Division, Rural Road Construction Division, Rural Water Supply Division, Building Construction and Maintenance Division of the Plateau State Agricultural Development Programme. I got the opportunity of getting actively involved in the preparation of the budget for these divisions. Preparation of all tenders, contracts and quantity surveys for civil and maintenance works, and international procurement in accordance with international loan and aid agency guidelines were many areas in which I had the opportunity of making a significant contribution. In July 1995, I retired from this assignment and came back to my country.

Since my return in July 1995, I have been an Agricultural Engineering Consultant for many a Sugar Plantation and for Manufacturing Industries in Sri Lanka. I worked as a Consultant to the country's biggest sugar manufacturing industry at Pelawatte as its Chief Engineering Consultant from 1995 to 2000. In November 2000, I was appointed as the Vice Chairman of Sri Lanka Central Transport Board and asked to be in charge of the engineering functions of the countries foremost State arm in the Transport Sector. I was successful in introducing rehabilitation of buses, the programme being carried throughout my tenure as the Vice Chairman successfully. I have retired from that post and am presently advising many entrepreneurs in setting up medium and small scale sugarcane plantations and manufacturing industries.

I once again would like to pay tribute to the Institution for the contribution to the success of my career. I wish this esteemed Institution the best in the future.

Yours sincerely

S A G Perera FIAgrE
115/10, Shockman Place,
Old Kottawa Road,
Mirihana,
Nugegoda
Sri Lanka

MEMBERSHIP CHANGES

Admissions

A warm welcome to the following new members

Associate

P Mudway (Wiltshire)
G E Vargas Buitrago (Cwmbran)

Student

R Hurley (Institute of Technology Tralee, Ireland)

Transfers

Congratulations to members achieving a further phase of their professional development

Fellow

R E Robinson (Wiltshire)

Associate Member

R T Borland (Bedford)
O Sharif (Essex)

Deaths

With great sadness, we record the deaths of the following members

J B McGrouther (Stirling)
J H W Wilder (Oxfordshire)

Engineering Council

Congratulations to the following members who have qualified as Chartered Engineers, Incorporated engineers, or Engineering Technicians, entitling them to use the designatory letters CEng, IEng or EngTech, respectively, after their name

Registrations

CEng

C F H Bishop (Cambridge)
D J Cooper (Staffordshire)
I J Loynes (Devon)

IEng

I M Scotford (Bedford)

EngTech

J R Speir (Nottinghamshire)
J Tuck (Dorset)

SPUD BRAIN OF BRITAIN 2004

What do agricultural engineers do when not thinking about engineering subjects? William Waddilove is proud to have earned the title of 'Spud Brain of Britain 2004'.

The Henry Doubleday Research Association, the countries largest organisation for organic gardeners, hosts an annual potato day during the first weekend of February. This is at Ryton Organic Gardens, their headquarters and demonstration garden near Coventry. (See www.hdra.org.uk).

This is the opportunity for gardeners and potato lovers to come and buy seed potatoes. The main focus is a marquee and, on tables, there are over a hundred varieties of potatoes. These range from first early varieties to main crop and from the very common to the very rare. Walk round, choose, help yourself and take home to grow.

Whilst walking around, he saw there was an empty chair on a stand and was talked into sitting in it. The sponsors Solanum Ltd, the suppliers of potatoes to Waitrose, were holding a competition of the 'Mastermind' type. In the questioning session, he got 7 out of 8 questions correct. Do you know who painted 'The Potato Eaters - Constable, Monet, Turner or Goya? (a)

That was the easy bit. In the afternoon, there was the final and here were another three contestants with the same score.

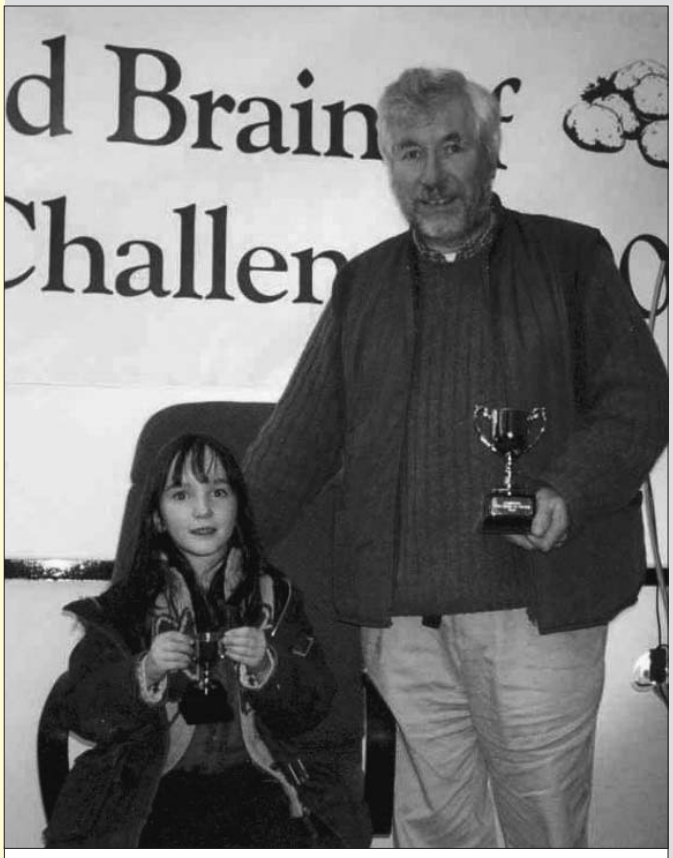
In the final round two contestants got four out of eight questions correct and two got five out of eight. As William said: 'I won the tie breaker for being less wrong that the other person'. So, how heavy was the world's heaviest single potato? (b)

Some questions could be guessed at such as: 'Which major British supermarket chain sells the widest range of potato varieties?' (c) Well, it would not be a rival supermarket would it? Other questions used a broad range of potato linked, general knowledge such as: 'Name the Scottish Island that gives its name to several varieties of potato?' (d)

The 'Junior Brain' gave correct answers to questions like: 'What have Paddington Bear and Peru got in common?' (e)

And the prize? A nice cup, a food hamper, a voucher to spend in the shop and an invitation to visit the Waitrose Farm near Cambridge and quite a few potatoes.

William hopes he will receive appropriate deference next time you meet him.



William Waddilove (now to be deferentially addressed as Senior Spud Brain) with the Junior Spud Brain (no relation) after receiving their awards

Answers

(a) Goya - one of the Dutch School of painting.
(b) The correct answer is 3.5 kg.
(c) Waitrose, the sponsor.
(d) The island of Arran, for example 'Arran Pilot' and 'Arran Victory'.
(e) They both come from Peru, although Paddington said from 'darkest Peru'.

ACADEMIC MEMBERS

Askham Bryan College
Askham Bryan
York
YO23 3FR

Barony College
Parkgate
Dumfries
DG1 3NE

Cranfield University
Silsoe
Bedford
MK45 4DT

Duchy College
Rosewarne
Camborne
Cornwall
TR14 0AB

Greenmount College of Agriculture and Horticulture
22 Greenmount Rd
County Antrim
BT41 4PU

Harper Adams University College
Newport
Shropshire
TF10 8NB

Institute of Technology, Tralee
Clash
Tralee
Co Kerry
Ireland

Myerscough College
Myerscough Hall
Bilsborrow
Preston
Lancashire
PR7 0RY

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Broxburn
West Lothian
EH52 6NH

Pencoed College
Pencoed
Bridgend
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Reaseheath College
Reaseheath
Nantwich
Cheshire
CW5 6DF

Royal Agricultural College
Cirencester
Gloucestershire
GL7 6JS

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

Sparsholt College
Sparsholt
Winchester
Hampshire
SO21 2NF

Wiltshire College - Lackham
Lacock
Chippenham
Wiltshire
SN15 2NY

COMMERCIAL MEMBERS

Autoguide Equipment Ltd
Stockley Road
Heddington
Calne
Wiltshire
SN11 0PS

Douglas Bomford Trust
Springhill House
Salters Lane
Lower Moor
Pershore
Worcestershire
WR10 2PE

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GL12 8NB

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Suttieside
Forfar
Angus
DD8 3EE

Shelbourne Reynolds
Shepherds Grove Industrial
Estate
Stanton
Bury St Edmunds
Suffolk
IP31 2AR

Silsoe Research Institute
Wrest Park
Silsoe
Bedford
MK45 4HS

White Horse Contractors Ltd
Lodge Hill
Abingdon
Oxfordshire
OX14 2JD

Willowdene Farm Training
Centre
Willowdene Farm
Chorley
Bridgnorth
Shropshire
WV16 6PP

NEWS OF MEMBERS

Keith Ward has left Guyana after three years working with the Guyana Sugar Corporation Inc as Estates Director and Agricultural Services Director. He has returned to the UK to await, hopefully, for another overseas posting.

Traffic congestion

Listeners were asked by the local BBC program 'Midlands today' to forward ideas to help reduce motorway congestion. Featured as the 'best suggestion received', the following contribution was introduced as 'from Dr **Dan Mitchell** an Agricultural Engineer' so hopefully Ag Engineers are seen as useful!

"Hi Nick. In response to your request for ideas to reduce congestion on the motorways, I am convinced that we could be motivated to modify our journey times. Why don't we use the overhead gantry signs on our motorways to tell us when peak congestion occurs ? We can then all adjust our journey times to avoid the peaks. Examples:

(1) PEAK CONGESTION
6.33 am to 9.06 am
(2) PEAK CONGESTION
4.32 pm to 7.06 pm

The figures can relate to yesterday's experience on the motorways from Trafficmasters data and change as we hopefully spread out our journey times.

"Alternatively it could be a simple graph or bar chart. We need to use the overhead signs to help us plan times to travel."

New members, start now

Geoff Lawson writes: "Very many thanks for the latest copy of *Landwards* [Late Spring, 2004] and I must say it was a very pleasant surprise to see my contribution appear as a double page spread. In fact, the piece has a slight valedictory air for me, though not obvious to anyone else, since I had already tendered my resignation from the dear old IAgrE w.e.f 1st January 2005, and this is no reflection on the Institution. Perhaps, I should have waited another 9 days since 9th Jan 2005 would have marked my 60 years (can't believe this but it is so) as a member.

"I have enjoyed working with you and is has been a delight to see *Landwards* evolve into something really readable under your Editorship."

Thanks for your many contributions to, and long support, for the IAgrE – I'll exercise editorial privilege and round it to 60 years in acknowledgement of your kind comment! You've set a high standard and long record for our new members to beat. The Editor encourages new contributors to submit articles of interest for publication in the Journal, as well as providing News of career development for Tony Chestney's section in Membership Matters.

BDW

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

AWARDS

JOHNSON NEW HOLLAND PRIZE FOR BEN DAYS AND TROPHY FOR CRANFIELD UNIVERSITY AT SILSOE

The Johnson New Holland Trophy has been awarded to Cranfield University for the prize-winning project by **Ben Days**. This 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. The trophy is held for a period of one year at the College where the project was supervised.

Trevor Jones (left) of CNH UK Ltd, the sponsors of the young engineer innovation award, presenting the Johnson New Holland Trophy and Prize to Ben Days; the trophy is held for a period of one year by the College submitting the prize-winning project, whilst the student receives the prize.

Ben is a mature Agricultural Engineering B.Eng. graduate, with extensive experience within the horticultural and agricultural industries and with practical knowledge and qualifications in farm machinery operation, servicing and repair. He started work as a commercial horticulturist on the family's fruit farm in 1975, later becoming responsible for extending the business into field vegetable production and plant raising. He became a partner in the business in 1984 and sole proprietor in 1989, later diversifying the enterprise to include some agricultural contracting and marine engineering (principally servicing and repairing diesel powered narrowboats). From 1997, the business was adapted to co-exist with college and university studies.

The research project resulted from a number of reported incidents where the top link bracket of the tractor was damaged while transporting a three-point linkage mounted hedge-cutter. The mounting of these machines differs from the conventional three-point linkage systems in that the mass of the machine is placed on the top-link bracket rather than on the lower link arms. Instrumented linkage components were used to measure the forces that occurred in two alternative hedge-cutter mounting systems when the tractor and machine traversed a repeatable track. Physical data was gathered on the system to enable a simulation model of the tractor and hedge-cutter to be produced, although modelling difficulties prevented any useful results being obtained. However, the experimental results suggest a relationship between speed and the load on the top-link bracket. The magnitude of this force was reduced by the incorporation of a spring damper suspension system into the attachment bracket.

The project was supervised by Dr Peter Crossley, and Ben Day completed his studies with 1st Class Honours.

IAGRE WEST MIDLANDS BRANCH AWARD

Ian Wormington (right) winner of the local IAgrE Branch award for the design and construction of his tractor wheel handler with Bob Voss Chairman of West Midlands Branch and Peter Walley course tutor (left); the machine is behind them; the students attending the Warwickshire College 16 week Maintenance and Repair of Agricultural Machinery course were judged by Dr Dan Mitchell as IAgrE President and further details on the course are available from Peter Walley on 01926 318096

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IMPROVED SOIL MANAGEMENT TO REDUCE RUNOFF AND FLOOD FLOWS

Marc Dresser and Richard Godwin

BIO NOTE

Professor Richard Godwin, Hon. FIAgrE is Head of Engineering Group and Director of Postgraduate Student Research at the National Soil Resources Institute, Cranfield University, Silsoe, Bedfordshire, MK45 4DT. Tel: +44 (0)1525 863052 E-mail: r.j.godwin@cranfield.ac.uk

Dr Marc Dresser, AMIAgrE, is Research Officer, Engineering Group at the National Soil Resources Institute at Silsoe. Tel: +44 (0)1525 863103 E-mail: m.dresser@cranfield.ac.uk

The authors would like to thank Humphery Temperly, Chairman of the Parrett Catchment Project and Louise Webb from the Environment Agency, for their assistance and support.

Correspondence and requests for materials should be addressed to Dr Marc Dresser, Engineering Group, National Soil Resources Institute, Cranfield University at Silsoe, Silsoe, Bedfordshire, MK45 4DT.

This article reports part of a theoretical study to consider the effects of improved soil management in the upper reaches of a catchment, to reduce runoff and downstream flooding. Enhanced soil management techniques which include residue and wheel traffic management, maintain higher infiltration rates and therefore reduce runoff and peak flood flows. The effects of this are modelled using the United States Department of Agriculture Soil Conservation Service, now National Resources and Conservation Service (USDA/SCS), Runoff curve numbers for part of the Parrett catchment above Chiselborough, Somerset. Using this simple model, the estimated runoff values for the current management practices are close to those recorded. The effects of improved vegetation and soil management are estimated to reduce peak flood flows by 20%.

The study (Godwin & Dresser, 2003) reviewed the available literature to determine if there was evidence to support the hypothesis that:

> 'Water retention capacity of soils could be enhanced by a variety of affordable measures that would make a significant difference to peak flood flows, whilst contributing to improving water quality though reduction in siltation and diffuse pollution and enhancing nature conservation and fisheries interests.'

The general case was considered, however the main focus was based upon the Parrett catchment, where rainfall intensities of 4 mm h^{-1} lasting for an eight hour period (a total of 32 mm) in Bridgwater in December 1999 were taken as an example. The other rainfall during the same day totalled 32 mm; this was in excess of that expected in a one day, one in ten year return period storm and was part of a five day rainfall event, of 62 mm, with a one in two year return period. A similar five day event followed almost immediately. Due to the effect of global warming on total rainfall, it is predicted that there could be an increase of 13 - 22% in the United Kingdom, through either increased intensity or duration (Environment Agency, 2002).

Fig. 1 Runoff problems caused by poor infiltration

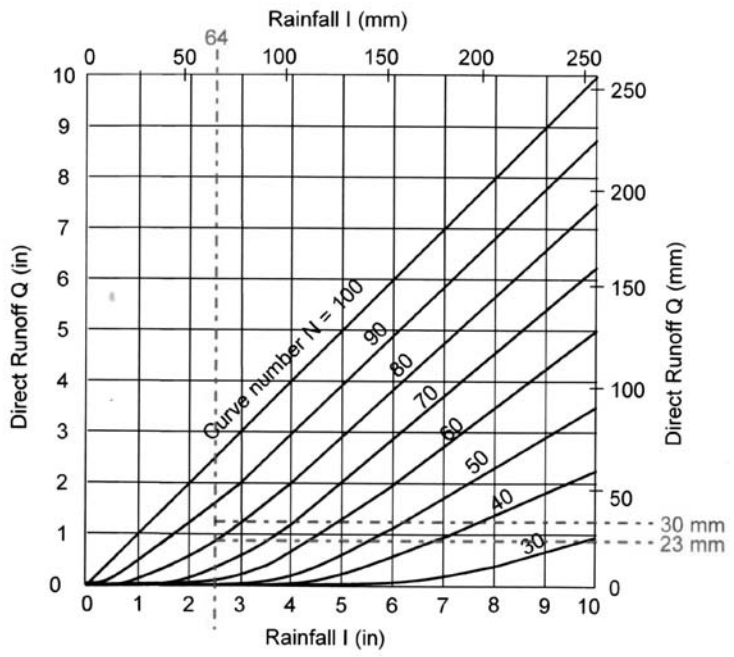

Fig. 2 Relationship between rainfall and runoff depth by curve numbers (USDA/SCS,1972)

There is ample evidence from many sources that the infiltration rates of soils in good structural condition are well in excess of the above rainfall intensities and that the runoff would be negligible. Comparison of rainfall and runoff data gathered between January 1997 and December 2000, however, indicate that runoff (Fig. 1) equal to or greater than the rainfall has been recorded at Chiselborough, Somerset, during recent winter periods. This evidence is in agreement with work by Palmer (2002), who demonstrated that extensive soil degradation was found in 64% and 46% of the sites examined by the National Soil Resources Institute (NSRI) in the Tone and Parrett catchments, respectively. He estimated that this could cause an increase in runoff by up to 25%. Similar increases were also shown by Hollis (2003) when reviewing the standard percentage runoff using the Hydrology of Soil Types (HOST) system which has been developed (Boorman *et al.,* 1995). Parallel work by the NSRI in the Yorkshire Ouse, Severn, Bourne and Uck catchments also report significant problems of soil degradation (Holman *et al.*, 2002 and increases in runoff between 0.5 and 12% with potentially greater increases in the Uck.

The soil conditions demonstrating the greatest potential for increased runoff would be those that suffered from significant surface capping (crusting) and compaction, the former having infiltration values of 5 mm h^{-1} (Table 1) which are close to the peak rainfall intensity reported here. The results of previous work (Davies *et al.,* 1973) showed that compaction caused by wheels significantly reduced infiltration to 10% of that of non-wheeled soil and that the infiltration rate was zero at 30% wheel slip. These results are supported by the work of Young and Voorhees (1982), who found the infiltration rate in a compacted wheel mark reduced to zero after 100 minutes of rainfall. Field studies with simulated rainfall of 75 mm h^{-1} (Edwards *et al., 1984)* demonstrated that all rain ran off the surface of compacted sandy loam soils at 4° slope. All the studies clearly demonstrate how degradation from compaction can reduce infiltration. Edwards *et al.*, however, also demonstrated that increasing the roughness of the soil surface by mouldboard ploughing would provide temporary storage for depths of water of approximately 16 mm on flat surfaces, and this would reduce to 10 mm for slopes of 10 degrees.

Care has to be taken when managing the surface compaction caused by tractors and heavy machinery which, for convenience, generally run up and down the field slope. Simply loosening the soil can increase the infiltration rate but could be the cause of erosion in the longer term. Significant reductions in runoff were obtained by Clements and Donaldson (2001) when loosening the compaction caused by maize harvesting at North Wyke, Devon. Similar studies were less successful at Long Ashton, Somerset, this being attributed to untimely tillage operations, resulting in smearing and compaction of the wet soil which caused the formation of channels. This can be remedied by the effective choice of soil loosening equipment as recommended by Spoor and Godwin (1981). It is

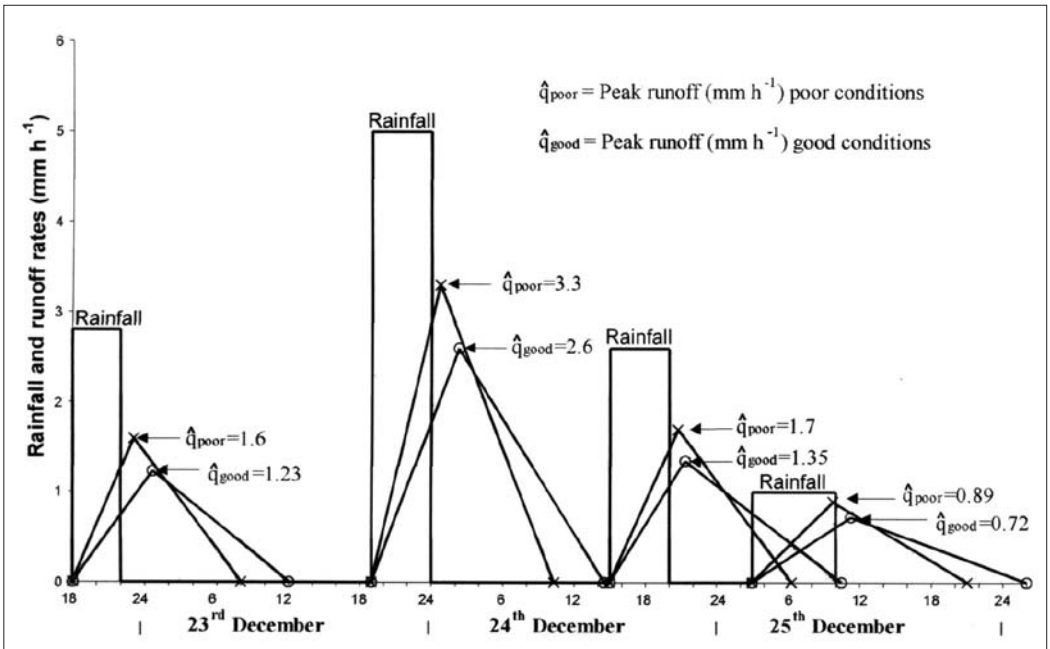

Fig. 3 Effect of improving soil management using simple runoff hydrographs

Table 1 Final infiltration rates (post Holtan & Kirkpatrick,1950)

Soil cover	Final infiltration rate, mm h^{-1}
Old permanent pasture	60
4 -8 year old pasture	36
3 - 4 year old pasture, lightly grazed	30
Permanent pasture, moderately grazed	24
Hay	17
Permanent pasture, heavily grazed	15
Strip cropped, mixed cover	11
Arable	10
Bare soil, cultivated	9
Bare soil, crusted	5

necessary, therefore, to manage both the wheelings and the water to meet the crop and soil conditions. The use of wider section tyres will reduce contact pressures, the depth of wheel ruts and increase trafficability. The absolute effect of the compaction resulting from tyres with lower inflation pressures on infiltration rate is not known. Infiltration rate data following the passage of tracked vehicles would suggest, however, that it would be considerably higher than conventional tyres (Young & Voorhees, 1982). The effect of reduced compaction may decrease runoff either individually or in conjunction with soil loosening operations. The exact mechanism needs to be researched to meet the soil, slope and crop conditions. In all cases there must be adequate under drainage, either through deep percolation or interception by a subsurface drainage system.

Grass and woodland conditions have infiltration rates in excess of 60 mm h^{-1}, as do soils with a high level of surface mulch which protects the soil from capping. Similar benefits should be obtained from the surface litter produced by perennial crops such as *Miscanthus* and short rotation coppice. For annual arable crops this can be influenced by the residue management strategy of the tillage system. Tullberg (1996) reported that a combination of controlled traffic and zero tillage practices reduced runoff by 48%. This is supported by Leopold and Maddock (1954) who state that: "Interestingly enough, improved management, including crop rotations, the actual sequence of planting various crops, the use of mulches and other practices which tend to improve the tilth of the soil, is more effective in reducing storm runoff than the more readily observed practices such as terracing, contour cultivation, and strip cropping."

Soil surface conditions often appear to be saturated, in many cases however, this does not represent a saturated profile but that of a perched water table. This is a condition where the compact surface produces conditions of apparent water logging but the soil moisture content at depth is no greater than field capacity. Destroying the compacted surface layer that causes the problem can make approximately 10% of the total soil volume available for temporary water storage (Castle *et al.*, 1984). This was illustrated by recent soil moisture measurements in the Uck catchment which had saturated conditions at the soil surface and drier conditions at depth. Similar principles apply when either ensuring that soil is well drained or when the water table is lowered. Lowering the water table by 0.5 m prior to the onset of a significant rainfall event would provide storage for 50 mm of water. This would store more water than a one day rainfall event for a one in ten return period or 80% of a five day rainfall event with a return period of one in two years, for the Parrett catchment. This demonstrates the importance of good field drainage in providing the necessary temporary buffer storage by allowing the discharge of antecedent rainfall. If this were not effective, further rain would simply runoff from the surface of a saturated catchment. Schwab *et al.* (1993) report that improved drainage reduced peak flows on flat watersheds in Ohio by 7% and the number of floods by 46%.

Good drainage of grassland areas, via lowering the water table, can provide both the storage referred to above and an increase in the strength of the soil, thus reducing the compaction damage by the feet of animals. Controlling the grazing location of animals to areas of the field higher up the field slope can allow the runoff to infiltrate into the non-compacted areas of the field lower down the slope as conducted by farmers in Pontbren (Baines, 2003).

Controlled release of the water from field drainage systems (Skaggs, 2003), ditches and from detention ponds, at discharge rates less than the field drainage rate, can reduce the peak of the runoff hydrograph (Schwab *et al.*, 1993). The use of modern instrumentation, control and communication technology should enable this effect to be 'intelligently' regulated across catchments. This will permit antecedent rainfall to be released prior to a major event and the discharge from that event to be suitably retarded.

Schwab *et al.* (1993) state that: "because downstream floods on major streams are much more spectacular and damage is more evident, floods in upstream areas are often neglected".

Whilst there are many references to the effect of poor structural conditions influencing runoff, there is little data quantifying the effects at catchment level. Therefore, in order to estimate the effects of soil degradation on runoff for a small catchment, a series of predictive models were used. Each of these demonstrated that improving the soil management could reduce runoff. The most applicable of these is the method developed by the USDA/SCS (1972) as it was specifically designed by soil and water engineers to enable different soil management practices to be evaluated. Runoff curve numbers (N) ranging from 1 to 100 are subjectively selected from tables, reflecting the current differences in soil type, management, cropping and topography. Subsequently the chosen N curve number can be adjusted to take into account antecedent rainfall conditions. The effect of this is illustrated in Fig. 2, where 62 mm of rainfall would, under relatively poor management (with N = 85), yield 30 mm of runoff and improving the soil management (N = 80) would reduce the runoff by 23% to 23 mm.

The SCS Method was also used by Godwin and Dresser (2003) to estimate the effect of improved soil management on a 75 km^2 catchment based upon the topography at Chiselborough. This predicted a 1.5 hour delay in time to peak runoff and a 20% reduction in peak runoff for a number of storms in a series of events in December 1999, as shown in Fig. 3. The rainfall was assumed to be of constant intensity for the duration of each of the four storms shown and the runoff hydrographs, calculated from the SCS method, shown as simple triangles from which the delay in time to peak and maximum runoff rates can be clearly seen.

Summary

Suitable management in upper catchments should ensure that the soils:

- are not saturated at the time of the peak rainfall;

- have the capacity to accept greater rates of infiltration by improved field traffic management of both vehicles and animals, thus minimising surface caps and destroying compaction;
- provide sufficient surface depressional storage to allow time for infiltration; and
- integrate the above with further water retention measures.

These softer engineering practices should then enhance the environment and reduce flooding.

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AGRICULTURAL PESTICIDES

Groundwater authorisation charges

The Environment Agency has written to farmers holding a groundwater authorisation to explain the reintroduction of the annual subsistence charges. The Environment Agency's advice comes as the Department for the Environment, Food and Rural Affairs (Defra) ends its 4-year waiver for the annual charges for these authorisations for farmers. The charges have been reintroduced from April 1 2004 following the expiry of the temporary waiver introduced by Government in 1999.

The Environment Agency is offering the following advice to farmers disposing of sheep dip or other pesticides.

- Groundwater Authorisation is required for any disposal into or onto land of used sheep dip or pesticides. For most farms this will mean only one Authorisation, but larger farms with several disposal sites may require several Groundwater Authorisations.
- For the majority of farms the annual subsistence charge for the 2004/5 financial year will be £129 for each Authorisation held.
- Under the terms of the recent CAP review, Single Farm Payments (SFP) made under the CAP will be linked to 'cross compliance', which will include compliance with the Groundwater Regulations. Holding an appropriate authorisation could therefore become a factor in relation to the SFP.

The new Landfill Regulations will prevent mobile sheep dipping or showering contractors taking used sheep dip back onto their own land for disposal unless they can show they have sufficient land to dispose of all the dip received. The Environment Agency expects that in many cases they will not be able to do so and so will no longer be able to dispose of dip away from the farm where the dipping or showering has taken place.

Farmers using mobile contractors who can no longer take used dip off site will need to make alternative arrangements. This may mean that farmers will need to apply for an Authorisation for a suitable area of land on their own farm for the disposal of used dip.

Farmers who hold Authorisations but who no longer dispose of pesticides or used dip as a result of changes in their business are asked to contact the Environment Agency to request that their Authorisation is revoked.

MORE INFORMATION

Environment Agency. Tel: +44 (0)8459 333 111. Forms to revoke Authorisations must be received by the Agency by 30 June 2004, to avoid any charge for the 2004/5 financial year.

LEVELLING

Dual beam technology keeps everything level

Mans International is pleased to announce the new LMH600 auto self-levelling rotary laser.

This compact easy to use system, uses dual beam laser technology to offer precise horizontal levelling and vertical plumb lines for any ground survey, building and construction project. It is lightweight and designed for single operator use, both inside and outside.

Dual beam laser technology in the LMH600 provides a continuous levelling line over any surface. Automatic self-levelling achieves true horizontal and vertical lines, even if the unit itself is placed on an uneven surface. If accidentally knocked during use, an 'Anti-Drift system' inside cuts off the beam and warns the operator. When used with a hand-held Laser Detector, the LMH600 can be used outdoors up to a range of 610 m. The detector itself provides a continuous audible signal after locking precisely onto the laser beam.

LMH600 self-levelling rotary laser; offers horizontal and vertical precision for ground survey, building and construction projects

This system is designed to replace traditional manual levelling screws or bubbles, with a simple push button operation that saves time and effort. Levelling applications fall into one of two categories; internal or exterior.

Internal uses include:

- suspended ceiling installation;
- floor and wall tile laying; and
- cabinet and shelving installation.
- Exterior uses include:
- decks and patio laying;
- ground work survey;
- pool installation;
- grading and excavating;
- batter boards and foundations;
- concrete setting boards;
- marking elevation;
- septic work;
- paving roads; and
- checking trench depth.

The LMH600 is part of the LaserMark® range manufactured by CST/Berger in the United States of America. The products are being distributed in the UK by Mans International, a new company that combines years of industry expertise with competitively priced solutions for projects big and small.

CONTACT

Contact: Mike Napper, Mans International Ltd, 19 Harris Road, Portemarsh Industrial Estate, Calne, Wiltshire. Tel: +44 (0)1249 816181 Fax: +44 (0)1249 816186 E-mail: sales@mansint.com Website: www.mansint.com

CROP SPRAYERS

Lechler's twin nozzle system provides increased deposition

Sprayer technology specialist Lechler, based in Sheffield, has increased its range of crop sprayer nozzle systems with the launch of the 'Twin Spray Cap'. This is a dual nozzle system for use in a wide variety of applications, including potato blight control, T3 applications and ear wash treatments.

Combining the advantages of low drift injector nozzles in the firm's IDK/ID range with the efficiency of the twin flat spray technique. The Lechler new twin spray cap is said to result in enhanced chemical deposition.

The cap is used to carry pairs of nozzles - one angled 30° forward, the other angled 30° backwards - to increase penetration into the crop canopy. In addition to better active ingredient use for crop and leaf mould treatments, says the firm, the 'Twin Spray Cap' system can also offer an increased number of spraying days when equipped with the Company's low drift nozzles.

Based on the bayonet fixing principle, Lechler adds that the cap is compatible with all 'Multi-jet' nozzle holders, plus adapters for Hardi, Rau and Amazone fixings. The price of the cap and a full listing of Lerap approved Lechler nozzles can be found on their website.

CONTACT

Contact Richard Riley, General Manager of Agriculture, Lechler Ltd, 1 Fell Street, Newhall, Sheffield, S9 2TP. Tel: +44 (0)1142 493556 Fax: +44(0)1142 492020 E-mail: info@lechler.com Website: www.lechler-agri.com

NUTRIENT MANAGEMENT

Terra Gator - Nutrient Management System

Terra Gator nutrient management system in action

The application of manure to land has reached a new level of sophistication. This technology offers proof as to who, what, when, where, and how much manure was applied to a field. Ag-Chem call this technology the Nutrient Management System (NMS).

The Ag-Chem NMS program is for self-propelled agricultural machines applying dry and liquid manure. A full range of spreaders are available for mounting on the Terra Gator so that the following materials can be applied:

- solid fertilizers;
- liquid fertilizers;
- sludge;
- lime; and
- compost.

NMS, via adjustment of bed chain speed and dosing gate aperture, is able regulate the rate regardless of forward speed. In addition, the Terra Gator NMS can be equipped with an electronic weighing system to indicate the spreading rate per hectare.

Terra Gator NMS is also available with Ag Chem liquid manure systems. A positive displacement pump is most commonly used for spreading or injecting liquid manure on arable land and grassland. The application rate is controlled by computer, according to pre-set rate and is independent of driving speed. The Terra Gator NMS can be fitted with various tank sizes, starting from 10 m^3, depending on individual requirements. An arable land injector, grassland injector, drop hose divider or spray boom can be fitted to the machine. You can also have a choice between an 'Optimal' and 'Automatic' model.

Of course, the Falcon System Controller is an option on the Terra Gator NMS. Through computer technology the as-applied histories can be downloaded to desktop computers for further processing or record keeping. This system was created by combining European and American machinery, software and computer technology. Essentially, satellite geographical information system (SGIS) software will match the nutrient indices of the soil, with the crop requirements and produce an application map matching these factors to nutrient content of the manure.

No application zones, slopes, soil types and buffer zones can also be taken into consideration. This application map is then put into the Terra-Gator NMS self-propelled application machine on board computer and together with the global positioning system (GPS) straight or variable rate application can begin, according to the application map for the manure. In addition, as the machine moves through the field it records the 'as applied' information as proof of the application rates, location, timing, *etc.*

Ag-Chem can also offer tool bars to ensure manure is injected into the soil every 17.5 - 22.5 cm, across the width, for better crop uptake.

We believe that the nutrients in manure are valuable and applied according to the nutrient needs of the crop, can help our environment and save costly chemical fertilizer applications for farmers.

Terra Gator NMS - features and benefits

- Positive displacement - rotary lobe pump
- Pump filtering system to prevent contaminants from damaging pump
- Loading arm - never leave cab to refill
- Multiple tool bars - even alfalfa, pasture or cereal grains
- Even distribution across tool bar - every 15 - 22.5 cm
- Injects manure on the go - saves nutrients, prevents odour and runoff
- Controller creates field history maps for further analysis or for record keeping requirements
- Terra Gator is *the* technology to make your business more productive and profitable
- Investing in latest technology for your business sends a strong message to your customers that you can provide them with the best opportunity for profitability
- Distance your business from all competition

CONTACT

Ralf Kroonen, AG-Chem Europe B.V., Horsterweg 66a - 5971 NG Grubbenvorst, The Netherlands. Tel: +31 (0)77 327 8424 Fax: +31 (0)77 327 0202 E-mail: RalfKroonen@AgChem.nl Website: www.agchemeurope.com

MONITORING SYSTEMS

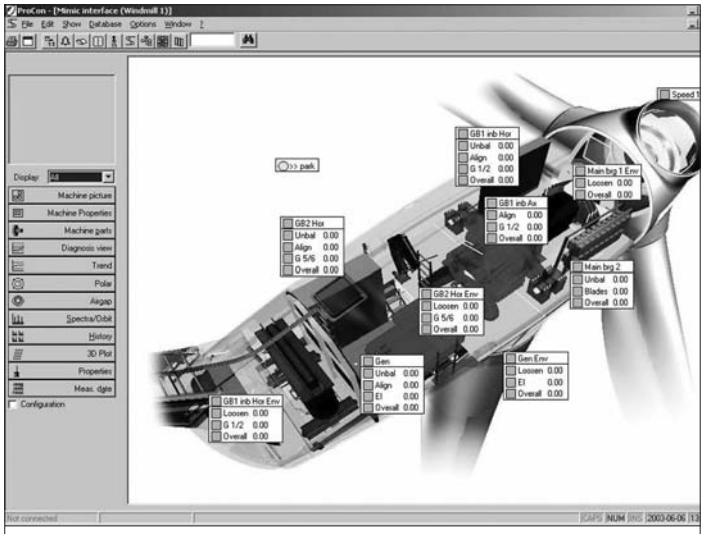
Allianz certification gained by SKF WindCon system

SKF has gained the certification of the Allianz Zentrum für Technik (AZT - Technological Centre of the German Allianz insurance group) for its SKF WindCon System, a condition monitoring system for wind energy turbines. This means that the SKF WindCon System is now officially acknowledged by Allianz Versicherungs-AG, a major German insurance company with activities in the wind energy sector.

Although developed to operate in the extremely harsh conditions of offshore wind farms, SKF WindCon operates equally well in onshore applications.

The certified SKF WindCon system helps to extend the maintenance intervals, by continually monitoring the operating condition of the key components of the wind turbine. This allows potential maintenance needs to be identified early and incorporated in scheduled maintenance stops. As a consequence, the time between maintenance intervals increases and costly emergency stops can be significantly reduced. Together these benefits result in less downtime, which increases the performance and cost efficiency of the turbine.

Using the SKF WindCon system a company operating a wind energy turbine may deviate from the German revision stipulations that are normally required. The normal revision clause binds wind energy operators to exchange all bearings and gear unit wheels no later than every four years and to have the rotor blades checked and reworked, if necessary. This is a very costly exercise, especially for offshore application where weather conditions can complicate the access and repair activities.



SKF WindCon System is a condition monitoring system for wind energy turbines; continually monitors the operating conditions of key components of the wind turbine

CONTACT

Colin Roberts, SKF Group Technical Press, Aktiebolaget SKF, SE-415 50 Göteborg, Sweden. Tel: +31 3060 75608 E-mail: ColinRoberts@skf.com Website: www.skf.com

FINGERTIP TOOLS

The 'Spin-A-Ratchet' from Agriemach - fingertip power to pre-tighten nuts and bolts

More spin than a politician

'Spin-A-Ratchet' is another ingenious tool brought to you by Agriemach which enables the operator to use his fingertips to pre-tighten nuts and bolts.

All that's needed is a push of the 'Spin-A-Ratchet' into the socket and a spin of the nut or bolt to the tighten position, then engage the ratchet and tighten the fastener.

Using 'Spin-A-Ratchet' cuts labour time in ratcheting work dramatically and will appeal to any technician or workshop with large volumes of ratcheting work to contend with.

Available in a 3 piece set of 6 mm, 9 mm and 12 mm square drive sizes, 'Spin-A-Ratchet' will pay for itself in labour saving costs within hours.

Priced at only £26.44 (inclusive of VAT but excluding post and packing), it is a must in every busy workshop, engine reconditioning or assembly plant.

CONTACT

To order your 'Spin-A-Ratchet' or for more information, visit Agriemach's on-line shop at www.agriemach.com Agriemach Ltd, Wayfarers, Domewood, Copthorne, West Sussex, RH10 3HD. Tel: +44 (0)1342 713743 Fax: +44 (0)1342 719181 E-mail: info@agriemach.com Website: www.agriemach.com and www.agriemach.co.uk

FORAGE HARVESTER

New Holland forager better than ever

Crop processing efficiency, ease of use and operator comfort have all been addressed in upgrades available on New Holland's FX Series of self-propelled forage harvesters for the 2004 season.

The major improvement this year is the introduction of CropPro™ Plus, a newly designed crop processor system that allows the crop processing unit to remain in place when harvesting grass, a major time saver at what can be a busy time of year.

The FX's CropPro™ Plus system has been tested and perfected over the past two seasons and now offers its best performance ever. The unit, which is available on the FX40, 50 and 60, sits just behind the cutter head and offers optimum treatment of maize and wholecrop.

New Holland harvester specialist Rob Jones suggests that typically users would not fit the processor until first cut silage is over and they are about to start work in wholecrop cereals.

"They can then leave the unit in place during second or third cut silage allowing the harvester to swap easily between grass and other crops as necessary," he says. "Once it has tackled wholecrop maize at the end of the season, the unit can be taken out and serviced ready for use the following season."

Swapping the unit between grass and wholecrop is simply a case of removing the drive belt between the upper and lower processor rollers and then, from the cab, hydraulically separating the top and bottom rollers, a process that automatically introduces a transition plate over the lower roller to smooth the path of the crop. The 20 cm gap that is left is more than adequate for the grass crop to pass through. The top roller remains driven at all times but remains out of the grass flow.

The CropPro™ Plus also features upgraded drivebelts, which have been doubled in width to reduce slippage and to more accurately maintain the speed differential between the two rollers in the crop processor.

The rollers, which feature a saw-tooth profile, can be easily swapped between a 12% speed differential for maize crops and a 63% speed differential for wholecrop cereals. This speed differential is the key to producing material ideally suited for ensiling. In alkalage production especially, it is important that every kernel is cracked to get the most from the process and New Holland's CropPro™ Plus has proved more than equal to the task.

The drive for the unit comes directly from the cutter head, which feeds power to the left hand side of the top roller. Two pulley combinations and a second drive belt are used to pick up the drive from the right hand side of the top roller and transmit power to the bottom roller, providing the appropriate roller speed differential in the process.

A standard CropPro™ maize unit remains available for FX buyers who do not need the CropPro™ Plus' wholecrop processing performance or the ability to switch easily between grass and maize crops. It has been upgraded for the 2004 season with an improved belt drive system.

Following feedback from users, all new FX40, 50 and 60 models coming off the production line are now fitted with additional soundproofing material below the cab floor. By reducing cab noise by up to 4 dB(A) in grass crops, where the noisiest working conditions are encountered, this upgrade, which is also available on the FX30, reduces the whine of the cutterbar, improving operator comfort.

Available also for the first time this season is a choice of abrasive resistant steel wear components for use in areas where rapid erosion of wear parts is a problem.

Replacement hardened wear parts for the spout, top feed roller and blower can now be sourced from New Holland dealers. In extremely abrasive conditions, where sandy soils can lead to accelerated wear, these new parts can last as much as 10 times longer than the standard equipment

New Holland's FX-50 forager is available with the CropProTM Plus system installed which offers optimum treatment of maize and wholecrop

CONTACT

Contact John Hewett, CNH.
Tel: +44 (0)1268 292183
E-mail:
john.hewett@cnh.com
Website: www.newholland.com

McCormick dealers unveil new 'power and comfort' combine range

- Caterpillar 'electronic' engines increase power by up to 30 kW
- Bigger grain tanks and faster unloading augers.
- Self-levelling models with four-wheel drive as standard.
- Commodore cab provides improved driver accommodation.

One of the new McCormick M series combines at work. This model, the M304 with five straw walkers, is powered by a 206 kW Caterpillar engine and can have an automatic self-levelling system with four-wheel drive.

A new range of straw walker combine harvesters, introduced by McCormick dealers, give farmers and contractors a wider choice of features and specification levels, with increased performance from 'all new' engines.

"The McCormick M series combines are down to earth machines for cost conscious growers and contractors," says Graham Thompson, McCormick's harvest products specialist." They offer performance and specifications to suit farmers in Wales or South West England who need a compact harvester to those with a big acreage in the eastern counties."

The main structure, made with 80% galvanised steel components, driveline and internal mechanisms of the M series combine harvesters are similar to those of the current LXE versions, built by McCormick's sister company, Laverda. However, the higher specification M series combine harvesters have more powerful engines and bigger grain tanks (up to 9000 *l*) with faster unloading augers rated at 105 *l*/s.

A six cylinder engine, from the new Iveco NEF range, powers the M303 five walker model which has an 8200 *l* grain tank and works with cutting tables up to 6 m wide. The Caterpillar 3126B engine powers other models, using advanced injector pump electronic fuel injection to give responsive but also economical power and torque delivery.

At 206 kW, the McCormick M304 has a 19 kW advantage over the equivalent LXE model as well as a 2000 *l* bigger grain tank. Two six walker combines head the range, the McCormick M305 at 206 kW and the M306 with 229 kW.

The M305 has an 8200 *l* grain tank while the M306 gets the full size 9000 *l* version; both combines can work with cutting tables up to 6.6 m wide.

For operators faced with hilly ground, the M304 LS and M306 LS will be welcome additions to the McCormick range as they work upright across slopes up to 20% and when working up and down slopes of 8% - or any combination of the two. Four-wheel drive is standard for maximum stability and traction at all times.

"It doesn't take much of a slope to affect the performance of a non-levelling combine," notes Graham Thompson. "The self levelling system keeps grain losses to a minimum while allowing the combine to press on at peak output."

New bodywork, featuring large composite panels, provides easier servicing and maintenance access, while the curved windscreen and large side glass, of the Commodore's spacious cab, provide clear visibility. There is also a full width window in the back wall of the cab that allows the driver to keep an eye on the contents of the grain tank.

More of the combine's functions are power operated than on the LXE models, with cutterbar controls arranged on the hydrostatic lever mounted on the driver's seat. A settings and performance monitor positioned at driver's eye level on the right-hand cab pillar covers all essential systems.

Operating features include 'Terra Control' which automatically regulates cutting height, and 'Ground Self Alignment' - an active system that keeps the cutting table parallel to the ground as it passes over undulations.

The combines also have a heavy duty 600 mm diameter threshing drum which is followed by the 'Multi Crop Separator', a cylinder that separates grain by centrifugal force and which, uniquely, can be powered out of position when operators want to preserve straw condition for stock bedding, especially when harvest conditions are very dry.

CONTACT

Contact Vikky Morley, Communications Manager, McCormick Tractors Inernational Ltd, Wheatley Hall Road, Doncaster, South Yorkshire, DN2 4PG. Tel: +44 (0)1302 733393 Fax: +44(0) 1302 762620 E-mail: vikky.morley@mccormick-intl.com Website: www.mccormick-intl.com

VALVES

Butterfly valves - high quality, reliable and economical

Tyco Valves & Controls has introduced a series of new, high quality, reliable and economical butterfly valves for general purpose industrial applications.

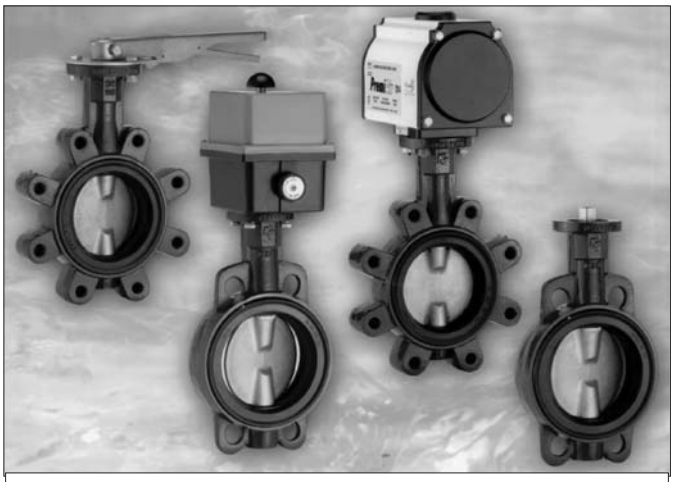
The cost effective PremiSeal Fig. 38 range is designed for use across a range of industrial applications, providing a wafer thin disc for excellent flow characteristics and head loss. Available in a wafer or lugged configuration, PremiSeal provides bubble-tight shut-off control in both directions and is also suitable for end of line duties up to 16 bar.

Available with either a parallel flat or square shaft drive, PremiSeal is ideally suited for use with the range of Tyco PremiAir pneumatic actuators or TVC electric actuators but is also available in a manually operated design.

The standard valve configuration consists of a ductile iron body and a stainless disc. The valve seat is available in either vulcanised ethylene propylene diene monomer (EPDM) or nitrile rubber.

The PremiSeal Fig. 38 is rated for use with pressures to 16 bar, temperatures from -40°C to +120°C and is available in sizes from 20 mm - 300 mm. All PremiSeal Fig. 38 valves conform to PED 97/23/EC and ATEX directive 9419/EC and are manufactured in an ISO-9001:2000 quality audited facility.

PremiSeal is available through 'Tyco Valves & Controls', the leading name for manufacture and supply of valves, actuators and controls.



TVC has introduced a series of high quality reliable and economical butterfly valves for general purpose industrial applications

CONTACT

Bob Harrison, Tyco Valves & Controls Distribution (UK) Ltd, Crosby Road, Market Harborough, Leicestershire, LE16 9EE Tel: +44 (0)1858 467281 Fax: +44 (0)1858 434728 E-mail: sales_uk@tycovalves.com Website: www.tycovalves.com

RECHARGEABLE VEHICLES

Notcutts take delivery of more electric utility vehicles

Notcutts, the family owned firm of nurseries based at Woodbridge near Ipswich, has taken delivery of a further 15 E-Z-GO MPT utility vehicles from Ransomes Jacobsen Ltd.

These latest electric powered vehicles, like their predecessors, will be used for towing trailers loaded with plants, shrubs and trees around the nursery grounds, as well as being used for general maintenance duties.

SEELB staff at the handover of the new utility machines

Production Director, Paul Masters commented, "We took delivery of an initial batch of 15 electric vehicles last year to replace our ageing fleet of compact tractors. They have proved so successful that we have ordered 15 more. The staff find them much quieter, easier to operate and they provide a more comfortable ride which minimises fatigue. They also dovetail into our environmental policy ensuring that we proactively minimise our effect on the local environment through best practice, wherever possible.

"These latest vehicles are the updated versions with a redesigned and strengthened frame, a wider front axle for improved ride and handling and a new corrosion protection system. They have 48 V electric motors with eight 6 V batteries providing the capacity to haul over 450 kg. We routinely get 7 - 8 hours of productive work between recharging and have achieved over 10 hours during peak demand in late spring and early summer."

CONTACT

Contact Helen Windsor, PR Assistant, Command Publicity, 1 The Matchyns, Rivenhall End, Witham, Essex, CM8 3HA. Tel: +44 (0)1376 535400

Her Majesty The Queen grants SocEnv Petition for Charter

The President and Council of IAgrE are pleased to announce that at the Meeting of the Privy Council on 6th May, Her Majesty The Queen granted The Society for the Environment (SocEnv) a Royal Charter. It is hoped that the formal sealed Charter will be in place by the time of the SocEnv AGM on July 1st 2004.

For IAgrE and the other founding constituent bodies of SocEnv, this is a momentous step and is the culmination of fours years of hard work by the various committees of SocEnv.

Following an initiative by CIWEM, initial discussions were held at a meeting in Church House – Westminster – on March 17th 2000, under the auspices of the Forum for Environmental Professionals, resulting, after much hard work, in the incorporation of SocEnv (The Company) on 13th February 2003.

The SocEnv formally petitioned the Privy Council for a Royal Charter empowering the Society to award the professional qualification 'Chartered Environmentalist' ('CEnv') and the Privy Council published details of the Petition in the London Gazette on 14th January 2003.

IAgrE has been part of the formation of SocEnv from the start and considers the granting of the Charter as a significant step in the development of IAgrE as a broad based Institution serving all those who work in the land based sector.

Following the formal sealing of the Charter, IAgrE together with the other constituent bodies (CBs), will be in a position to award CEnv to those members who are suitably qualified and experienced.

The 'Founding Fathers' of the Society for the Environment celebrate the granting of its Petition for a Royal Charter by Her Majesty The Queen. From left to right: Bob Fuller (IES and Company Secretary SocEnv); Peter Redman (IAgrE President -Director SocEnv); Mark Bedford (CIWM – Director SocEnv); Mark Gibson (CIWM – Director SocEnv); John Brady (IEAMA – Director SocEnv); John Gregory (IFM – Director SocEnv); Nick Reeves (CIWEM – Director SocEnv); Jon Prichard (ICE); Will Pope (IES – Chairman SocEnv); Russell Foster (IEAMA – Director SocEnv); Lynn Cooper (IWO – Director/Hon Treasurer SocEnv); Peter Matthews (CIWEM – Director SocEnv); Tim Boldero (IWO – Director SocEnv); Neil Atkins (IChemE); Jim Thompson (IEEM – Director SocEnv); Chris Whetnall (IAgrE – Director SocEnv); Alex Tait (IEEM – Director SocEnv)

There will be a 'grandparenting' process whereby existing full (corporate) members of CBs, in membership at the time of the granting of the Royal Charter, will be entitled to follow an abbreviated route to CEnv. Many of you have already registered interest in undertaking this route to CEnv and will have been contacted about the process to be followed. If you have not been contacted, please tell us and we will send out the appropriate information.

This abbreviated process will only be available for a 12 month period. Applications for CEnv following that date will then be processed through a more rigorous route entailing a full professional review interview.

SocEnv has now created a significant common community of environmental practitioners which, with the recent addition of the Institution of Civil Engineers to the CBs, now exceeds 100,000 in number. Others such as the IChemE are waiting in the wings.

During the coming months, a Chief Executive and Secretariat will be appointed and it will be they who will maintain the CEnv register and focus the voice of SocEnv in matters relating to a sustainable environment.

Founding constituent bodies

Chartered Institute of Wastes Management (CIWM)
Chartered Institute of Water and Environmental Management (CIWEM)
Institute of Ecology and Environmental Management (IEEM)
Institute of Environmental Management and Assessment (IEAMA)
Institute of Fisheries Management (IFM)
Institute of Water Officers (IWO)
Institution of Agricultural Engineers (IAgrE)
Institution of Civil Engineers (ICE)
Institution of Environmental Sciences (IES)

The professional institution of choice for engineers, managers, scientists, technologists, environmentalists and students in the land based sector offers five grades of membership from Associate (including students) to Fellow. Non-corporate grades accommodate non-engineers and companies; you do not need to be an engineer to enjoy IAgrE membership

BENEFITS of MEMBERSHIP

Professional Registration
Recognition of professional status as Chartered Engineer (CEng), Incorporated Engineer (IEng) and Engineering Technician (EngTech); and shortly as Chartered Environmentalist (CEnv)

Professional Contacts
Networking opportunities with almost 2000 members worldwide by access to the Membership Directory

Publications
Personal copy of the bimonthly IAgrE Journal, Landwards, with technical articles, information alerts, products, and news of members

Career Planning
Continuing Professional Development through Conferences, Branch meetings nationwide, Specialist Group events and Young Engineers programme

Specialist Fields
- Food Engineering and Technology
- Precision in Farming
- Vehicles and Machinery Management
- Forestry Engineering
- Horticultural Engineering
- Renewable Energy
- Soil and Water Management
- Amenity and Ecological Engineering
- Pioneering Technology
- Overseas/International Development
- Livestock Engineering

If you have found something of interest in this journal, send for details of membership to:

The Secretary
IAgrE
West End Rd
Silsoe
Bedford
MK45 4DU
United Kingdom

Tel: +44 (0)1525 861096
Fax: +44 (0)1525 861660
E-mail: secretary@iagre.org
www.iagre.org

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