Agriculture • Horticulture • Forestry • Environment • Amenity

LANDWARDS

Winter 2007

PRECISION AGRICULTURE

- PLANT PROTECTION
- AMENITY

IAgrE JOURNAL Volume 62 No.4 www.iagre.org

TRACTOR

Fendt – an axle ahead

Superlative intelligent technology

With the concept study TRISIX Vario, Fendt presented a high-performance vehicle at the Agritechnica 2007. The concept unites the advantages of track tractors with those of high performance wheel tractors, without incorporating each of their disadvantages. Three axles mean a higher transfer of power and significantly better traction compared to conventional wheeled designs, while its outer width allows unrestricted use on the road.

The new dimension in power transfer

Since it is driven with three axles or, respectively, six individual wheels, it is suitable for a wide range of applications independent of the prevailing ground conditions. Stability against sliding sideways on slopes is better than in standard tractors, even in poor ground conditions, in which track vehicles would hit their limits. Furthermore, the tyre contract area is higher than in standard or classic articulated tractors. To optimise traction and reduce soil compaction, Fendt plans a tyre pressure control system for this design concept.

Full suspension

The X5-cab with the Variocentre operating concept provides exceptional ride and operating comfort. The independent wheel suspension on all six wheels and the smooth driving performance, resulting from three axles, provides never-before-seen ride comfort. The motorway-capable TRISIX Vario offers maximum driving safety. Stable straight-ahead driving and better tracking in curves are guaranteed at any speed.

Maximum transport capacity

The high-performance braking system, together with the optional antilock braking system (ABS), permits transport speeds above 60 km/h. In combination with the high payloads that are possible and the overall concept of the vehicle, the highest transport capacities can be achieved. A third top mounting area behind the cab offers additional options for mounting ballast weights, transport containers or articulated trailers.

Technical specifications

Maximum 400 kW and two Vario transmissions deliver the performance that can be expected from the dimensions of the TRISIX. With an overall length of 7.61 metres and a width of 2.75 metres, new dimensions come true.

TYRES

Mercedes-Benz Unimogs get a grip on winter with 'Snowflake' tyres

A new, high traction tyre for winter roads, specially developed by Mercedes-Benz Unimog and manufacturer, Continental, is now available for the entire Unimog range: the U300, U400 and U500, and also the U3000, U4000 and U5000.

The new Snowflake-branded tyres are made from natural rubber to provide improved traction on winter roads, giving Unimog drivers even more confidence as they operate snowploughs and salt spreaders or snow blowers in the harshest weather conditions.

The standard range of Conti AC 70 445/65R22.5 and Conti HTC 385/65R22.5 are joined by the Conti HDW 385/65R22.5 – a Scandinavian-design truck tyre proven to add reliability of grip on black ice – and the Conti MTP 80/81 335/80R20 and 365/80R20. The MTP 81 has been specially designed for improved winter service operations, and includes better traction, braking and cornering capabilities.

Both ranges of Mercedes-Benz Unimogs are now available with specially-developed tyres for added grip and traction when tackling winter jobs, such as snow ploughing and salt spreading.

"The snow plough or spreader is often leading the traffic in difficult conditions, particularly off motorways and dual carriageways: it is making the highway safe for following motorists, and that means reliability in the harshest winter weather is vital. The reliability of the Unimog is enhanced by the introduction of this new range of specially-developed heavy duty tyres," says Mark Hopkins, Director of Unimog UK.

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Volume 62 No 4, **2007**

LANDWARDS

The Professional Journal for Engineers, Scientists, and Technologists *in* Agriculture, Horticulture, Forestry, Environment and Amenity

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Origination: David King

Printing: Barr Printers Ltd

Publisher
Landwards is published quarterly by:
IAgrE,
Barton Road, Silsoe,
Bedford, MK45 4FH
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Fax: +44(0)1525 861660
E-mail: secretary@iagre.org
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Front cover: *Massey Ferguson MF5475 (courtesy: AGCO)*

ISSN 1363-8300

PRECISION AGRICULTURE FOR DAIRYING

Ian Yule, Hayden Lawrence, Rob Murray

BIO NOTE

Dr Hayden Lawrence (left) recently completed his PhD entitled: 'Adoption of Precision Agriculture Technologies for Fertiliser Placement in New Zealand'. He now works for CDAX Systems Ltd, as their Innovations Officer. His job is to progress and promote projects such the rapid pasture meter within the company.

Robert Murray (centre) has is awaiting the examination of his PhD thesis, 'Variable Rate Application Technology in the New Zealand Aerial Topdressing Industry'. He will also join CDAX Systems Ltd, as their Product Development and Technical Manager.

Dr Ian Yule (e-mail: I.J.Yule@massey.ac.nz) is the director of the New Zealand Centre for Precision Agriculture (NZCPA) which was established in 2001 and is based at Massey University. Ian has worked at Massey for 10 years having left the UK in 1997. The work of the Centre reflects New Zealand's heavy reliance on pasture based production systems. Both Hayden and Robert's work was concerned with challenging the assumptions around the application of fertiliser to agricultural systems, i.e. that fertiliser application is uniform and we have good control over the process.

Both Hayden and Robert worked at the Centre before commencing their PhD's and worked on the Rapid Pasture Meter which has now been commercialised by CDAX Systems Ltd.

Abstract

In the past, Precision Agriculture (PA) has typically been applied to cropping situations, where yield measurement techniques could be used and the data mapped. The situation is somewhat different in dairying. In a dairy farming system inputs and outputs undergo little measurement and there are few attempts made to account for spatial variation. This article illustrates two aspects of dairying systems to show how precision agricultural techniques can be applied; the first aspect of interest is pasture measurement and the second is fertiliser distribution.

Introduction

A high speed, accurate and repeatable method of pasture measurement has been missing in pasture-based dairy systems. Complex feed budgeting software has been available for a number of years, but, capturing accurate pasture measurement data has been difficult. In New Zealand, the average herd size is now over 300 cows, with many herds numbering over 1000, pasture measurement has been a major impediment to improving the performance of the dairy farming system. Fulkerson *et al.* (2004) illustrated that feed utilisation could be improved by between 9 and 12% on typical Australian dairy farms with the application of accurate feed measurement and budgeting. This would have considerable impact in the New Zealand dairy industry with an estimated increase in value of NZ$560M to NZ$890M per annum, based on 2004 financial figures.

Several methods of pasture measurement have been developed (rising plate meter, capacitance probe, sward stick, satellite technology). Satellite based technology, although having the potential to measure very large areas quickly, has a number of practical limitations on dairy farms, particularly cloud cover, especially at crucial times of the year, such as spring. Most of the dairying areas in New Zealand have at least 1000 mm of rainfall per annum; small paddock size and image resolution are additional factors that need to be considered.

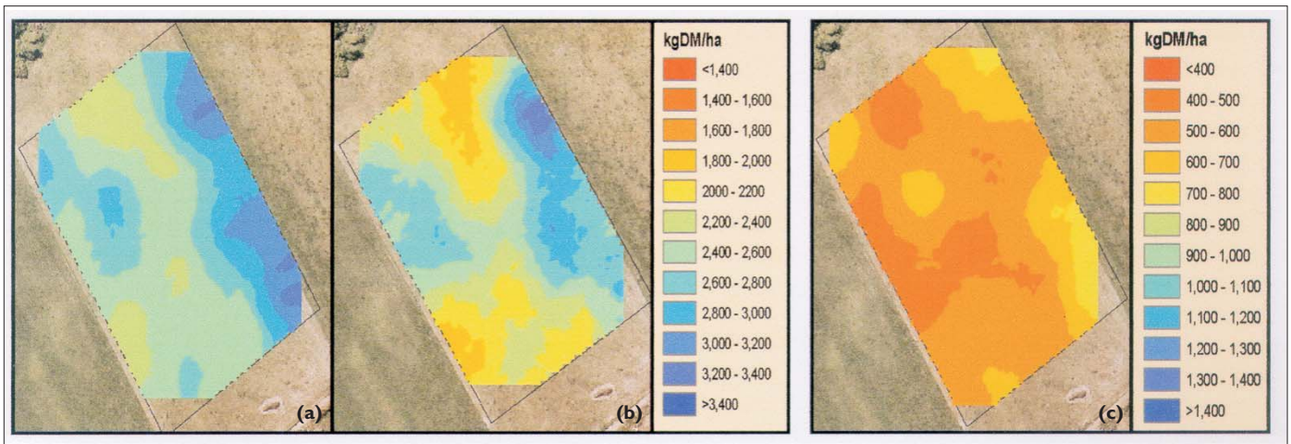

Figure 1. Levels of spatial pasture dry-matter as measured at (a) pre-grazing, (b) post-grazing, and the (c) calculated difference between the two surfaces (indicating pasture removed).

An experimental tool was trialled by the authors in 2000, and has subsequently been developed into the rapid pasture meter which has been commercialised by the New Zealand company CDAX Systems Ltd. The pasture meter is mounted on a sled which is pulled behind an all-terrain vehicle (ATV), measuring pasture height and completing 200 measurements per second. This high sampling rate creates very accurate profile of the sward. The unit is designed to operate at speed of up to 20 kmh^{-1} and provides the opportunity for farmers to intensively measure larger areas of pasture in a short period of time. The unit can also be linked to a global positioning system (GPS) in order to create spatial pasture maps, similar to those obtained from cropped fields.

The spatial accuracy of fertiliser application from ground-based spinning disc fertiliser spreaders has also been investigated and the agronomic and economic effects on New Zealand dairy production systems summarised. When considering on-farm trials, and properly controlled experiments, there appears to be universal assumption that the fertiliser application achieved is completely uniform. This clearly cannot be the case. Quality assurance procedures for fertiliser distribution state a coefficient of variation (CV) expectation of 15% for nitrogenous products, and 25% for non-nitrogenous products. An extensive review of test methods given in Lawrence *et al.* (2006) showed the variable performance of a number of testing methods used throughout the world. Furthermore, the field variation (CV) of 15% could only apply if perfect driving was achieved in perfectly shaped fields. Clearly, the CV achieved in the field will be higher even when devices, such as GPS guidance assistance and machine control, are utilised. Such equipment is now becoming standard on spreading trucks in New Zealand where 85% of the fertiliser products are spread by contractors. A method of mapping the spatial distribution of fertiliser application was developed by Lawrence & Yule (2007). This method can be used to evaluate the agronomic and economic impact of poor nutrient application in pastoral farming systems.

Methods

Rapid Pasture Meter

A Rapid Pasture Meter was used to assess both pre- and post-grazing conditions over a period in order to calculate pasture growth rates (kg [DM] ha^{-1}), and pasture utilisation. This was done at a spatial resolution of 4 m^2. The Rapid Pasture Meter uses high speed electronic sensors that measure pasture height every 0.027 m when operating at field speeds. Pasture height is converted to pasture dry matter using a regression equation (Eqn 1) developed from trial work. The equation found strong correlation with both visual (R^2 = 0.982) and rising plate meter readings (R^2 = 0.889). A series of equations have been suggested for different times of the year and pasture conditions:

$Y = 20x + 750$ (Eqn 1)

where:

Y = pasture dry matter in kg [DM] ha^{-1}

x = pasture height in mm

Fertiliser Distribution Mapping

Lawrence & Yule (2007) used a fertiliser application mapping model to evaluate the accuracy of implementing a fertiliser program over a 12 month period. The model used the GPS track log and static spread pattern of the spreader to evaluate field application accuracy. Data extracted from the model included: application statistics, calculation of respective crop responses to fertiliser inputs, and calculation of the economic value of applying the fertiliser used.

Results and discussion

When developing tools for the agricultural market, it is important to consider how they fit into the management structure of the targeted farming system. Tools need to offer users assistance at either the operational, tactical, or strategic management level. The results from the two tools described here (Rapid Pasture Meter and Fertiliser Application Mapping) aim to fulfil objectives within these management processes.

Rapid Pasture Meter

Figure 1 shows results from a grazing event in (March, 2007), pre-grazing cover was 2645 kg [DM] ha^{-1}, ranging from 2244 kg [DM] ha^{-1} to 3277 kg [DM] ha^{-1}. Post grazing results showed similar variability around the 1724 kg [DM] ha^{-1} average cover, indicating variability in pasture removal rates across the grazed area. On average, the pasture removed from the paddock was 916 kg [DM] ha^{-1}, ranging from 611 kg [DM] ha^{-1} to 1350 kg [DM] ha^{-1} in the measured quadrants. It is evident from the spatial pasture cover map that more

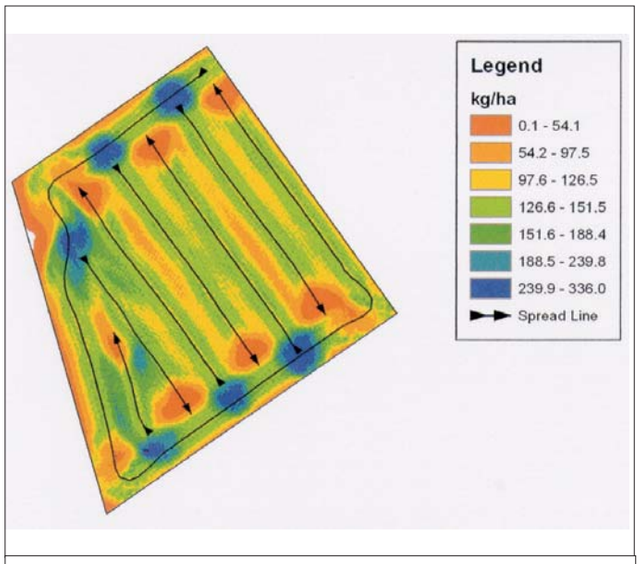

Figure 2. Fertiliser application surface created using measured machine parameters and a GPS track log of a spreading vehicle during field application.

highly palatable pasture was available on the right hand side of the paddock (Figure 1a) as this was the area where the highest rate of pasture removal was obtained (Figure 1c).

White & Hodgson (1999) define pasture management as having three branches, these are: *feed profile* (long term), *feed budget* (medium term), and *grazing plan* (short term). Figure 1 shows how the Rapid Pasture Meter can be used at the operational management level (short term) to define the quantity of pasture eaten at individual grazing events, it also helps to determine quantities of supplements required by each mob of animals. At the tactical management level, it allows management to successfully perform feed budgeting to identify feed surpluses and deficits. Within the strategic level, this data can be used to make both fertiliser application and land use decisions. The Rapid Pasture Meter satisfies all three management levels, *Operational* – pre and post-grazing measurements; *Tactical* – feed budgeting; and *Strategic* – pasture utilisation, pasture growth and land use evaluation.

Fertiliser Application Mapping

The geographical information system (GIS) model described in the method was used to create spatial application surfaces for each fertiliser application event over a 12 month period on a dairy farm. In total, there were 183 individual application events which included superphosphate, urea, and lime.

Over all of the application events the calculated field CV ranged between 23.5 and 80.0%. The spreading of urea produced the lowest field CV on the trial property (34.9%), followed by superphosphate (35.6%), and lime (54.3%). An economic analysis between nutrients calculated according to a nutrient budget, and actual nutrients applied calculated using the field application model described, was performed. Total economic loss was calculated over a 12 month period from actual application data. For both base and nitrogen fertilisers the loss was NZ$66.18 ha^{-1}, well above the NZ$5.00 ha^{-1} level deemed significant for New Zealand agriculture (Horrell *et al.* 1999). The total cost of all applied fertiliser was NZ$33,919 yr^{-1} and spreading costs were NZ$8,765 yr^{-1} for the 107 ha dairy unit. Agronomic and economic loss totalled NZ$7082, 16.6% of the total input cost of fertiliser operations. Again, this approach satisfied both tactical and strategic management requirements. At the tactical management level, measurements can be made to see if nutrient plans have been satisfactorily implemented on farm. At the strategic level (when combined with annual pasture yield maps), fertiliser application surfaces can be used to make judgments on the economic effect of spatial variability in fertiliser application. As a result, variable rate control systems may be beneficial in subsequent nutrient applications.

Conclusion

As in other parts of the world, farmers are under a great deal of pressure to be environmentally responsible. Dairy farmers are users of intensive grassland where fertiliser and nutrient inputs from animals can be high. The precision tools discussed here have the ability to aid the decision making processes. Further development tools need to be based on the ability to help either the operational, tactical, or strategic decision making process. The ability to map pasture production, combined with the capability to map fertiliser inputs, will allow farmers to calculate their response to nutrients on any part of their farm. This gives them the ability to match fertiliser inputs with the potential productivity of the land unit. As well as having economic significance, these two methods greatly enhance environmental sustainability through greater understanding of the performance level and management of the nutrient application process.

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Protect your engine from the winter blues

With winter fast approaching the bleak, cold days may be upon us all too soon, but companies running fleets of both on and off-road equipment can save themselves both time and money by planning their winter maintenance schedules now. Shell UK Oil Products Limited is urging operators to plan for the coming winter by making sure they use the right lubricants to help protect their vehicles' engines and keep them performing through the long winter months.

With tyre pressures changing due to cold morning starts and engines facing tougher working conditions, checking your lubricant is now as essential as using a good quality antifreeze. "Oil can be one of the last things people consider but it is one of the areas where getting things right can save you money by helping to increase your fuel economy and reduce the hassle of downtime," explains Les Dash, Shell's Technical Manager for Transport Lubricants, UK and Ireland. "Get things wrong and your vehicles will be in the workshop for longer and you risk doing long-term damage to your engines."

The average 35 litres of oil in an engine sump may need to disperse over 3 kg of soot particles between scheduled oil changes and these particles can clump together and cause wear in critical areas, such as the valve train components. In the depths of winter, this mixture takes time to heat up properly and can delay the protection that the lubricant offers, so you need to be sure that the oil you have chosen can cope with the extreme demands that winter operations place upon it.

With the costs associated with running any truck these days, your vehicles need to be on the job earning you money and it can be all too easy to delay an oil change for one more day, or, worse still, top up the engine with the nearest oil can that comes to hand.

Finding the right oils for your vehicles can also be a challenge as

commercial engines become more powerful and face increasingly tough emissions legislation and this dilemma is compounded for operators of mixed fleets or those running both transport and off-road equipment. Others face the dilemma of dealing with both Exhaust Gas Recirculation (EGR) or Selective Catalytic Reduction (SCR) devices. As test partner for the rigorous annual Arctic Test – held in the extremely cold conditions of Lapland for trucks, vans and off-road equipment – Shell understands the increased pressure low temperatures place on your engine oil. Shell's answer to these winter blues is the Rimula family of commercial lubricants which have been specially formulated to work alongside the most up-to-date engines and meet the latest European and world emissions standards.

"The entire Rimula family has been engineered to meet the needs of customers whatever conditions engines are working in," adds Dash. "Rimula products can help extend maintenance intervals to meet manufacturers' recommendations and improve fuel consumption, whilst offering advanced protection for engine components."

Heading up the advanced product range is Rimula Signia 10W-40, a unique formulation, designed specifically to cope with the differing requirements of both EGR or SCR devices to meet the latest Euro 4 legislation. Rimula Signia is an exclusive Shell formulation using advanced technology to achieve outstanding performance proven in over 8 million kilometres of field trials.

In addition to being ideal for all engine types – old and new, European and North American, offering excellent piston cleanliness and valve train wear protection and the soot and viscosity control required to protect low emission engines - the lubricant is formulated to minimise contamination of after-treatment systems.

It comes with all necessary recommendations from manufacturers, and delivers excellent soot and viscosity control, as well as providing top tier wear protection which can lead to longer engine life and better fuel economy.

The Rimula products also work together with Shell Spirax – a range of world-class gear and axle oils – Donax – automatic transmission fluids – and Retinax, the Shell portfolio of wheel-bearing and specialist automotive greases to provide advanced protection for every situation.

"Too often the lubricants and greases are one of the last things to be considered when you can really save yourself time, hassle and money by thinking of these things in advance," adds Dash. "Any reputable supplier will also be glad to do most of the work for you by examining your requirements and developing a package to suit your budget and your vehicles."

ORGANIC FERTILISER

nutri-bio increases biosolid granule availability

In the light of increased pressure on nutrient management and soil health, arable farmers are becoming more creative about where they source crop nutrients and how productive arable soils are managed.

"The days of ample farmyard manure have gone on most arable units in eastern England so farmers wanting to build organic matter have had to look elsewhere for alternatives," says nutri-bio Technical Manager, Scott Baker. "Biosolids recycled from sewage treatment offer both soil health and economic advantages which is probably why farm-management specialists such as Velcourt and TAG apply them regularly.

"In the last 15 years, 18% of the UK's soil organic matter has disappeared from productive land, largely due to the ploughing up of grassland; and given that it's a key indicator of soil health, it is inevitable that the loss will take its toll on the soil dynamics of drainage and pH as well as erosion," he says. "The nutrient status of soils depleted in organic matter can be addressed using fertiliser, but problems such as increased acidity and reduced moisture retention are problems that emerge with over-reliance on non-organic source of N."

In the light of increased demand for biosolids, Anglian Water has invested £40 million into a plant at Tilbury for the production of nutri-bio biosolid granules. The plant will be in production this summer.

The granules which will be supplied in 1-1.5 tonne fertiliser bags at a cost-neutral price for Anglian Water of an anticipated £15/tonne within a 40 km radius of Tilbury. Growers outside this area can have access to the granules, but will have to pay for additional haulage costs.

Bulk biosolids being spread by a Terragator.

As with other forms of biosolids, the granules will be spread by a nutri-bio contractor within the cost.

"The granules will be very valuable to growers wanting to apply biosolids in a residential area where odour is a contentious issue currently," explains Alan Thorogood, nutri-bio Sales Manager.

Application rates are expected to be in the region of 4-6 t/ha; the typical nitrogen content will be 220 kg of total N at 6 t/ha.

"There is often confusion on crop restrictions for the use of biosolids – they can in fact be used on all combinable crops, as well as potatoes, where a non-intrusive harvest interval is required (approval is also given on many high profile Grower Protocols)," he adds.

The key benefits of biosolids are for soil health and cost savings:

- price to farmer includes spreading of granules and recycling of bags;
- reduced reliance on bagged fertilisers;
- from one annual application of biosolids, a guide to the anticipated typical fertiliser equivalent values are given in the table (where soil P Index = 2 or above);
- increase in soil organic matter, particularly important in areas which have no/limited sources of farmyard manure or where growers have been wholly reliant on inorganic fertilisers;
- increased organic matter improves soil moisture retention (important in drought-prone soils), with crops benefiting from the improved available water holding capacity;
- improved worm population and microbial activity;
- good phosphate content (a major issue on many farms in the eastern counties);
- improved soil structure & friability; these factors also reduce the likely impact of soil erosion;
- slow release of nutrients to the crop, providing significant opportunity for improvements in crop growth;
- anecdotal evidence from farm agronomists on reduction in Take-all.

Typical fertiliser equivalent values

Nutrient	Total applied nutrient, kg/ha	Available nutrient, kg/ha	
		1st year	2nd year
Nitrogen (N)	220	46	17
Phosphate (P_2O_5)	217	108	54
Potassium (K_2O)	8	6	2
Sulphur (SO_3)	161	48	34
Magnesium (MgO)	20	10	5

The biosolid granules will be available under contract. Please go to the nutri-bio website for local contact details **www.nutri-bio.co.uk**

CONTACT

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SPORE TRAPS, SENSORS AND SPRAYING FOR ROSE DISEASE CONTROL

Terry Mabbett

Rapid expansion in world-wide cut-rose production in greenhouses is accompanied by big increases in mildew disease. Type and severity is governed by physical factors (climate and altitude) and growing conditions (greenhouse design and irrigation), and how these impact on temperature, humidity and leaf surface wetness.

Whether roses are infected by downy mildew (*Peronospora sparsa)* or powdery mildew *(Sphaerotheca pannosa),* fungicide control is possible. Respective pathogens are taxonomically different (downy mildew is Oomycetes and powdery mildew is Ascomycetes), so selected fungicides and application strategies will vary.

Downy and powdery mildew diseases can move rapidly into disease epiphytotics (epidemics) to devastate blooms. Either mildew disease may spread out of control in a short space of time, especially in greenhouses and the ideal conditions of temperature, humidity and surface wetness they create.

Growers have three options when considering the use of fungicide control, either:

- apply fungicide on a routine basis; or
- determine environmental conditions for infection, and only spray when these occur; or
- monitor disease and environmental conditions in tandem using spore traps linked to sensors for temperature and humidity.

BIO NOTE

Dr Terry Mabbett is a plant protection consultant who can be contacted on +44 (0)1707 644953. E-mail: DrTerryMabbett@btinternet.com

Routine spray regimes

In today's cost and safety conscious environment, routine application of fungicides to commercial cut roses is fraught with all kinds of difficulty and danger. Prophylactic insurance sprays are generally considered a waste of resources and increase risk of pathogen insensitivity (resistance) to groups of products with similar fungicide chemistry.

Furthermore, unnecessary application of agrochemicals generally disrupts the rose growing environment with adverse effect on natural enemies of insect pests, 'friendly' microbes in the soil and the workers looking after the crop.

Big cut-flower importers, such as the European Union (EU), have strict rules and regulations regarding pesticide use in exporting countries and residue levels on cut rose blooms. No-one is likely to 'eat' cut-flowers but they are still handled by packers and consumers and the latter will instinctively smell the blooms, even if not scented which is the case for most contemporary cut-rose varieties.

Decision led spraying – environment

Spraying only when temperature, humidity and leaf surface wetness come together to create optimum conditions for infection, spread and development of a disease is another option. This is a major step forward but clearly not the ideal solution because there is no way of knowing whether the pathogen is present.

Decision led spraying – disease and environment

The most logical way forward is to monitor presence/absence of fungal pathogens alongside the environmental conditions for spore germination, infection, tissue colonisation by mycelium and spore production and spray accordingly.

Spore traps are linked to sensors which monitor environmental conditions during the spore trapping period. This is an integrated system used indoors

or outdoors although clearly easier to control and manage inside the greenhouse. Downy and powdery mildew diseases on roses are spread mainly via air-borne spores and therefore ideal for disease forecasting using spore traps and sensors for temperature and humidity.

With fungal pathogen identified and quantified by trapping air-borne spores, and sensor readings showing ideal conditions for infection, fungicide sprays can be synchronised with those periods then the crop is at risk. Prompt and accurately timed spraying is crucial, especially when using protectant (preventative) fungicides. Preventative fungicides must be deposited on the plant surface before fungal spores arrive. Preventative fungicides will not control established infections.

Spore trapping and environmental monitoring

The instrumentation will use dedicated spore traps inter-linked and integrated with a range of sensors for temperature, relative humidity, leaf surface wetness and any other environmental parameters that affect infection and disease development.

Novel tried and tested approach is provided by Burkard Scientific **(www.burkardscientific.co.uk)** a United Kingdom company based in Uxbridge with decades of experience and expertise in instrumentation and equipment for monitoring fungal pathogens and environmental conditions for disease forecasting and decision-led control.

The 'SporeWatch' spore and pollen sampler from Burkard Scientific uses state-of-the-art electronic technology to drive definitive methodology with precise specification based on the original 'Hirst Spore Sampler'. SporeWatch provides users with the same precise methodology underpinning contemporary spore sampling procedure, with more flexibility, reduced size and at a lower cost through benefits of modern technology.

SporeWatch uses the 'original' drum and tape principle to trap and secure spores. Orifices and air throughput are identical to those on the Hirst spore sampler, but with interchangeable orifices improving the trapping efficiency of particles in the 1-10 μ m diameter size range.

Units have been tested and evaluated under field conditions by independent accredited scientists. They report 'SporeWatch' providing equal performance as a modern replacement for its predecessor the Hirst spore trap.

Modern electronics enhance performance and control with advanced features including 16 pre-selectable sampling periods, automatic shutdown to avoid over-impacted spore load and a simple stop/start control.

Spores are impacted on adhesive coated transparent plastic tape (Melinex) stored and supplied on a drum of standard circumference, with specification and operation identical to the Hirst spore sampler. Integral vane makes the sampler sensitive to very small variations in wind direction, and adjustment of the 10 litre/min throughput is made by simply adjusting the metering screw easily and conveniently located on the underside of the unit.

SporeWatch may be powered by mains or battery via an external encapsulated power unit or 12V battery, respectively. A highly efficient solar power option increases flexibility of SporeWatch in remote operational areas under all normal weather conditions worldwide. The standard solar panel at only 360 mm x 250 mm x 35 mm is highly compact but still provides 10 watts of power. Panels are of an aluminium frame construction which allows for a range of mounting options on the floor, roof or a pole. The solar power kit includes a battery and controller facilitating overnight operation from charge received during daylight hours, thus providing continuous 24-hour operation. Users say the SporeWatch solar power kit provides an easy economic answer to stand-alone operation in remote locations.

Use of aluminium in the design and construction of SporeWatch provides a light weight and entirely portable unit for use anywhere in the field and all parts are finished and protected by hard stove enamel or anodised coat to prevent corrosion under normal weather conditions. Drums are changed on site in a quick, simple and no fuss operation via a lockable instrument side panel cover opened for easy access to the drum and all controls. The unit is supplied with a tripod for stand-alone, on-ground operation or an optional and complementary support arm so that SporeWatch may be fitted to an environmental monitoring station or other mounting sites. An integral setting level simplifies instrumentation set up to avoid biased rotation.

The 'SporeWatch' spore and pollen sampler from Burkard Scientific

Burkard Scientific have taken the operational scope of SporeWatch one stage further by design of an 'aerobiological monitoring station' so users can simultaneously monitor air temperature and relative humidity over the spore sampling period. Data is logged and can be downloaded for laboratory analysis if required. A stable platform provides secure mounting for the sampler and solar panels and the battery is conveniently housed in the control cabinet. A guy rope set is available for additional stability in windy conditions.

Powdery mildew of roses

Powdery mildew disease can be expected when high daytime temperatures give way to cool humid nights as in roses under cover in the tropical highlands of Africa. Conditions ripe for development of powdery mildew are defined as night-time relative humidity rising from 40-70 per cent during daylight hours to exceed 90 per cent at night. This humidity profile, in tandem with at least six hours in the 20–30°C temperature range, sets off spore (conidia) germination and a spiral of irreversible crop damage as disease rapidly moves into epidemic proportions. Failure to spot the first signs of infection

and take remedial action is central to control failure of powdery mildew on roses.

Life cycle can be complicated by type of growing system and whether roses are grown outdoors in temperate climates or in unheated glass or plastic greenhouse (e.g. equatorial highlands of countries like Kenya and Ethiopia).

In rose producing countries where growing season is not punctuated by a cold winter period, the fungus reacts in an equally unbroken fashion, with continuous production of asexual spores (conidia) on the leaves, young shoots and green scales of flower buds. Optimum temperature for germination of conidia is around 22°C with minimum and maximum at 5 and 35°C, respectively. Spore germination occurs over a wide range of relative humidity, although free moisture (surface water) inhibits the process.

Under optimal conditions the powdery mildew disease cycle proceeds at phenomenal speeds, conidia germinating within 2 to 4 hours of landing on the surface. The entire disease cycle of spore release, germination, fungal infection and production of more conidia may take as little as 72-96 hours. Net result is several million spores produced and released from just 6.25 cm of infected leaf surface.

With high value cut rose crops at risk from total destruction in days if not hours, powdery mildew disease demands 24 hour monitoring throughout the year to identify onset of high risk periods and accompanying spore release, so that timed preventative sprays may be applied.

The trick is to intercept airborne spores by trapping and then analyse results with utmost speed so that fungicide can be applied before spores germinate. Indeed protectant fungicides will only control the disease if they are on the crop surface and active prior to spore germination. Otherwise, growers are forced to use systemically acting eradicant (curative) fungicides which penetrate the leaves to kill established infections, but take longer to work and are more expensive.

Leaf disease (and caterpillar!) on a rose stem

Where growing season is broken by a definite low temperature winter period the fungal pathogen responds by surviving as mycelium inside rose bud scales and young leaves, conidia production resuming when the right conditions return. Alternatively it may move into its sexual reproductive phase by producing resting bodies called cleistothecia. When warm humid spring weather returns the cleistothecium absorbs water and ruptures to release a sac (ascus) containing eight ascospores, which are carried by air currents onto the leaves where they germinate. Whether the airborne spores are conidia or ascospores they can be trapped, identified and quantified using SporeWatch.

First signs of powdery mildew appear on the upper (adaxial) surface of expanding leaves as irregular shaped blistered areas light green to reddish in colour. These are quickly followed by typical powdery mildew symptoms caused by a combination of white mycelium of vegetative hyphae and reproductive aerial hyphae (conidiophores) bearing the conidia.

Failure to control early infections leads to distortion of young leaves that are completely covered with white felt-like lesions and stunted shoots that fail to recover. Advanced infections show young leaves becoming more red and purple under the powdery layer, before yellowing and dropping off. Infected flower buds produce deformed flowers with discoloured petals and blooms with a much shortened shelf-life.

Downy mildew of roses

'Downy' mildew like the 'powdery version' needs a high humidity of around 80 per cent for uninhibited spore germination, although optimum temperature for spore germination is on the cooler side at 15 to 20°C. Colonisation of rose leaf tissue moves most rapidly within a higher range of 20 to 25°C. In common with other downy mildew pathogens leaf surface wetness is crucial for spore germination. At optimal temperatures only 2 hours of leaf wetness is required for spore germination. More detailed predictive models show the critical leaf wetness period for disease development is an average 8.4 hours per day over a 10 day period. At optimal temperatures for leaf colonisation (20 to 25°C) disease cycle is short with symptoms appearing just 4 days after spore germination and spore producing lesions several days later.

Potential losses are huge with growers traditionally spraying fungicide on a routine 7 or 14 day basis, but as with powdery mildew this fungal pathogen is apparently limited by some environmental conditions. Therefore like powdery mildew it is a good candidate for disease forecasting via spore trapping and environmental monitoring. The short rapid cycle of rose downy mildew helps to explain why growers often fail to control the disease even with application of protectant fungicides at 14 day spray intervals.

All above-ground plant parts are affected. Typical symptoms on roses include irregular shaped leaf spots that are purple red to dark brown in colour. Major leaf veins may restrict spread of lesions which therefore become angular as they enlarge. Shoots are distorted and flowers deformed by infection of flower bud scales.

During periods of sustained humidity grey coloured spore masses develop on the underside (abaxial surface) of leaves which eventually die and abscise resulting in severe defoliation, if the disease is left uncontrolled. Small spots or elongated purple coloured areas may form on the rose bush canes with eventual die-back caused by secondary *Botrytis* fungal attack.

Downy mildew control with fungicide is all the more difficult due to development of resistance (insensitivity) to some chemical groups such as the systemic phenylamide fungicides (e.g. metalaxyl). This is all the more reason to develop decision-led spray regimes based on disease forecasting through combined spore trapping and environmental monitoring.

WOOD PROCESSING

Timber quality measurements embedded into log sales and processing

Measurements of timber quality and straightness are being incorporated directly into timber procurement and processing for the first time, in an innovative research and development partnership between the Forestry Commission and a leading sawmilling company.

The Commission's research agency, Forest Research, has established the joint project with sawmiller James Jones & Sons Ltd. Although only one private-sector company is involved at this stage, the results of the project will be disseminated to benefit the whole British forestry and wood-processing sector.

Shaun Mochan of Forest Research and David Leslie of James Jones are working together from January to June this year to review the needs of the wood-processing industry and the latest research on the measurement of timber quality. They will use this knowledge to develop an operational system to inform decisions on the procurement and processing of timber in the forest, log-yard and sawmill.

The outputs of the project will be:
an operational system for incorporating quality measurements into the procurement and processing of British timber;
training for harvesting teams in the measurement of stem straightness in standing trees; and training for harvesting and processing personnel in the use of acoustic tools for determining timber quality.

At the end of the project a series of industry-wide workshops will be held to demonstrate the proposed system and how it can help to improve the allocation of material between forests and processors.

The project has direct benefits for Forest Research and for private-sector timber growers and wood processors. It will help Forest Research to gain a better understanding of the British wood-processing industry, how it operates, and the market forces driving the industry. James Jones, and ultimately the whole private sector, will learn about the latest techniques and research that are available to improve their business.

Barry Gardiner, from Forest Research's forest management division, explained, "This system is really a refinement of the 'red' and 'green' log system in current use, so that we'll be able to make much more refined assessments of timber quality and therefore be able to direct logs much more accurately to the most appropriate customers.

"As researchers, we can only go so far in developing these techniques in the laboratory, so to speak. At some point, in order to make the products of our research useful to the 'real world', we have to 'road test' them and develop them in the real world. This is what we're doing here, and we're grateful to James Jones for giving us this opportunity. Later this year, we expect to be able make it available to the whole industry, and it should help to keep British wood competitive with imported wood.

"Partnerships such as this allow very direct technology transfer of research findings into industrial application. We hope that further such partnerships will be developed in the future to the benefit of the whole British forestry and wood-processing industries."

Professor Jim Lynch, chief executive officer of Forest Research, welcomed the collaboration: "This will help us better understand the real drivers of the British wood-processing industry: in particular the real operational constraints and market forces. We especially welcome this as we embark upon significant change within our organisation with the implementation of our new development plan."

John Kissock of James Jones is clear of the benefits for the company and the private sector: "We're excited that we will learn the latest techniques from cutting-edge research, and we hope we'll be able to put them into use to build our business further."

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ENVIRONMENTAL STANDARDS

After the International Standard - now comes the ISO 14001 video clip

The International Organization for Standardization (ISO) has launched a video clip on the International Standard ISO 14001, which is implemented in 138 countries. ISO Secretary-General Alan Bryden introduced the clip as one of a number of initiatives undertaken by ISO and its national members since last year to celebrate the 10th anniversary of ISO 14001, the first standard in the family.

Launched in 1996 and republished as a new, improved version in 2004, ISO 14001 gives the requirements for an environmental management system (EMS), which is a tool for helping organizations to implement good environmental practice and to aim for continual improvement of their environmental performance. ISO 14001 has become the international benchmark for EMS and is now thoroughly integrated with the global economy.

The video clip, ISO 14001 – the world's environmental management system standard, can be downloaded free of charge from ISO's website (**www.iso.org**)

ISO has also launched an updated CD-ROM collection of the 23 standards (plus one draft) that currently make up the ISO 14000 family. They include new or updated standards for use in greenhouse gas accounting and verification programmes and emissions trading, environmental labelling, life cycle analysis and environmental communication.

NEW PUBLICATION

New UK construction & quarry machinery magazine launched

The UK has a new monthly specialist magazine devoted entirely to construction and quarry plant and equipment.

Following the success of Machinery Movers Ireland, which was launched only a year ago with a circulation of 8,000 across the whole of Ireland, the first edition of Machinery Movers UK will be published in November/December 2007, following which it will then appear monthly.

Its publisher, Brian Coogan, said: "Machinery Movers Ireland has grown rapidly to become the No1 dedicated construction and quarry equipment title in Ireland and we anticipate similar success for our new UK edition."

"Like its Irish counterpart, Machinery Movers UK will be packed full of interesting and informative news and features, with regular sections on plant news, rental & plant hire, health & safety, new & used machinery and operator reviews, combined with extensive manufacturer and distributor profiles.

"The practical, hard working, down-to-earth, no nonsense approach with our Irish publication has been enthusiastically received by readers and advertisers alike and its our intention to replicate this in the UK market."

"This success to date has also been achieved in no small part by constantly listening to the views and opinions of our readers and advertisers. We're always interested to hear from them with any news, comments or suggestions they may have", he added.

Distribution of the new magazine across the UK mainland will be through a combination of subscription and specialist news trade sales, together with mailings to selected named individuals, covering the construction, quarrying, civil engineering, recycling, demolition, plant hire and rental sectors, as well as distributors, local authorities and utilities.

The first issue of Machinery Movers UK will contain in-depth features on Mini Excavators and Mobile, Static & Mini Crushers; looking at what's new and available from the leading manufacturers and distributors.

Company or product news for the UK edition should be submitted to Acting Editor, James Lane, who can be contacted on +44 (0)1473 464966 or e-mail: **james@machinerymoversuk.com**

ANNUAL LEAVE

Acas offers holiday help as minimum allowance increases

With holiday entitlements to increase by four days from 1 October 2007, employment relations service Acas has launched a new guide offering free advice to help employers introduce the changes.

Research undertaken in a survey last year showed that 63% of UK managers were not using their full holiday entitlement and that almost half were losing up to two weeks holiday because they fail to book the time off. As a result, Acas is urging employers and employees to make the most of the changes.

The Acas guide *Holidays and holiday pay* is available free online to businesses and employees at **www.acas.org.uk.** The guide offers free advice on holiday rights for full and part-time workers and guidance on how to calculate holiday pay.

The amendments mean that employers may have to take some of the following actions:

- recalculate new entitlement for part-time and full-time employees
- inform all employees in writing of the increased entitlement from 1 October
- ensure that all new written statements of employment feature the updated holiday and holiday pay entitlements.

Susan Clews, Acas Director commented: "With recent changes to holiday entitlement coming into play, this new guide will help employees calculate what they are entitled to and will help employers understand precisely what they should be providing.

"This will ensure that workers make the most of their holiday entitlement and help businesses – particularly smaller ones – plan effectively for periods when employees are away."

Statutory holiday entitlement increases to 4.8 weeks (24 days if you work a five day week) from 1 October 2007 and to 5.6 weeks (28 days if you work a five day week) from 1 April 2009.

Employers or employees who need further help can call the Acas helpline on +44 (0)8457 47 47 47 for free confidential advice or book online for one of Acas' training courses, available throughout Britain.

NATIONAL STATISTICS

2007 Survey of Attitudes and Behaviour in relation to the Environment

A full report of the results from the *2007 Survey of Attitudes and Behaviour in relation to the Environment* has been released. It gives a representative picture of what people in England think, and how they behave, across a range of issues relevant to the environment, including transport and recycling.

The results presented here follow from previous Environmental surveys run by Defra and its predecessors in 1986, 1989, 1993, 1996-7 and 2001. The results for the 2007 survey were produced from data collected from a representative sample of 3,618 individuals in England during spring 2007. The data were collected on behalf of Defra by the British Market Research Bureau (BMRB) during computer assisted interviews.

Structure of the report

This full report, completed for Defra by BMRB, follows National Statistics releases of headline survey results released on 14 August 2007, and results of questions on wellbeing on 27 July 2007.

The survey itself was split into several sections. The report is presented using the same structure, as follows:

1. Knowledge and attitudes
2. Behaviour to reduce climate change
3. Travel behaviour and attitudes
4. Energy and water efficiency in the home
5. Reducing waste, reusing and recycling
6. Purchasing behaviour
7. Green spaces
8. Animal welfare
9. Biodiversity
10. Wellbeing

Where applicable, each section covers the following in relation to that subject:

- attitudes
- behaviour
- barriers

The survey data, anonymised to protect confidentiality, is being concurrently released on the UK data archive website. The full report can be found at **www.defra.gov.uk/environment/statistics/pubatt/index.htm**

CROP BOOST

Revolutionary plant and soil treatment launched in the UK

The appliance of science has resulted in the launch of a revolutionary new product, with the potential to transform the way that growing is done in the UK.

And for those in the farming, horticulture and forestry industries, a product that can *reduce water usage, help to prevent water table contamination, significantly increase crop yields and provide quicker, stronger, healthier growth*, as well as boosting profitability has got to be good news.

Quick-Sol is a unique plant and soil treatment pioneered in the United States, distributed by Beyond International Inc, that has proven to yield extra-ordinary results as well as aid in the protection of the environment. Quick-Sol can play a major role especially within the Nitrate Vulnerable Zones of the United Kingdom.

Quick-Sol is environmentally friendly, biodegradable and non-toxic and has been certified in its existing markets for organic use. Evaluations are well advanced for certification to the European equivalent standard. It can also dramatically reduce water requirements, one of our most precious resources, without affecting quality or productivity.

It was developed as a direct response to a growing need for innovative products that facilitate growth and productivity and has now been brought to the UK by newly formed distributor, Lancashire-based Quick-Sol (UK) Ltd.

Quick-Sol is supported by specific crop data and has been tested on numerous different crops in agriculture, horticultural and forestry industries worldwide and is already being successfully utilised in over ten different countries. Trials of the product are set to begin soon in the UK.

Water soluble, it is applied to the soil and crop with remarkable results. The science and patented technology behind Quick –Sol strengthens the plant itself and also enables more efficient uptake of available nutrients leading to strong and accelerated growth.

Managing Director of Quick-Sol (UK) Limited. Alan Schofield said: "We are confident that Quick-Sol can play a huge role in the future of the horticultural and agricultural sectors within the UK. We believe that it has the potential to transform many sectors of the industry with a much needed boost to profitability."

Full details and product information, along with data and images of the product tests is available on the website **www.quick-sol.com**

RISK MANAGEMENT

Dykes can no longer stem the tide

Building dykes is no longer enough to hold back rising water levels in low-lying countries. The authorities have managed to keep rivers in a straitjacket for years, but now they are threatening to burst out of it. To avoid serious damage, we have to allow the water more space, and allow controlled flooding. Temporary water storage can be an excellent combination with nature conservation and recreational usage. This is the key message of the Best Practice Manual (**www.frameproject.eu**), the manual presented by the transnational government project, Flood Risk and Management in Estuaries: Sustainable New Land Use in Flood Control Areas (FRaME), at its closing conference in Antwerp, following a four years' intensive cooperation.

In densely-populated regions like ours, it is advisable to combine various types of land use. Traditionally, agriculture, nature development and recreation had not been linked to controlled flooding areas – an unjustified approach, according to the Best Practice Manual produced by FRaME. By dividing up the available space creatively, walkers and nature-lovers can enjoy a beautiful area that increases protection against flooding.

The Flemish Minister for Nature and the Environment Kris Peeters, Al Gore ambassador and Serge Degheldere were among the visitors of the conference and showed interest in the project. All advocate in favouring the Best Practice Manual, which is intended to encourage government to urgently take efficient measures against flooding in all the countries around the North Sea. With the support of the European Union's Interreg North Sea programme, the FRaME project has brought together local authorities in Belgium, the Netherlands and the United Kingdom to work together on solutions at five locations.

Frank van Holst, FRaME Project Manager says: "Five water containment areas were set up and the three countries spurred each other on. Belgium has shown how it deals with changing tides in densely-populated areas, and the British have shared technical knowledge with the other countries." But cooperating for four years is not enough to protect the whole population and the countryside in low-lying countries. FRaME wants to prolong the cooperation, as well as broadening its geographical scope. That is why FRaME is inviting government organisations in Germany and France to join the partnership.

FRaME has supported the following five projects. In the Netherlands, the Zuiderklip project converted former agricultural polders into a water containment area with nature and recreational facilities. In the Noordrand Goeree-Overflakkee project, FRaME has demonstrated that containing surplus water can be combined with provision of water supplies and the establishment of ecological connecting zones. In the Belgian area of Kruibeke-Bazel-Rupelmonde, water can now flood in a controlled manner, to contain storm floods from the River Scheldt. Around the River IJzer, FRaMe is exploiting the attractiveness of water for both wildlife (birds) and people. In the United Kingdom (Alkborough Flats project), an area previously used for intensive agriculture has been allowed to flood (water from the River Humber) to make it a nature reserve. All the experience with these projects and solutions has now been compiled into the Best Practice Manual.

EARLY RECRUITMENT

Tractorman website launched

A new website site packed full of resources for children and those interested in tractors has been launched to inspire youngsters into the farm machinery industry. The website **www.tractorman.biz** is a support resource for the Tractors in Schools project.

The website is packed full of photos, images, games and puzzles to broaden the perception and understanding of tractors and their role in food production. The free to use website allows visitors to learn more about tractors and how they are used in the production of food.

The site also supports teachers interested in using a tractor as the focus of a lesson or as part of a food and farming project. There are many ways in which the materials will support the delivery of a broad range of curriculum subjects including maths, English, history and geography bringing an exciting and interesting angle to the perception of tractors in agriculture and food production.

The website has been developed by Ian Beecher Jones, with the support of the South East Development Agency (SEEDA) Sector Champion Scheme, Farming and Countryside Education (FACE) and the Machinery Industry's Careers Project which has been set up to encourage even more young people into the industry.

As sector champion for 2006/07, the Tractors in Schools project has been encouraging schools to invite Tractorman and his tractor to schools to inspire children through being able to touch and feel a tractor close quarters. The Tractors in Schools project will be a contributor to the Year of Food and Farming in the South East, London and across the country.

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Snow, White and Small (Engineering Consultants)

A Fable for Our Times

A long time ago

In a city not so far away, ten engineers worked in a happy partnership. They had a range of skills and nicknames such as *Oily Mike* and *Stressed Jim*. They all knew each others strengths and weaknesses. Everyone knew who to talk to when they needed help. To contain costs they each took responsibility for various non engineering jobs. One looked after the premises, *Dave the Drains*, while another dealt with the accountant and the bank. One managed a basic website and marketing and another managed the office systems, *Fred the File*. In this way they all had additional responsibilities but in so doing worked at keeping systems and overheads under tight control. Though this took some 10% of their time, they were happy as it widened their skills and contacts. They kept their customers satisfied by their rapid and well informed response. They could also be heard whistling as they went to work.

Life was simple, costs were low and work was easy to find. They were good at their jobs.

One day, one of them decided he wanted to retire and live in the Land of Oz. This presented the remaining nine with a quandary, some of his expertise was not easy to replace but could be bought in. The answer was to get in help to do the 10% administration work at half the cost and buy in the critical expertise. This would release one whole engineer's time, the remaining engineers could absorb much of the missing work and there would still be time to spare.

Not quite so long ago

Because the 'Office Administrator' disrupted the day to day work of the engineers, it was decided to provide a separate office down the road in a nice new shiny office block along with Snow, the senior engineer. He felt it improved the image of the firm and made him feel very important. Because of reduced contact and a general lack of understanding, more complex systems had to be put in place to ensure accurate communications with customers and service providers. The senior engineer's location was not always known and it was difficult to get decisions made quickly. An administration assistant was taken on to help reduce these problems. The website was now run by an outside expert and it had become far more professional even if it was almost impossible to find the few critical bits of information new customers required. The 'missing' expertise was provided by *Stepmothers Inc.*, a top rate high cost organization situated in an ivory tower. This often took weeks. The office facilities were managed by outside contractors so the *Fairy Godmother* from down the road no longer came in to make tea and give them a friendly smile. It came out of a vending machine without any smile.

Very recently

Contracts were being lost due to slow response to enquiries and an increase in the charges made. Contact with customers was poor due to the complex procedures put in place to ensure accurate logging of work. Another engineer retired early suffering from stress and was replaced with a marketing expert in an attempt to get more work and remove some of the pressure on the remaining seven engineers. The senior sow (sorry Snow) no longer had time to work on projects as he now spent most of his time sorting out communication breakdowns, attending meetings and polishing his ego. To help out with routine work and managing his diary he had appointed a personal assistant, this made him feel even more important and absorbed more of his time.

Just before Christmas in a city close to you

The company has now grown to twice its original size with Human Resources (HR) staff, a compliance officer and an accountant. The seven engineers are only managing to work on projects two thirds of their time. They spend an excessive amount of time waiting for decisions, working on dream world objectives, chasing up outside experts and keeping the various support staff informed and error free. Annual output has been reduced by 50% while costs have risen by a factor of two. Everyone is stressed and the engineers are now all called *Grumpy*. The bureaucrats have moved into overdrive to save the company. Committees to manage a move towards lean working practices have been set up and meet on a regular basis and should produce recommendations some time late in 2008. Eagerly awaited consultant input is holding up progress. Their prime objective at present is to safeguard core jobs so HR is looking for a 20% staff reduction. The engineers have the best chance of finding new jobs so four of them are taking the redundancy money. They have been planning this for some time and along with their redundancy payout have obtained a promise of support from the *Golden Goose Charitable Trust* and are looking for links with their local Higher Education (HE) establishments. They are steering well clear of the bureaucratic *Enchanted Forest* of state support. They are setting up a web based virtual consultancy with six other complimentary home based engineers and open for business in March 2008. The remains of *Snow, White, etc.* is to be absorbed within their main overseas competitors *Baron Enterprises Inc.* who are buying them based on their past reputation and the spin from the Public Relations (PR) agency employed to save the decaying edifice. Little else will be retained in the long term or even short term.

The moral of this tale

The survival of the bureaucracy will become the prime reason for running a business; they have the time to protect their jobs till the organisation dies.

GFDW

Quarterly WINTER 62(4)

MEMBERSHIP MATTERS

THE NEWSLETTER OF THE INSTITUTION OF AGRICULTURAL ENGINEERS

The environmental and land-based industry is to benefit from new Diploma

The Diploma in Environmental and Land-based Studies has been designed by employers from the sector, in collaboration with schools, colleges training providers and higher education institutions. Available at three levels and aimed at 14-19 year olds, the diploma will benefit employers by giving young people a modern understanding of the sector. The qualification bridges the divide between academic and vocational learning, and will be available in some areas of the country from September 2009.

The diploma is part of the biggest reform in education since the introduction of the General Certificate of School Education (GCSE). The development has been led by Lantra, the Sector Skills Council (SSC) for environmental and land-based industries, with support from a further five SSCs (Construction Skills; Energy & Utility Skills; Improve; People 1st; and SkillsActive). This is essential as the qualification is linked to a larger number of industries than those covered by Lantra.

Martin Callow, Diploma Development Advisor comments, "As a group of SSCs, we have worked to ensure the structure and content of the Diploma in Environmental and Land-based Studies reflects the contemporary needs of employers.

"It has been developed in close consultation with employers, with the aim of guaranteeing learners holding the qualification will have gained knowledge, understanding and hands-on experience of the sector, whilst putting new skills into practice. Young people will be able to apply this learning to a work setting as this is a core element of the diploma.

"Employers will benefit from having new recruits with work related skills and young people will benefit from a broad general education set within the context of the sector."

The qualification is part of a suite of 17 new diplomas. Five diplomas are set to go live in September 2008, with the Diploma in Environmental and Land-based Studies being prepared for September 2009, along with a further four. All 17 diplomas will be available across England from 2013

Jonathan Taylor, Head Ranger at Coombe Country Park added: "This Diploma is a massive opportunity. It will help to encourage young people into our sector, with a clear view of what we are about and with a strong aspect of what they would like to do.

"It's critical that employers of all sizes recognise this as an opportunity. Employers have been asking for this for a long time, and now is the time to get involved."

Nigel King, Greenspace Adviser at Natural England also added: "I think it's a most positive step – there's a real need to improve the planet and these industries have a big part to play. It's a major step forward."

For more information on the Diploma in Environmental and Land-based Studies, please visit **www.diplomaelbs.co.uk**

LETTER TO THE EDITOR

Dear Sir

Agricultural Engineering Research

During a recent conversation with a committed agricultural engineer, the topic of research within the industry was raised. As always, the definition of what was meant by Ag Eng was debated. As I see it, it is the activity of developing, manufacturing and introducing to the market machines, equipment and systems that improve agricultural production using the technologies mainly associated with Mechanical, Electrical and Civil Engineering.

To progress and support UK based agricultural engineering, there is a need to carry out research and development work. Is this being done now that Silsoe Research has been disbanded and Silsoe College absorbed into the School of Applied Science (not the School of Engineering) at Cranfield University?

Searching the web gives one little confidence that the industry, colleges/universities or other research organisations have any real interest in research in this area.

continued overleaf

In the end, it gets down to finance. Does anyone know where the money saved in closing Silsoe is spent? Does the Government realise what damage they inflicted on the industry by withdrawing this funding without putting in place an alternative research organisation. I was in despair of NIAE Research long before it became Silsoe Research but that did not mean that such an organisation was not required. What was needed was a major overhaul not the scrapyard. Does the Department for the Environment, Food and Rural Affairs (DEFRA) have any policy regarding the engineering aspects of primary food production or appreciation of the need for support for the UK Small to Medium Sized Enterprises (SME's) in this industry? Are there any other taxpayer funded organisations with responsibility for Agricultural Engineering?

The Douglas Bomford Trust (DBT) does support research projects and is the only source of funding I am aware of but its resources are limited and they are committed to a wide range of activities. Guidance and involvement from the industry might help to channel the limited money the DBT has to areas where benefit may be maximised. Additional financial support from industry could help to revitalise Ag Eng research in the UK.

It would be interesting to get other members views or are we all drifting to extinction and the death of Silsoe was a symptom not the cause of the terminal decline. Get angry, demand at the very least a heated debate. Go down fighting if needs be.

[Some people in] my generation have let you down; it is not too late to start the fight back.

Best of luck
Geoffrey Wakeham MIAgrE

Who will respond in the next issue of Membership Matters and add their support for revitalising Agricultural Engineering R&D in the UK? Editor

Long service certificates

Name	*Grade*	*Date of Anniversary*
35 years		
Sidney Denis **Cartmel**	IEng MIAgrE	19 Oct 2007
Christopher Charles **Rothery**	IEng MIAgrE	19 Oct 2007
Francis Robert **Bibby**	IEng MIAgrE	20 Oct 2007
Michael Paul **Douglass**	IEng MIAgrE	20 Oct 2007
Alan Richard **Jones**	MIAgrE	20 Oct 2007
25 years		
Robert Colin **Fletcher**	IEng MIAgrE	4 Nov 2007
Mark **Colclough**	EngTech MIAgrE	4 Nov 2007
James Howard **Ward**	IEng MIAgrE	13 Nov 2007
Glen Edward Mark **Reeve**	EngTech MIAgrE	15 Nov 2007
Timothy Edwin George **Lee**	Eur Ing CEng MIAgrE	15 Nov 2007
John **Mullins**	CEng MIAgrE	15 Nov 2007
Iain Nicol **Pirie**	AMIAgrE	19 Nov 2007
Katherine Iris **Stearne**	IEng MIAgrE	19 Nov 2007
Jeremy Duncan Charles **Green**	AMIAgrE	19 Nov 2007
Michael Wingrove **Hallett**	AMIAgrE	19 Nov 2007
David Frederick **Topping**	CEng MIAgrE	25 Nov 2007
Peter John **Kettlewell**	CEng FIAgrE	2 Dec 2007

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Greenmount Campus
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Northern Ireland
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Harper Adams University College
Newport
Shropshire
TF10 8NB

Institute of Technology, Tralee
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Ireland

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

Sparsholt College
Sparsholt
Winchester
Hampshire
SO21 2NF

Willowdene Training Ltd
Chorley
Bridgnorth
Shropshire
WV16 6PP

Wiltshire College – Lackham
Lacock
Chippenham
Wiltshire
SN15 2NY

Last Landwards for IAgrE from Land Technology

Commercial Members

Alvan Blanch Development Co Ltd
Chelworth
Malmesbury
Wiltshire
SN16 9SG

Autoguide Equipment Ltd
Stockley Road
Heddington
Calne
Wiltshire
SN11 0PS

Douglas Bomford Trust
Barton Road
Silsoe
Bedford
MK45 4FH

Bomford Turner Limited
Salford Priors
Evesham
Worcestershire
WR11 5SW

John Deere Ltd
Harby Road
Langar
Nottinghamshire
NG13 9HT

FEC Services
NAC
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2LS

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

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

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

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

Lecturers – the unrecognised heroes in the science and engineering community

Better funding and greater support for lecturers and teaching staff are crucial in the battle to engage and attract young people into science and engineering careers, said a leading academic publishing company. Ziyad Marar, Deputy Managing Director of SAGE, the world's fifth largest journals publisher, made the observation in London at the 'Oscars' of the higher education science and engineering world. The claim comes at a time when a shortage of science graduates risks threatening the future of British industry.

The Science, Engineering and Technology (SET) Student of the Year Awards are designed to raise the profile of science and technology education in Britain. They are judged by professional SET bodies and sponsored by global industrial and pharmaceutical companies.

"Subjects defined as strategically important by the UK government and therefore worthy of greater funding and study include science and technology. At SAGE, we fully appreciate the value of these subjects to society and to the economic well-being of the UK," said Ziyad Marar, deputy managing director, SAGE.

"We passionately believe that publishing scientists' best cutting-edge research in peer-reviewed journals and disseminating the results world-wide informs high calibre teaching. We're proud of our role in the positive development of our society and how this shapes the next generation of researchers and practitioners."

SAGE's commitment to supporting the research and teaching of science and technology was demonstrated with the sponsorship of the SAGE Lecturer of the Year Award. Over 15 awards are made in areas ranging from biology and biotechnology to mathematics and materials science and engineering. The highest scoring student across all awards is declared the 'Science, Engineering and Technology Student of the Year' and it is to the Lecturer of this student that the SAGE Lecturer of the Year is awarded.

Mr Marar concluded: "During the presentation of the Awards, I watched these talented young people talking about how thrilled they were to receive an award of this kind. I was moved by the consistent and heart-felt thanks that they give to their tutors and supervisors, who clearly played a large role in their success. At SAGE, we understand and fully support the role that academics play in the formal teaching, training and development of the scientists and innovators of the future".

"We are particularly pleased to be the first academic and professional publisher to sponsor the SAGE Lecturer of the Year Award and delighted that Dr Andrew Owen from the Pharmacology Department at the University of Liverpool has won the Award. It recognises his key role in personally inspiring and nurturing the talent and drive of the young students at Liverpool today."

Dr Owen received his trophy at the gala awards dinner attended by hundreds of scientists, engineers, industrialists and opinion formers from the higher education community. He said: "I am thrilled for Craig who won the overall Student of the Year Award. He is an exceptional student and I'm proud, along with all my colleagues in the pharmacology department at Liverpool University, to have played a part in shaping his doubtless exciting future."

Dr Lynda White, a senior lecturer in mathematics from Imperial College London was the 2006 Lecturer of the Year. She added: "Winning this award is both a personal delight and of real practical use, professionally speaking. It's given the department a great boost in morale over the last year and shown both undergraduates and prospective students how committed we are to their development."

MBA scholarship for farmers boosts their strategic business skills

The agricultural industry faces a very challenging future. The phasing out of production subsidies means that in the future only farms that are well managed are likely to be successful. To help meet this challenge, younger, entrepreneurial farmers are being targeted with a £26,500 scholarship to do a Master of Business Administration (MBA) degree at the Cranfield School of Management, one of the world's top business schools.

The Scholarship is the brain child of John Beckett who, after a lifetime of achievement in agriculture, is the driving force behind the award. John's experience as a farmer and as a successful businessman has convinced him that modern farmers need to be as familiar with the skills and techniques of business as they are with farming. The aim of the scholarship is to give carefully selected farmers the opportunity to become pathfinders, demonstrating what can be achieved when world class management is mixed with British farming skills. The scholarship covers the cost of fees for the MBA, which may be done on a full-time basis for one year or as a two-year, part-time (executive) programme.

Reform of the Common Agricultural Policy (CAP) over the last 15 years means farmers are increasingly dependent on the market rather than government subsidies for their incomes, says Séan Rickard, Director of MBA Admissions at the Cranfield School of Management.

"There's a requirement now for farmers to be more entrepreneurial, to better understand their markets and to get closer to their customers. The result of management education will be not only more efficient and profitable farms but also a better managed countryside and sustainable environment," he said.

Richard Milligan-Manby is the first recipient of the John Beckett Agrifarm Scholarship and began his MBA in January 2007. In the industry for some 16 years, he runs a family arable and beef farm in Lincolnshire as well as serving as non-executive director of a grain storage and grain marketing business.

He says: "I think the challenges for the industry have to do with confidence, innovation and making the supply chain more efficient. We need to look at issues strategically."

Richard adds: "I believe doing an MBA will enable me to diversify the business. It's about bringing other ideas into how you run your business – I think of it as a cross-fertilisation of brain cells."

CONTACT

For information about the scholarships, go to www.som.cranfield.ac.uk/som/mba/applications or telephone Maureen Williams on +44 (0)1234 754812.

Membership Changes

Admissions

A warm welcome to the following new members

Member

R L Earle (Dumfries)
D A Smith (Staffordshire)

Associate Member

J Almond (Norfolk)
C Doyle (West Yorkshire)
M Hodson (Lincolnshire)
N J Rupasinghe (Sri Lanka)
A C White (Norfolk)

Associate

N Anstee (Wiltshire)
C K Bosrotsi (Ghana)
M A M Elnijomy (Sudan)
J German (Leicestershire)
S O Jekayinfa (Nigeria)
S Mcleod (Wiltshire)
D J Norbury (East Sussex)
J E Rymsza (Northamptonshire)

Readmission

P B Davies-Cooke (Flintshire)
J A J Gander (East Sussex)
A C Poole (Hampshire)

Transfers

Congratulations to members achieving a further phase of their professional development

Member

S O Jekayinfa (Nigeria)

Associate Member

J C C Harris (West Midlands)

Associate

D Ansorge (Germany)
J D Coe (Cambridge)
A P Dedousis (Greece)
M Hallett (Essex)
R Hill (Essex)
G Lowis (Lancashire)
D Melville (Cheshire)
B Pritchard (Powys)
A D Rhodes (Lancaster)
P Rossall (Lancaster)

Death

With great sadness, we record the death of the following member

Colin Victor Brutey (Hertfordshire)

Engineering Council

Congratulations to the following members who have qualified as Chartered Engineer and Incorporated Engineer, entitling them to use the designatory letters CEng and IEng after their names, respectively

Registrations

CEng

P A Skinner (Lincolnshire)

IEng

R A Holt (Leicestershire)

Produced by: Land Technology Ltd, Edinburgh Printed by: Barr Printers, Glenrothes

INSTITUTION of AGRICULTURAL ENGINEERS, BARTON ROAD, SILSOE, BEDFORD, MK45 4FH, UNITED KINGDOM. Tel: +44 (0)1525 861096 Fax: +44 (0)1525 861660

IAgrE Branch Meetings and Events

JANUARY 2008

January – date tbc

Northern Ireland Branch

Tractor Testing

Speaker: Dr Manfred Neunaber, Editorial Director, Profi International

Venue: Greenmount Campus, Antrim

Profi International produce the well known tractor and farm machinery journal with its unique independent testing and user surveys. Dr Neunaber will explain how these tests are conducted and their findings published.

Contact e-mail: **duffi@iagre.biz**

Tuesday 8 January, 19.30

South East Midlands Branch

Developments in Insect Pest Control using Heat

Speaker: David Bartlett - David Bartlett Bio Measurements Ltd

Venue: Coffee House (opp Englands Hall), Cranfield University-Silsoe

Research by the flour milling industry has shown that getting insects 'hot under the collar' is an effective alternative means of control, now that methyl bromide is to be phased out. Raising the whole of a flour mill to the required temperature (55°C) is not without its risks however, such as hot spots that cause spontaneous combustion or conversely, set off the sprinklers! A 'death monitor' is also needed to determine effectiveness!

Contact Branch Secretary, John Stafford, for further details, e-mail: **john.stafford@silsoe-solutions.co.uk**

West Midlands Branch

The Mercedes-Unimog Story

Speaker: Stuart Lamb

Venue: Stoneleigh Village Hall, Stoneleigh

Stuart is an undoubted enthusiast of the Unimog and shows his vehicles at many events in the Midlands. He will describe the development of the Unimog and its specialist uses as an off road vehicle. If you are involved in forestry, working in difficult terrain or are just interested in four wheel drive and off-road vehicles then this will be a well worthwhile presentation.

Contact e-mail: **westmids@iagre.biz**

Wednesday 9 January, 19.30

Yorkshire Branch

Alternative Energy, Wave/Wind Power, etc.

Speaker: TBC

Venue: Buckles Inn, Askham Richard, York

Contact Gordon Williamson for further details, e-mail: **gordon.williamson@ntlworld.com**

Monday 14 January, 19.30

Wrekin Branch

The Collection and Recycling of Farm Plastics

Speaker: Owen Jones, SASTAK Machinery Ring

Venue: Lecture Theatre, Harper Adams University College

The results of a farm plastic collection and recycling trial will be presented in this meeting. For further details contact Graham Higginson.

Contact e-mail: **wrekin@iagre.biz**

Tuesday 22 January, time tba

Herts & Essex Branch

Title: tbc

Speaker: Alan Chadborn

Venue: tba (south Essex)

A title to be confirmed on the topic 'Working as an Agricultural Engineer in the Urban Jungle.'

Contact e-mail: **Malcolm.Carr-West@ceme.co.uk**

FEBRUARY 2008

February, 14.30 – date tbc

Northern Ireland Branch

Hosted by Dr Peter Frost, this meeting will take the form of an on-site explanation and overview of the investment in progress to create a centre of excellence on renewable energies at Hillsborough.

Venue: AFBI Centre, Large Park, Hillsborough

Topics considered will include solar and biomass heating and anaerobic digestion.

E-mail: **duffi@iagre.biz**

Monday 4 February, 19.00

South East Midlands Branch

Branch AGM and Technical Talk entitled 'Precision Farming – pretty maps or a path to profit and reduced environmental impact?'

Speaker: Simon Parrington, Managing Director, SOYL Ltd

Venue: Maulden Church Hall, Church Road, Maulden, Bedfordshire, MK45 2AU

SOYL Ltd provide advice, services and support to growers who wish to use precision farming techniques to improve the economic, agronomic and environmental performance of their farm business. Their most popular service is SOYL Maps - Precision Nutrient and Lime Management. Over 1 million acres have now been SOYL mapped in the UK. Another service is sub-SOYL which investigates conductivity of soil across a field to determine texture, moisture, structure, organic matter and depth. The meeting will be preceded at 19.00 h by the Branch AGM.

Contact e-mail: **john.stafford@silsoe-solutions.co.uk**

Monday 4 February, 19.30

Wrekin Branch

Forage Wagons - The Future of Silage Production

Speaker: Neil Robinson, Strautmann UK

Venue: Lecture Theatre, Reaseheath College

The benefits of using forage wagons to collect forage and the engineering requirements of designing and operating a forage wagon.

Contact e-mail for Graham Higginson: **wrekin@iagre.biz**

Tuesday 5 February, 19.30

West Midlands Branch

Latest Developments at AGCO

Speaker: tbc

Venue: tbc

Contact Mike Sheldon for details of this event, e-mail: **westmids@iagre.biz**

Wednesday 13 February, 19.30

Yorkshire Branch

Latest usage of bio-degradable oils as used in the Eden Project

Speaker: Cliff Lea, Fuchs Lubricants

Venue: Buckles Inn, Askham Richard, York

Contact e-mail: **gordon.williamson@ntlworld.com**

Wednesday 20 February, time tba

Herts & Essex Branch

The impact of upland management on flooding – the Pont Bren Experiment

Speaker: Prof Howard Wheater, Imperial College-Flood Risk Management Research Consortium

Venue: tba

Prof Wheater will talk on work in Wales that demonstrates that field scale flood runoff peaks can be reduced by sensible conservation methods.

Contact Malcolm Carr-West for further details, e-mail: **Malcolm.Carr-West@ceme.co.uk**

Tuesday 26 February

Scottish Branch

Members' Night

Venue: tbc

Members are invited to present short talks (about 10-15 minutes) involving amusing, interesting or controversial subjects. *Contact Branch Chairman, Jeff Livingston, if you would like to participate*

Tel: 01786 435614

E-mail: **jeff.livingston@forestry.gsi.gov.uk**

Wednesday 27 February, 19.00

East Midlands Branch

Engineering to add value to the Food Supply Chain

Venue: Hammonds Produce Ltd, New Farm, Thornton Avenue, Redhill, Nottingham, NG5 8PB

Hammonds Produce Ltd, RASE Award Winners, provide state of the art vegetable processing and packing for their supermarket clients whilst pioneering environmental sustainability. Attend this meeting to see how a member's work has provided clients with some of the engineering needed in a forward looking business that has bridged the value gap between production and the supermarket shelf. See and hear about packing lines for parsnips, carrots, leeks, potatoes, cabbage and lettuce. Reports of the first months of production of bio-fuel from rapeseed will be of particular interest to some members. A buffet will be provided during the evening.

Contact David Yates for more information and to book a place

Tel: 01636 830628

E-mail: **enquiries@yatesengineers.co.uk**

MARCH 2008

March – date tbc

Scottish Branch

Branch AGM and Conference 'Grass Management'

Venue: tbc

Contact Branch Secretary, Allan Langley for further information

Tel: 0131 535 4308

E-mail: **allan.langley@sac.ac.uk**

March – date tbc

Herts & Essex Branch

Branch AGM and technical talk

Tuesday 4 March, 19.30

West Midlands Branch

Branch AGM and Technical Talk by President's Representative – tbc

Venue: Friends Meeting House, Stratford upon Avon

Still to be confirmed

Contact e-mail for further details: **westmids@iagre.biz**

Monday 10 March, 19.30

South East Midlands Branch

Keeping one's head above Water; Sports turf drainage machinery and techniques

Speaker: David Shelton, Shelton Sportsturf Drainage Solutions

Venue: Maulden Church Hall, Church Road, Maulden, Bedfordshire, MK45 2AU

David will talk on the development of their award winning (4 times RASE Silver Medal) sports turf drainage machinery, their R&D programme and latest drainage techniques for fine sports turf.

Contact e-mail: **john.stafford@silsoe-solutions.co.uk**

Monday 10 March, 19.30

Wrekin Branch

Branch AGM and Technical Talk entitled 'It's Shocking ... the latest in Battery Technology'

Speaker: Mike Davies, Exide Technologies

Venue: Themes Restaurant, Coleg-Powys, Newtown

Presenting the latest techniques which are used in accumulator batteries used on today's vehicles.

Contact Graham Higginson for further details, e-mail: **wrekin@iagre.biz**

Monday 10 March, 19.00

East Anglia Branch

Branch AGM and Technical talk: 'AGCO-Technology in Agriculture'

Venue: Randell NFM, Attleborough, Norfolk

Contact Duncan Russell for further details, e-mail: **duncan_russell@talk21.com**

Tuesday 11 March, 20.00

Northern Ireland Branch

Branch AGM and Technical Talk entitled 'From Hitches to Legoland'

Speaker: Richard Robinson, Autoguide Equipment Ltd and President-Elect of IAgrE

Venue: Glenavon House Hotel, Cookstown

Richard Robinson is a Director of Autoguide Equipment Ltd which originally produced hitches for agricultural tractors but now has a diverse range of branded products as well as offering a complete design, development and prototyping service for customers.

Contact e-mail: **duffi@iagre.biz**

Tuesday 11 March, 19.00

East Midlands Branch

Branch AGM and Technical Talk entitled 'Finite Element Analysis in Implement Design'

Speaker: Philip Wright, Simba

Venue: Simba, Sleaford

How Simba have connected computer modelling with the real world of soil mechanics. Attend this meeting for an introduction to advanced design technology and methods to accelerate the proactive design of durable and affordable machinery. Meet at 19.00 h for buffet and a 19.30 h start.

Contact Paul Skinner for further details

Tel: 01205 480431 / 353754

E-mail: **paulskinner57@btinternet.com**

Wednesday 12 March, 19.30

Yorkshire Branch

Branch AGM and Technical Talk on the Land Rover with Emphasis on the Camel Trophy Experience

Speaker: David Spiritt

Venue: Buckles Inn, Askham Richard, York

Contact Gordon Williamson for further details, e-mail: **gordon.williamson@ntlworld.com**

Wednesday 19 March, 18.15

Western Branch

Branch AGM and Technical Talk entitled 'Maintenance of Lakes and Rivers using the Aqua Tractor'

Speaker: John Colton, MD of Kingcomb Aquacare

Venue: Royal Agricultural College, Cirencester

John has over 20 years experience of water and fisheries management. Here, he will talk about the ongoing development of Horace Miller's original weed harvester into what it is now, a versatile and manouverable platform capable of a wide variety of tasks.

Contact Tom Overbury for further details

Tel: 01242 870458

E-mail: **Tom.Overbury@rac.ac.uk**

Thursday 20 March, 19.00

South Western Branch

Branch AGM and Technical Talk entitled 'Waste Water Treatment'

Speaker: Robin Weiss, Alro Services

Venue: Vapormatic Co. Ltd. Kestrel Way, Sowton Ind Estate, Exeter, EX2 7NB

Alro is a successful private company finding solutions to waste water problems for a wide range of clients. Refreshments provided.

Contact Mat Payne for further details

Tel: 01823 350727

E-mail: **mtpayne16@yahoo.co.uk**

RENEWABLE ENERGY

UK Environment Minister praises Scotland's largest hydropower development

UK Environment Minister Joan Ruddock visited Sloy Power Station, on Loch Lomondside to see Scottish and Southern Energy's facility there and to learn more about the company's new development at Glendoe, near Loch Ness.

She visited the Sloy Dam which feeds the power station on the western shore of Loch Lomond. Sloy Power Station was originally commissioned in 1950 primarily to supply electricity to Clydeside and Central Scotland at times of peak demand. It makes use of the waters of Loch Sloy some 285 metres above sea level and has an operating head (the drop from reservoir to turbine) of 277 metres. The station was formally re-opened in 1999 by the then Scottish Environment Minister Sarah Boyack, after an extensive refurbishment. The refurbishment of Sloy Power Station cost a total of £113 million and will ensure the continued operation of the power station for a further 30 to 40 years. As well as extending the life of the station the plant capacity was increased through the installation of modern turbine and generator technologies.

Following a tour of the power station, the Environment Minister was briefed by Dr Keith Maclean, SSE's Head of Sustainable Development on the new scheme at Glendoe, which will commence production in 2009. Glendoe Hydro Scheme, near Loch Ness, is the biggest civil engineering project currently underway in Scotland. Glendoe's prime purpose will be the generation of electricity – 180 GWh,in an average year. It will have the highest head – the drop from the reservoir to the turbine – of any hydro station in the UK, allowing it to generate more energy from every cubic metre of water than any other facility in the country.

Joan Ruddock said: "Renewable energy production plays a key role in ensuring that the UK will have a secure and diverse energy mix in the future, and will help us to achieve our climate change goals. Hydropower plays a significant role in Scotland in particular. I was impressed that the Glendoe Scheme will provide enough electricity to power every home in a city the size of Glasgow and have the potential to save 100,000 tonnes of carbon a year.

"I am committed to working with Scotland and the other devolved administrations to develop policies and programmes that help us fight climate change right across the UK."

Minister of State for Scotland, David Cairns, commented: "Scottish and Southern Energy is the third largest supplier of electricity and gas in the UK and is Scotland's third largest FT-SE 100 company. Its role in delivering Scotland's varied energy mix is a crucial one."

BUILDING INNOVATOR

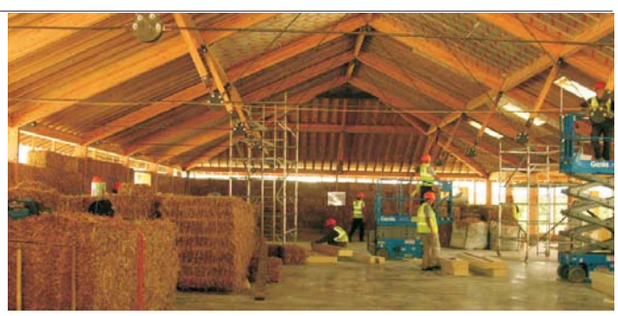
Strawbale buildings

A leader in environmentally-friendly buildings, using straw bales rather than traditional bricks and mortar, amazonails has been named as one of the top social enterprises for 'Innovation in Enterprise' in Yorkshire, having been declared earlier top innovator in West Yorkshire. Innovation in Enterprise is one of five categories in the Social Enterprise Yorkshire and Humber Awards, which are sponsored and supported by Yorkshire Forward and the four sub-regional Business Links.

Based in an old Todmorden mill, which is currently being renovated, amazonails is a leader in strawbale building in the UK. The organisation recently finished the construction part of the largest strawbale building in the UK and has built a major centre for the National Trust in the Lake District, as well as numerous houses, studios and other buildings.

Apart from many innovations in building techniques which have been developed by the Todmorden enterprise, particularly in terms of sustainability and environmental friendliness, amazonails has also pioneered the use of strawbale construction days for team-building in a variety of different kinds of organisation. This calls on the community spirit and fun we are familiar with in films showing raising the walls and roof of a house by pioneers on the American prairies.

Barbara Jones, Executive Director of amazonails says: "We have been very successful in



adapting the strawbale building techniques developed in the USA to the different climatic and other conditions in the British Isles. Such buildings not only offer the possibility of exciting, eco-friendly homes; working commercial buildings can also benefit from the advantages of this kind of building while helping to lessen the consequences of climate change. The thermal efficiency of straw bale walls means that long term running costs can be much lower than other types of building and the dependence on fossil fuels can be reduced".

There are estimated to be well over 2,000 social enterprises in the county of Yorkshire, employing 90,000 people and contributing over

CONTACT

Further information from Rachel Hammond, Business Support Manager, amazonails, Hope Mill, Crescent Street, Todmorden, West Yorkshire, OL14 5HA. Tel: +44 (0)845 458 2173, E-mail: info@amazonails.org.uk Website: www.amazonails.org.uk

BIODIESEL

Algae: the new super fuel!

AlgaeLink, a subsidiary of Dutch firm Bioking made history at Biodiesel-Expo on 17-18 October by unveiling their revolutionary photobioreactors, giving the UK its first demonstration of the 2nd generation biofuel that is already getting the bosses at Boeing excited. A little-known yet long established industry in commercial algae farming is coming to the rescue of the increasing controversy surrounding biodiesel. Unlike crops such as soya, palm, maize and rapeseed, many strains of micro-algae contain as much as 70% oil – up to 25 times more than oil seed rape.

With increasing interest in biodiesel as an alternative to fossil fuel, many have looked at the possibility of growing more oilseed crops as a solution to the problem of peak oil, raising concerns over the displacement of food crops and rising feedstock prices. Set to become the world's first super fuel, feedstock algae is also capable of absorbing nitrogen from wastewater and extracting carbon dioxide from the atmosphere. Algae needs just water, sunlight and nutrients to kick-start a happy oil-bearing life and can be grown in open ponds or sealed in clear tubes to produce far more oil per hectare than soya beans – a controversial source for biodiesel.

The many advantages of micro algae include:

- all year cultivation and a short life cycle
- the fastest growing plant on earth – 100 times faster than trees – typically doubling their weight everyday
- requirement only for raw materials that are abundant – sunlight, water, carbon dioxide and nutrients
- ability to grow in adverse conditions such as deserts and saline waters.

SOLAR ENERGY

Ben-Gurion University of the Negev develops ground-breaking solar technology

A British-born physicist at the Jacob Blaustein Institute for Desert Research at Ben-Gurion University of the Negev has developed a solar panel a thousand times more powerful than conventional solar technology.

Professor David Feiman, a world expert in solar energy, has designed a reflector which can collect and convert sunlight with twice the efficiency of ordinary silicon based panels. Although the new technology was considered by some as being too expensive, Professor Feiman's addition of mirrors has enabled a cost-effective prototype to be produced which can handle the intensified light and convert it into energy. Using the new technology of solar, or photovoltaic cells, the process of gathering the energy occurs in two stages, first the light is converted into electricity and then the light is stored for future use.

Professor Feiman is currently in talks with a solar company to explore the possibilities of using the ground-breaking technology for domestic use.

Professor Feiman said: "After thirty years of research on solar energy, my life's work of experiments in how to produce electricity from the sun, I can say this year that I know how to manufacture solar energy that will compete with conventional energy. We constructed a large, parabola-shaped glass plate. It not only absorbs the light, it also focuses it on one point, a thousand times more than regular sunlight.

"No one has ever produced so much electricity from a solar cell at this strength."

UK MACHINERY MARKET

Trade in Agricultural Engineering Products in first half 2007

Total exports of agricultural and outdoor power equipment increased by 1.3% in the first 6 months of the year to £714.2 million.

Tractors are the largest single element in the total (£361.5m) and these fell back by 2.1% reflecting the run down of tractor production at the McCormick plant in Doncaster. In contrast exports of agricultural machinery improved 16.3%.

The EU remains the most important market area for British exporters taking 68% of tractor exports and 74% of agricultural machinery, showing a growth rate of 11% and 18% respectively.

The Irish Republic remains our major customer taking 20.8% of new tractor exports and 23.9% of agricultural machinery. For tractors the next most important market is the USA (17% of trade), followed by France (11.2%), Belgium (5.7%) and Germany (5.7%). For machinery Germany is our second largest destination (10.8% of total exports), followed by France (8.5%), Sweden (5.7%) and the Netherlands (4.9%).

Total imports in the same period rose 10.8% to £791.3 million, reflecting strong demand on the UK market. As a result the balance of trade moved further into negative territory showing a deficit of £77 million. The balance of trade is likely to deteriorate further in the second half year due to an ongoing strong demand for equipment from the arable sector of farming plus the final completion of assembly at Doncaster.

RECRUITMENT

Fraudsters in the workplace

The Forum of Private Business (FPB) is sending a message to its members to keep an eye out for employees making fraudulent claims on their curricula vitae (CVs). The Credit Industry Fraud Avoidance Scheme (CIFAS) is the UK's fraud prevention service and it estimates that employee fraud costs the UK £40m per year. Around 1,500 employee fraudsters are dismissed each year, leaving businesses in the lurch and often out of pocket.

Philip Moody is Senior Member Services Representative at the FPB. He sent a stark message to the 25,000 small and medium-sized businesses it represents. "Its not just the lure of bettering themselves that will lead to people falsifying their CVs, there is a criminal element who will infiltrate selected companies, and endeavour to place individuals in positions where they have access to money, goods or information."

CV fraud is on the increase and there have been several well-publicised cases in the press recently, most notably that of Barian Baluchi, the taxi driver who used fictitious qualifications to set himself up as a Harley Street doctor and consequently conned £1.5m from the Government, charities and unsuspecting patients.

CV fraud can damage businesses in a number of ways. Mr Moody said the consequences could be severe: "Companies could be subject to fines from regulatory bodies or provide customers with a poor level of service, or even put them at risk, if staff are insufficiently qualified."

The FPB has warned that there could be a negative impact on fellow employees who have to shoulder the burden of an ill-qualified team member, individuals could even put themselves and their fellow workers in danger.

So the question has to be asked, what can you do to reduce the risks of being taken in by a fraudster? Mr Moody said there are a number of ways to spot a fraudster. "When reviewing CVs, check for gaps and unusual job moves. When interviewing, use a competency-based approach to gain evidence of how the person would perform. Consider using work-based ability tests to provide real data on each candidate's ability to do the job."

"Ensure you thoroughly check a new candidate's identity and address. It is not enough to rely solely on physical documents, although these must also be double-checked to guard against forgeries. The most efficient way is with an online check that can confirm a candidate's identity and address within seconds, against a wide range of datasets."

Other top tips from the FPB include the following suggestions.

- Once the decision has been made to employ the successful applicant, the company must ensure that the offer letter states that this is a 'provisional offer subject to references satisfactory to the company being received'.
- Owners and managers could insist on seeing original certificates for all relevant qualifications.
  Fully reference any new employees before they are allowed to start. Automating the referencing process, by using a credit reference agency, will free up your time as well as speed up the process.
- Always include a probationary period as part of the employment contract – if misrepresentation comes to light once an individual has joined the company, it will be easier to release them.

FPB produces an Employment Guide to help implement the law in the workplace. The Guide gives you all the information needed, from recruitment through to dismissal, to help avoid industrial tribunals and unfair dismissal claims, and maintain positive workplace relations.

With a CD-ROM containing easy-to-use letter and contract templates, the FPB Employment Guide helps businesses get it right with the minimum of fuss and effort.

CONTACT

Forum of Private Business Website: www.fpb.org

CARBON CREDIT

Userful makes green computing a reality

Userful Corporation, the worldwide leader in public computing, today announces that in the last year its software that allows up to ten people to work from one personal computer (PC) has saved over 13,250 tonnes of CO_2 emissions, the equivalent of taking 2,300 cars off the road. (The calculation is based on 526 kWh/PC/year for operation; 1818 kWh/PC for production; electricity generated @ 0.7 kg [CO_2]/kWh; and 5.243 t [CO_2]/car/year.

Modern desktop computers sit idle virtually the entire day while we read or type. DiscoverStation leverages this unused computing power to create an environmentally efficient alternative to traditional desktop computing. Multiple users can work on a single computer by simply attaching extra monitors, mice and keyboards.

"Computer hardware production and disposal is one of the fastest growing threats to our environment. Powering and cooling computers is an increasing contributor to global warming. By leveraging the underused power of modern PC's, DiscoverStation helps people around the world 'Go Green'," says Timothy Griffin, President of Userful.

DiscoverStations have been deployed around the world with a typical configuration of six stations per computer. Reducing the number of computers in use has additional earth friendly benefits. Electronic waste is an increasing problem globally due to the quick obsolescence of electronics. This is compounded by the fact that computer waste is high in many toxic materials such as heavy metals and flame-retardant plastics, which easily leach into ground water and bio-accumulate. DiscoverStation can reduce electronic waste by up to 80%, further decreasing its environmental footprint.

CONTACT

Please visit http://userful.com/greenpc

HEALTHY WORKPLACE

EU report marks ten years of progress in safety and health at work

The central role of the 'European Agency for Safety and Health at Work' in promoting healthier, safer and more productive workplaces was underlined in its 2006 annual report. It shines a spotlight on last year's impact on young workers and small businesses and shows how the Agency continues to improve the quality of working life in an expanding European Union.

Ten years after its creation, the Agency consolidates its role in providing workers and employers with first-hand information and examples of good practice in the field of occupational safety and health. It promotes a culture of risk prevention and continues to strengthen cooperation with accession and candidate countries and organisations throughout the world.

Agency Director Jukka Takala says that "occupational safety and health issues across national borders can only be tackled successfully through close cooperation between Member States. The Agency has set up a unique network in all EU countries and beyond to promote safer jobs, healthier people and stronger businesses."

European policymakers need to recognise the importance of good occupational safety and health to productivity and to people's quality of life - a concern in the line with the Lisbon strategy.

Key achievements in 2006

The *'Safe Start campaign'* was dedicated to improving the health and safety of the EU's 75 million young workers. As well as making employers and young people more aware of risk, the campaign involved teachers and emphasised the importance of preparing young people for the work while they are still at college.

Eight organisations from across Europe were recognised by prestigious Good Practice Awards and the video competition boasted an excellent participation of young people who produced short documentaries of impressive quality.

The *'Healthy Workplace Initiative'* for small businesses was launched in the newest EU Member States and candidate countries (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovak Republic, Slovenia). Under the motto 'Good safety and health is good for business', the Agency organised 36 seminars addressing its key target group: small businesses. 3,000 company representatives welcomed the opportunity to assess risks, involve workers in prevention plans and share good practice.

Protection of workers from new threats like avian flu is at the heart of the work of the 'European Risk Observatory'. The Agency responded quickly to this new biological risk by releasing up to date information on the web portal. Good practice solutions and advice were made available to front-line workers such as flight attendants, nurses or veterinarians.

The Agency also started work on developing material for specific sectors such as hotels, restaurants and catering.

CONTACT

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FOOD SUPPLY CHAIN

Managing environmental sustainability in the European Food and Drink Industry

Environmental sustainability is a matter of collective responsibility and also good business for individual companies, CIAA –which represents Europe's 280,000 food and drink manufacturers – says in its comprehensive new publication entitled 'Managing Environmental Sustainability in the European Food and Drink Industries'.

As the sector that buys and transforms about 70% of the European Union's agricultural output, food and drink manufacturers are making significant and continuous improvement in ensuring a sustainable supply of safe food for Europe's 480 million consumers as well as customers around the world.

The report represents CIAA's contribution to a constructive debate on environmental sustainability and an antidote to sometimes short-sighted initiatives targeting just one stage in the supply chain without weighing potential side effects. In order to be effective, cooperative action on environmental sustainability in the food chain must involve all key players according to their environmental impact, including farmers and manufacturers, the transport sector, retailers, consumers and others. Each has a crucial role to play, individually, and also as a team player.

"We invite all stakeholders inside and outside the food chain to a constructive debate on collective responsibility," said CIAA President Jean Martin. "Our report highlights the value that food and drink manufacturers can bring to the table."

The 64-page publication which can be accessed under **http://envi.ciaa.eu** highlights issues, industry actions and future strategies in the areas of raw materials, resource efficiency, waste, energy, water, packaging, transportation and distribution efficiency, among other topics.

The report is also intended to provide inspiration for continuous improvement by the small- and medium-sized enterprises that make up the vast majority of Europe's food and drink manufacturers by demonstrating through case studies how protection of the environment makes sense for both good corporate citizens and good business.

WATER CONSERVATION

Water butts in every garden by 2010

"Water butts to collect rainwater and patios with permeable surfaces must become standard features of gardens within a few years", said Environment Minister Phil Woolas.

Speaking to a meeting of drainage industry representatives, Mr Woolas said the impacts of increased development and climate change demanded a shift in thinking. A few simple measures could mean not only that rainwater was stored and utilised more effectively, but that the potential for heavy rainfall to cause surface water flooding could be reduced.

Mr Woolas also called for a review of the existing 130 year old measure for new developments to be automatically connected to the sewer for surface and roof drainage, which at present offers little incentive for developers to think about building in other water management measures.

Phil Woolas said: "It's clear that we can't concrete over grass and soil without any consequence. Surfaces which allow water to penetrate, such as village greens and permeable paving, can reduce the rapid run-off from heavy rainfall, ease pressure on the drainage system, and limit the impacts of any overflows. The local pond, the water butt and the front garden all have a crucial role in tackling surface water drainage, and I think the value of these is currently underestimated in the bigger picture. It is folly to drain rainwater through expensive treatment works and into our rivers when it should be going into our gardens, fields and ultimately the water table.

"I want to see a safe water butt in every garden by 2010 and permeable patios and paving.

"Currently, a developer can automatically connect any surface water run-off to the public sewerage system. Where is the incentive to try and minimise that run-off? We have to question whether this is right. One of the issues we are also considering is whether we should ensure that where front gardens are paved over it is done with permeable materials.

"This is the kind of thinking that is informing the development of our Water Strategy, which we will publish in the New Year. The Strategy is founded on the simple principle that every action which impacts on one part of the water environment has the potential to impact elsewhere. Only by recognising that we do not act in isolation, or without consequences, can we meet the challenges of increased development and climate change in a sustainable way."

GREENHOUSE GASES

Geological storage of CO_2

IFP, Géostock and BRGM announced the creation of a joint company, Geogreen, specialising in engineering services for the transport and geological storage of CO_2. These three leading French players are pooling their skills in order to position the company in the world market for the geological storage of CO_2 and thereby contribute to reducing emissions of greenhouse gases.

IFP holds a 40% stake in the new company, Géostock another 40%, and BRGM 20%. The technical activities are perfectly complementary between shareholders. This enables Geogreen to provide the industries concerned with a very broad range of services, covering the whole chain from the transport of CO_2 to its geological storage, from upstream expertise to engineering and project development. In the longer term, Geogreen will offer injection site inspection and maintenance services, and monitoring services in connection with closures of storage sites.

Gilles Munier, Chief Executive Officer, Pierre Le Thiez, Executive Vice-President, and Carlos Gomez-Montalvo, Vice-President Sales & Marketing, will lead the new company.

Poorly developed only a decade ago, CO_2 technologies are today recognised as a way to make a significant dent in emissions of greenhouse gases. Industries that emit CO_2 are taking a close look at mass geological storage solutions, and pilot CO_2 capture and injection facilities are mushrooming all over the world.

Aware of the environmental stakes for future generations, and the importance of taking steps towards sustainable development, Geogreen is firmly committed to a public interest approach. Its leaders are determined to apply a stringent health, safety and environmental protection policy and to work in complete transparency with all players concerned by its business.

As an international research and training centre, IFP (**http://www.ifp.fr**) is developing the transport energies of the 21st century. The capture and storage of CO_2 are among its strategic priorities.

Géostock (**http://www.geostockgroup.com**) is an international engineering group and a leader in the underground storage of hydrocarbons, in particular natural gas.

BRGM (**http://www.brgm.fr**) is a French leading public institution the Earth sciences field to manage the resources and risks of the soil and the subsoil.

GREEN RESEARCH

Tarmac study proves benefits of 'green fertiliser'

Green fertiliser, or AgSlag as it's commonly known, which is made from steel slag dust, now has proven benefits for arable and grassland farming, according to Tarmac and Newcastle University.

Steel slag dust is a by-product of the steel manufacturing industry, which currently produces around half a million tonnes of it each year. In a bid to reduce the amount of steel slag dust being sent to landfill, a joint research study led by Tarmac and Newcastle University has been carried out to measure the benefits of using 'green fertiliser' and to demonstrate its long-lasting effects.

Field trials in Scotland have also shown that AgSlag is capable of boosting grass growth; restoring the natural pH balance and mineral content of the land; increasing crop yield and improving the well-being of livestock. Importantly, the product also has a lasting effect and in most cases land only requires treatment every three to five years.

Dr Howard Robinson, head of product development at Tarmac, said: "Our field trials in Scotland have proven that AgSlag rejuvenates grassland and benefits grazing stock by producing thicker, lush pastures. The treatment can also help to prevent disease in the vegetation and encourage the growth of a more diverse range of grass and plant species."

Dave Merrilees, senior soil and water management specialist at the Scottish Agricultural Association, comments: "The field trials carried out on the benefits of AgSlag in grass production showed that a similar grass yield can be achieved by a single application of AgSlag, compared with separate applications of ground or magnesium limestone and triple-super-phosphate.

"Application of AgSlag to an acid soil with 'low' Phosphorus (P) status resulted in a pH increase from 4.9-5.6 within seven weeks of application and an increase in soil P status to 'moderate' showing a significant net gain in plant P uptake. AgSlag also increased plant uptake of magnesium reducing the risk of hypomagnesaemia in livestock."

Commenting on the long-lasting effect of the product, Howard Robinson adds: "AgSlag acts as a slow release mechanism for soil-locked phosphates, keeping the soil replenished for, on average, three to five years; about two years longer than conventional soil treatments."

Green fertilisers, such as AgSlag, have been used in Britain for many decades, but are only now becoming more widely used as farmers look for more sustainable solutions that bring benefits for the land, crops and livestock.

Howard Robinson concludes: "Farmers are looking for green alternatives that enrich rather than deplete the environment. AgSlag is free from nitrates and harmful leachates, there have even been some reports that animals that graze on treated pastures have higher fertility rates and that weight and stocking levels have also increased."

CONTACT

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VAPOUR EXTRACTION

Pioneering remediation project

In what is believed to be a UK first, AIG Engineering Group has successfully applied its new thermally enhanced soil vapour extraction process to clean-up contaminated land at the UKAEA Harwell site.

As part of the development of the pioneering remediation technology, AIG worked closely with Busch UK to develop a robust and portable extraction plant capable of dealing with a variety of site conditions. The new process involved electrically heating the extraction zone to around 100°C whilst simultaneously applying a vacuum to extract water and vapour that could be separated and dealt with accordingly.

The selection of the vacuum system was crucial to the project's success, particularly as it needed to meet the ATEX regulations for explosive atmospheres and deal with harsh working conditions. Busch UK was chosen to supply a vacuum system packaged inside a six metre long container that could be easily moved around the various sites.

Simon Dockerty, process and systems manager with AIG, explained: "This thermal process is far more aggressive than conventional soil vapour extraction methods and as such is highly effective at removing contaminants; they are in fact vaporised by the heat.

"This, coupled with the high level of vacuum supplied by the Busch system, means that it can significantly speed up decontamination of a site, making it much more cost effective. Our previous experience with Busch's vacuum technology proved its quality and reliability, so naturally it was our first choice."

ARBORISTS AND TREE SURGEONS:

FIND THE HIDDEN CASH IN FELLED TREES

Bruce Boyers

A new, cost-effective solution turns felled trees into a great revenue source

Tree surgeons and arborists may be sitting on a gold mine without even realizing it. The cedar that the client wants taken down to put in a room addition, the oak to come out of the back yard to make room for the swimming pool, the walnut tree that needs to be cleared for new landscaping, all of these can now be sold as lucrative timber instead of the traditional and far less valuable firewood.

"You do make a little bit of money out of firewood, but nowhere near as much as you will if you've got some quality timber to sell," says Robert Dyer, a tree surgeon from Lymington, Hampshire. Dyer and the company he owns, Always Greener, Ltd, has joined the ranks of many others discovering how to make milling such timber a possibility.

"There is also a market for those looking to buy the green timber and cure it themselves. Dyer is finding regular buyers who he can alert when various trees are to be felled to see if they would like that particular wood, and how they would like it cut"

Not long ago, Dyer realized that the wood he was hauling away was turning to waste. "I had a couple of really nice big trees I was due to fell, and I thought, instead of turning them into firewood, is there any way that I can, myself, turn them into planks and useful wood?" he says. He typed the term 'chainsaw mill' into a search engine, and on an American website discovered a mill which would enable him to mill a tree out where it was found. He realized that he already owned the chainsaws and was already being paid to take away the wood, and for a few hundred pounds investment he could be paid for high-quality timber as well.

Dyer ordered the Granberg Mini-Mill, not available in England at the time, from the US. "I couldn't believe the great results you could get, just from a chainsaw on logs," he says. "And as soon as I started using it, I could see that the system works pretty well. It's just a good, solid, easy to use system." He then graduated to a larger Granberg model, the Alaskan.

What he found ideal about the mill was its portability. In the case of approximately half the trees he was required to remove, no other sawmill could be taken to the location. The only other answer would have been to move the logs to a sawmill, which in most cases wasn't possible. But with this solution, he's been able to mill every tree he's come across.

Dyer did explore other brands of mills, but found them to either be much more expensive, in the thousands of pounds, or more complicated to set up. What sold him on this particular chainsaw mill was a combination of both aspects, price and ease of use. Of the latter he says, "As a tree surgeon, you haven't got much time, you can't afford to fiddle about too much. And you haven't got too much space on your truck because you've got to load your other tools as well. This system clamps quickly onto your saw and is nice and portable. Also, you haven't got to worry about having a lot of other bits and pieces."

Once Dyer had the mill, the question then became what to do with the milled timber, a marketing proposition he's still exploring. The first option he considered was to sell the timber while green, which can be done; there are artisans that make what is called 'green furniture'. There is also a market for those looking to buy the green timber and cure it themselves. Dyer is finding regular buyers who he can alert when various trees are to be felled to see if they would like that particular wood, and how they would like it cut.

Of course, the more lucrative market is for cured, dry wood, and Dyer is now contemplating numerous ways to take advantage of it. Kiln drying requires a kiln, which is quite expensive, and air-drying can take as long as a year. But as part of his business Dyer owns a greenhouse, and came up with the idea of building 'a greenhouse within a greenhouse' in which to bring the timber's moisture content down to 8 - 10%, the level at which it becomes valuable.

Dyer has also utilized his partner, a master carpenter, to build furniture, a table and a bed, which they sold for a tidy profit.

BIO NOTE

Bruce Boyers is an independent writer based in Glendale, California

While they may or may not continue a furniture line, the experience helped Dyer see all the possibilities with the mill. "The good thing about this mill is you can mill the wood and make people a piece of furniture to the size that they want," he says.

The mill can be used to mill lumber on-site to needed sizes—e.g. 100 x 100 mm, 200 x 200 mm, large 50 mm planks—whatever size you need you can mill. At the same time, depending on its intended use, the timber can be milled roughly out in the field, and then further cut down and planed smooth later at a larger mill, at a negligible cost.

Dyer was so impressed with the mill that, after he'd been using it for a time, he made an offer to the manufacturer to become the first UK reseller. He found that, at least in his part of the world, chainsaw mills were relatively unknown. As soon as he began promoting the mill, however, professionals saw the advantages and began buying. "I've sold about 150 of them in 5 months," he says.

As with himself, it is the combination of price (it is priced lower than any other brand currently available in England) and the mill's portability that sells it to others. He says that he's even had customers that own large sawmills buying the chainsaw mill for instances when they run across a tree which can't be moved out or to which they can't bring another mill. They can cut it down into planks, then take them to the larger mill to be further trimmed or planed down. "Even if you've already got a big sawmill, even if you've got a portable sawmill, you can still use one of these."

CONTACT

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SLURRY SEPARATOR

Alvan Blanch launch innovative new slurry separator

A new slurry separation machine, the Roller Screen 500, has been developed and launched by UK manufacturers Alvan Blanch Development Co Ltd.

With throughputs of up to 60 mΔ /h, the system efficiently separates solids from agricultural and industrial slurry by means of a unique action in which product passes between rubber compression rolls and a perforated stainless steel drum to deliver stable, stackable solids of up to 30% dry matter.

Independent slurry consultant Simon Johnston says: "The Roller Screen 500 has been in field tests for a year and one machine has already been working efficiently for 4,800 hours. Its benefits include reduced storage, better liquid quality and solid waste that's easier to handle and to distribute.

"As well as these practical benefits to dairy farm efficiency, the separation of solids from slurry has real benefits to the environment in terms of reduced greenhouse gas emissions and less leaching of nitrates into water courses."

Andrew Blanch, Managing Director of Alvan Blanch explains: "We have used the benefit of our experience in this field to develop a completely new separator which is exactly what dairy farmers in Europe have been looking for – a cost effective machine that delivers a consistent end product, day in day out.

"We have engineered reliability into every aspect of the machine – from the robust hot dip galvanised frame and stainless steel internal components to the high quality motors and triple sealed bearings. The separator is also compact and adaptable, to suit any site. Alvan Blanch can also offer full system design and installation services."

"We have been astonished by the level of interest in the machine, especially from those who have witnessed demonstrations. Firm orders have already exceeded our most optimistic projections for this year and these have included exports to Germany."

The machine costs £7,700 ex works and Mr. Blanch says: "It's the most cost-effective slurry management system available, so it's a good investment for farmers with units from 100 cows upwards."

CONTACT

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COMBINE HARVESTER

New Holland CR combine wins Gold and Silver Medals at Agritechnica

New Holland's latest CR Elevation rotary combine harvester was presented with three medals at Europe's premier machinery show, Agritechnica, held in Hannover, Germany from 11 to 17 November.

A gold medal for the combine's Grain Cam™ system and two silver medals for the Opti-Clean™ cleaning shoe and IntelliCruise™ system were bestowed on the CR Elevation combine by the DLG (German Agricultural Society) in a pre-show competition that recognises the technical innovation and the production benefits of new technologies. The latest features highlight New Holland's continuous and innovative approach to product development, further raising the productivity levels on the high-capacity CR combine range.

Gold Medal: Grain Cam system
The gold-medal winning Grain Cam system monitors the grain sample quality as it travels up the clean grain elevator, displaying the image on the IntelliView II™ monitor. The sensor detects and calculates the amount of 'material other than grain' (MOG), which includes broken grains, using image processing software to analyse the sample displayed. The operator can adjust the cleaning shoe and threshing system to maintain or improve the grain sample. The Grain Cam system, which will be available in season 2009, is the first on the market and marks an important step towards a fully automated combine process control.

Silver Medal: Opti-Clean system
To handle the increased power and capacity of the CR Elevation combine, New Holland has developed a new cleaning shoe. The Opti-Clean system uses independent suspension of the grain pan and sieves to enable the movement of each individual component to be optimised. The Opti-Clean shoe is the first to allow opposite movement of the pan and upper sieve, increasing the cascade height for greater separation capacity and more aggressive cleaning with less overall vibration level.

Silver Medal: IntelliCruise system
The IntelliCruise automatic crop feeding system monitors crop load on the header to ensure a smooth optimisation of the driving speed. Sensors on the header and the straw elevator monitor the amount of crop being fed into the combine and provide early detection of variation in crop load. The combine's forward speed is automatically adjusted based upon this information, resulting in consistent and optimum performance and maximum operator comfort.

STONE PICKER

On stony ground…

The new 'Stone Picker' is now available in the UK from Gregoire Besson and as the name suggests is designed to prepare the soil prior to cultivation.
Many parts of the UK have stony soil, which as well as reducing crop yields can take its toll on tyres and serviceable parts of agricultural equipment. The Stone Picker is available in 4, 5 and 6 m working widths as well as single and twin axle versions. Stones between 25 and 300 mm can be collected. The 6 m Stone Picker can handle 1.2 t/min.

Stone Picker: 4, 5 and 6 m working widths with single and twin axle versions available

Rotors on each side of the unit collect stones and transfer them to a lifting drum that has tines that move the stones along a sieve into the stone tank. The size of the sieve can be altered for different cultivation requirements. The stones are cleaned via agitation and can be re-used as construction material or for roads. The hopper can hold up to approximately 3 t, prior to tipping onto the ground or a trailer for further transport. The collected soil is left to drop back to the ground. Low ground pressure tyres are used to minimise compaction.

The Stone Picker is attached to the tractor draw bar and the working depth is adjusted via a hydraulic drawbar on the machine; the working depth stays stable in uneven conditions. The Stone Picker features a 'stump jumper' so that if a permanent obstacle is hit, the equipment will ride over it to prevent damage or stress. Working speeds between 1 and 6 km/h can be obtained.

A number of options are available including a rotor lift so that the rotors can be raised from the tractor cab when not in use, without the need to disconnect the power take-off shaft or wires. The optional rotation guard can help maintain visibility to the rotors and lifting drum in dusty conditions; it also has the added benefit of reducing the likelihood of belt damage.

Commenting on the latest addition to the Gregoire Besson range, Managing Director Bill Immink said: "The Stone Picker perfectly complements our range of ploughs, disc harrows and other cultivation equipment. It isn't just farmers that will benefit – it will also be useful in the utility market, for land reclamation, playing fields, golf courses and so on."

CONTACT

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AIR CONDITIONING

Beat the heat with evaporative cooling

An evaporative cooling system from JS Air Conditioners is the ideal solution for beating the heat in agricultural storage and livestock facilities during summer, as it reduces temperatures by up to five times that of ventilation alone. This means that crop spoilage is reduced and livestock kept more comfortable and productive during cycles of breeding, suckling and fattening. The ventilation it provides also helps clear gases and odours, reducing levels of CO_2, $NH_3$and H_2S.

An evaporative cooling system: the ideal solution for beating the heat in agricultural storage and livestock facilities during summer, as it reduces temperatures by up to five times that of ventilation alone

Another benefit of installing an evaporative cooling system is that it produces a good level of indoor humidity, thus reducing the moisture loss from crops, helping to maintain weight and freshness.

JS Air Conditioners can supply and install an evaporative cooling system to control the temperature, air quality and humidity in any size of agricultural facility. The running costs are very low as the only powered elements are a fan and water pump.

Installation is relatively quick and simple and therefore does not require the building to be out of use for long. A typical evaporative cooling installation consists of an external box-type evaporative unit installed either on the ground directly outside a building, or on the wall or roof. This contains a large fan, which draws air into the unit through continually wetted filters. As well as cooling, airborne pollutants such as dust are filtered out. The cooled, purified air is then fed into the building and distributed to the areas to be cooled via ducting.

One unit will typically cool an area up to 3,500 m^3 but multiple units can be installed to cool any size of area.

In order to ensure good performance, the area being cooled needs to be well ventilated but no active extraction of indoor air is required. All that is needed is to leave windows, doors or ventilation louvers open to allow air to flow through the premises.

Alternatively, for those wanting a temporary cooling solution or 'quick fix' to high temperatures in agricultural facilities during the summer months, a mobile unit can be used to cool an area up to 625 m^3. As it is on wheels, it is easy to position and it only requires a single phase power supply, water and drain making setting up simple. As with the fixed models, the mobile units can also be connected to a thermostat for automatic control.

JS Air Conditioners offers a full service of advice, design, supply and installation of evaporative coolers for any sized agricultural application.

CONTACT

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CROP DRIER

Digital drying technology to raise grain quality

Top quality grain is much easier to deliver following the addition of a digital programmable logic controller (PLC) control option to the Continuous Double Flow Drier manufactured by Alvan Blanch Development Company Ltd.

The new control panel further enhances a grain drying system that has operated successfully on farms for many years, by providing improved controllability, simplified adjustment and continual performance monitoring.

"In light of fiercer demands from the food chain for quality assurance and traceability, the PLC control panel, which can also be accessed remotely, ensures that optimum operational efficiency and grain quality is maintained," says company managing director Andrew Blanch.

"The capability for efficient, even drying has long marked out the Continuous Double Flow drier over others - its unique mechanical conveyor principle ensures that all grain is dried for the same duration," Mr Blanch explains.

"Added to this, and the fundamental requirement for a robust and durable machine, we recognise the growing list of considerations when making the long-term investment in a grain drier," he notes. "With climate change and environmental considerations rising steadily in priority, it's important that farm equipment is energy efficient."

The drier offers fuel savings by recycling all the heat from the cooling section of the drying bed, and overall efficiency is improved by the electronic crop follow-on device that allows immediate changeover between crops without emptying and refilling.

"And with the prospects of both warmer UK temperatures and new crop markets opening up, it is worth considering the different crops that are likely to be introduced to rotations in the coming decades," adds Mr Blanch. "Alvan Blanch's drier is designed to handle any type of granular crop in any condition."

Indeed, Hungarian farmers may already be setting the trend in adaptation to new technology and cropping possibilities as Alvan Blanch sees the first of its upgraded machines sold to arable units in Hungary.

CONTACT

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Additive takes the hard work out of complying with slurry regulations

As the slurry tank emptying season approaches, many farmers will be dreading the thought of what lies ahead of them.

The hassle of 'crust busting' – agitating, stirring and pumping. The stench of the job potentially leading to complaints from family, workers and the local community. The costs, diesel, labour, machinery, they all add up. Nitrate vulnerable zones (NVZ) and integrated pollution prevention control (IPPC) regulations only add to the headache, with much focus on slurry storage and odorous emissions.

"I can't imagine farming without it now. The amount of hassle Epizym's 'bugs' takes out of slurry management is nothing short of amazing," said John Pidsley. Lactobacillus (top right) and nitrosomas (bottom right) under the microscope – surprisingly effective for their size.

Costly problems

A typical response might be to buy a new piece of 'kit' to deal with a slurry problem. A new stirrer or pump, have the contractors in for longer. A new ventilation system to deal with odour or a new, bigger tank to deal with the storage issue. But we're now in a climate where farmers can ill afford large capital expenditure, what with foot and mouth, poorer harvests and increased competition from abroad all potentially eroding profit from UK farm coffers. This on top of milk and livestock prices being squeezed mercilessly by retailers.

Few realise that slurry additives containing bacteria ('bugs') – millions of which could fit on the point of a pin – are the unsung heroes in solving numerous slurry problems and delivering some key benefits, in one go.

"Bacteria: the biggest non-unionised workforce in the world"

One such additive, proven in trials at home and abroad, is Epizym Cattle and Pigs. It is the result of over 30 years of research and development by the late Dr Howard E. Worne, recognized as one of the world's leading microbiologists. Dr. Worne developed one of the world's most comprehensive arrays of multi-complex organisms for use in environmental microbiology. Through his research, he isolated naturally occurring bacteria which, when applied in specifically prepared groups and measured amounts, perform a variety of remediation and waste management tasks. His famous statement that "bacteria are the biggest non-unionised workforce in the world" is embodied in how Epizym's slurry additive works.

Putting the bacteria to work

The bacteria in Epizym's animal waste deodoriser and liquefier use slurry as a food source. They break down the particles to produce a more consistent and runny mix, virtually eliminating crusts and putting floor solids into 'suspension' within the mix itself. This produces a liquid, easy to handle organic fertiliser. This goes a long way towards maximising capacity in a storage system, a big tick for the NVZ stipulation of the 'closed for spreading' season.

Just as importantly, the additive is proven through Silsoe's Olfactometer Unit to halve noxious gases, helping pig and poultry farmers not only to meet IPPC rules (where a strict eye is being kept on farms upsetting 'sensitive receptors' – those within 400 m of the farm) but also to improve atmospheres within buildings for animals and workers.

But the bacteria don't stop there. It's also been proved that treatment with Epizym increases the ammonia captured in slurry by 50%, making it more readily available to the crops, boosting the organic fertiliser value of the slurry. Dairy farmer John Pidsley has been using it for 10 years: "When I put the thinner slurry on the land, I saw that the grass was growing noticeably quicker almost straight away. So much so, that by the springtime, I was able to drastically reduce the amount of fertiliser I put onto the land, buying only a couple of bags as an 'insurance policy' almost." John also found the increased liquefaction of the slurry beneficial: "I've noticed Epizym treated slurry doesn't stick to leaves, so contamination risk is reduced on silage grounds and we can get the cows back to grazing sooner."

The product comes in powder form in easy to store 1 kg tubs and is simple to apply, with only a bucket, water and a stick needed as tools. It's 100% non GM, making it perfect for organic farming, where maximising slurry value as a fertiliser is essential. It's also non-corrosive, non-toxic biodegradable and completely environmentally friendly. Using it can completely remove the need for expensive, noisy and 'carbon footprint' making machinery and slash the number hours or sometimes days spent slavishly in and around the slurry storage system.

So rather than reaching for the machinery catalogue to solve a slurry problem, farmers under pressure might consider harnessing the silent strength of bacteria to do the job for them. For many, it could help save a lot of money which could be re-invested elsewhere, whilst at the same time making life on farm much more pleasant, compliant with regulation and hassle free.

CONTACT

For more information, including a free no obligation consultation on how to make the most of your slurry, call 0800 083 0614 Website: www.epizym.com

DREDGING

Compact Kubota Minis keep canals flowing

Kubota mini excavators provide the ideal solution for canal dredging specialists Blue Boar Contracts

A barge-mounted Kubota mini excavator has overcome a serious access problem for canal dredging specialists, Blue Boar Contracts, dramatically slashing downtime.

The compact 3.25 tonne KX91-3 mini has proved so successful that the Warwickshire business has now bought a second machine.

Blue Boar Contracts, of Dunchurch, near Coventry, is one of two dredging businesses on British Waterway's roster and also works for local authorities.

Its existing fleet of barge-mounted 4.25 m wide, 6.5 tonne excavators, fitted to pontoons, could not pass through the 2.12 m wide canal locks and tunnels or under narrow bridges commonly found in urban areas.

They had to be tracked off, the pontoons broken down into two sections and moved individually around the obstructions, which could take up a day. More time was often spent moving equipment around than dredging urban canals.

This downtime and the expense involved have been eliminated as the 2.12 m wide Kubota KX 91-3 can work in the narrowest of canals. An added advantage is that it can dredge narrow lock chambers, something Blue Board could not attempt before.

After removing the Kubota's tracks, it bolts the machine's slew ring to the deck of a barge and remounts the excavator's superstructure.

With a digging depth of 3180 mm, the longest capability of any machine in its class, the mini uses its 1500 mm wide ditching bucket or a 450 mm wide digging bucket fitted with teeth to remove silt from the canal.

The silt is loaded on to a 20 t capacity hopper in front of the barge, with the 15 m long combined unit pushed into position by tug. Clean silt is spread on agricultural land adjacent to canals, with contaminated material sent to land fill.

As the machine's hydraulics are already piped up for attachments, a hammer is used for piling work with metal sheets to combat bank erosion. The minis have been converted for use with bio-degradable oil for use on water.

Said Blue Boar director Simon Potter: "We wanted a compact and easy-to-use excavator that was simple to maintain. We looked at several makes and the Kubota was the most suitable. It's powerful, reliable, highly productive and has a terrific reach."

It was also the only mini he saw with a simple method of removing the cab, which is required when they have to get under a particularly low obstruction.

"It's just a question of undoing a few screws and removing the cab. With the others the wiring loom tended to be an integral part of the cab, making removal difficult if not impossible," said Mr Potter.

"Its use has resulted in huge time savings as it can work in the narrowest of locations on the canal network. The operators like it because of the simple controls and the cab's comfort. The barge it's mounted on has hydraulic legs that make it more stable when static, which can be operated from the machine's cab."

The barge had to undergo an independent stability test before it could be used and passed at the first attempt. It's currently working on the Llangollen Canal where it's dredging up to100 m a day.

Blue Boar's second KX91-3, purchased because of the success of the first, has also been mounted on a barge and is undertaking dredging duties on the Peak Forest Canal.

Both machines were supplied by Kubota dealer, Shellplant Ltd, of Earls Barton, Northamptonshire.

Said Shellplant's partner Julian Payne: "Most of the Kubotas we sell are for ground work, landscaping or plant hire. Working on a barge to dredge canals is a fairly unusual application and we are delighted to have helped Blue Boar become even more efficient."

Blue Boar also has a smaller 1.5 tonne Kubota which is used for towpath construction work.

Kubota is the world leader in mini excavators and provides the largest range of minis available from a single manufacturer. Customers can select from 18 base models, spanning the weight range from 850 kg to 8 t, and including the widest choice of the increasingly popular zero tail swing machines.

With a legendary reputation for quality, performance, reliability and excellent resale values, together with unbeatable support from a nationwide network of specialist dealers, their versatility makes them the ideal tool for many different applications and end-users, from civil engineering to landscaping and plant hire companies to owner operators.

Sales of Kubota mini excavators have continued to increase significantly, further boosted by the incorporation of a unique key-based 'ANTI-THEFT' security system - the first of its kind fitted as standard equipment by an excavator manufacturer.

CONTACT

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New self-propelled foragers offer intelligent solutions

New levels of power, 'intelligent' technology and productivity are offered by John Deere's 7050 Series self-propelled forage harvesters, which will be available for the 2008 season. The new range has models with engine power ratings from 285 to 518 kW.

Designed for high capacity harvesting in grass, maize and wholecrop, this latest range continues to use Deere's unique infinitely variable length of cut (IVLOC) transmission to enable operators to change chop length on the move.

In addition to the basic models, six new ***i*** Series machines will be equipped as standard with an integrated 'intelligent' package of precision farming technology. This includes the HarvestLab dry matter sensor, GreenStar 2600 display, Harvest Monitor and Harvest Doc software, StarFire iTC receiver with SF1 signal (offering +/-30 cm accuracy for yield mapping), and new AutoLOC.

AutoLOC provides automatic adjustment of the length of cut depending on the dry matter content of the crop being harvested, based on settings programmed in by the operator on the in-cab GreenStar display.

The precise length of cut required from the standard 40 knife drum can be dialled in from the driver's seat, in 1mm increments from 6 to 26 mm. For even greater flexibility, optional 48 and 56 knife drums offer adjustable cut lengths from 5 to 22 mm and 4 to 19 mm respectively.

This unique system allows the operator to adapt to different crop conditions within the same field and keep the machine running at optimum levels for peak performance. It also provides contractors with the ability to tailor their service to individual customer preferences, and to vary, monitor and record output not just from farm to farm, but from field to field or even trailer to trailer.

Combining HarvestLab with Harvest Monitor and Harvest Doc means the user can record yield and moisture data for transferring to an office computer, which can then form the basis of yield and moisture maps, as well as comprehensive operational, crop management and traceability records.

The information provided on the cab display can also be used to control silage additive applicators for variable rate application, and enable the operator to select machine settings to produce the optimum feed quality from the crop being harvested. In addition, the farmer knows precisely the total amount of silage dry matter in the clamp to plan for future feed rations.

The versatile HarvestLab sensor can also be removed from the forager spout to allow it to be used for stationary feed analysis of different forage ingredients.

Power increases of up to 11% are generated by a new fuel efficient John Deere PowerTech Plus Tier 3 engine – 9 litre on the smallest 7250 model, and 13.5 litre on the 7350 to 7750 machines – with similar exhaust gas recirculation and variable geometry turbocharger technology to that featured on the company's latest 30 Series tractors. The top of the range 7850 model continues to use the same Cummins 15 litre Tier 2 engine as before.

Options on the new foragers will include the ProDrive hydrostatic transmission with full anti-slip control, automatic diff-lock and automatic park brake, AutoTrac assisted steering and a new automatic spout positioning system with nine settings. Additional specification improvements include a roller blind to reduce crop build-up at the feed intake and reduce the need for cleaning and maintenance.

All the new foragers are designed to take the award winning Kemper four, six, eight and 10 row (3 to 7.5 m) rotary maize headers, in addition to the standard 3 m grass pick-up. These include the new eight row (6 m) Kemper 460 Champion, a large drum, row independent maize header which is designed to handle very tall plants and difficult, laid crops to reduce harvesting losses.

For undulating ground, a new optional automatic header control is available for the Kemper range, featuring active management of header height and tilt using information from sensors on the header feelers.

CONTACT

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LANDWARDS 2008

Making Manufacturing Pay

This conference is aimed at all those engineers who are interested in, or need to get up to date with, the latest ideas in all aspects of Manufacturing for Land Based Engineering. Speakers from well respected suppliers will present a wide range of topics including case histories from companies that have effectively implemented positive changes.

For those of you running smaller companies, there are problems keeping abreast with the latest developments. This conference is intended to provide an opportunity to network with experts in many aspects of manufacturing. The intention is that everyone will leave with information that can be put into immediate effect and give increased margins as well as increasing production from existing resources.

Although there has been a dramatic reduction in the UK manufacturing base in recent years, paradoxically, a small number of companies seem able to expand profitably, by exploiting design and manufacturing skills without the need to utilise offshore suppliers. We hope to show how this can be done economically and effectively.

The Conference will be chaired by Roger Lane-Nott, Director General of the AEA. The day will include an introduction by Richard Robinson, Managing Director of Autoguide Equipment and IAgrE incoming President followed by presentations from:

- **JCB**
- **Bosch**
- **Trumpf**
- **Akzo Nobel**
- **SSAB Swedish Steel Ltd**

and other leading manufacturers

on topics including:

- **Materials selection**
- **Making change work**
- **Outsourcing or not?**
- **Supply Chain Management**
- **Cutting waste in manufacturing**
- **Customer Supplier relationships**
- **Maximising the efficiency of work practices**

Poster and product displays will also be on view throughout the day.

This conference is kindly supported by:

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LANDWARDS 2008 Conference

May 8th

Venue:

Queen Mother Hall

Harper Adams University College

For further information, please contact:

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