

News from EurAgEng

Summer 2015



EurAgEng

EurAgEng

'Rendezvous and seminar'

At the SIMA Exhibition in Paris February 2015

by **DAVID TINKER**, Secretary General, with added contribution from **Luís Alcino Conceição**



"How do EurAgEng and agricultural engineers contribute to innovation for sustainable intensification of agriculture?"

The contribution of agricultural engineering on innovative sustainable solutions to the intensification of agricultural production was the theme for a seminar that took place at the 76th SIMA in Paris.

To start this valuable meeting there were messages from holders of the EurAgEng Award of Merit with their views on the importance of innovation in agriculture.



President Emmanuel Hugo reminded us of the activity of EurAgEng and the importance that it has had over the years in the discussion of issues around engineering applied to agriculture, bringing together researchers, businesses and farmers in the various conferences, publications and working groups.

SIMA and EurAgEng organised this first ever seminar and it recognised the important role that innovative engineering has in promoting the sustainable intensification of agriculture.

SIMA arranged simultaneous translation (French & English) and an excellent room while IRSTEA, the French national research institute for science and technology for the environment and agriculture, also provided support with lunch and IRSTEA's President J-M Bournigal gave the closing presentation summarising the talks.

EurAgEng has some very good friends who

provided a range of excellent technical presentations.

The technical speakers were:

- **'Background to the topic'** by Eberhard Nacke, Head of Product Strategy, Claas, Germany
- **'Agricultural Engineering: Meeting the strategic challenges'** by Mark Kibblewhite, Emeritus Professor, Cranfield University & President IAgrE, UK
- **'Agricultural robotics in open fields'** with Michel Berducot, IRSTEA - Ecotechnologies Scientific Department, France)
- **'Think ISOBUS'** presented by Carsten Hühne; AEF Project leader Communication & Marketing Spokesman Europe & Kverneland Group, Germany
- **'La Haute Culture Sulky'** with Gilbert Jouan, General Manager, Sulky, France
- **'Innovations for Hillside Farming'** with Sepp Knüsel, Landmaschinen & Robert Kaufmann, Agroscope, Switzerland
- **'Tractor Innovations'** by Martin Kremmer, European Technology Innovation Center, John Deere GmbH & Co. KG, Germany
- **'SIMA 2015'** with Jean-François Goupillon, AXEMA, France

To show the innovative research and developments being prepared by the younger agricultural and biosystems engineers we also included some PhD presentations covering 'Control of a fleet of heterogeneous autonomous vehicles in off-road conditions' by Audrey Guillet of Irstea and 'Tillage system effect on maize seed depth placement and fuel consumption' with Luís Alcino Conceição, based at Universidad Politecnica Madrid and Instituto

de Ciencias Agrarias e Ambientais Mediterranicas / Instituto Politecnico de Portalegre in Portugal.

The full presentations are available from the EurAgEng website (there is a link to 'presentations' on the home page) but here is a 'taster' of the discussions.

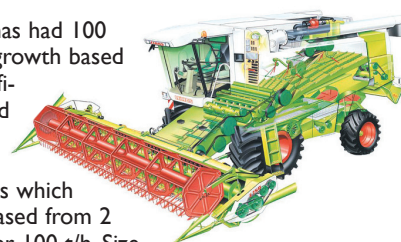
EBERHARD KNACKE discussed the background and challenges now and to come, before showing the management of shortages which will be the main driver for future farming progress which needs to be met by sustainable intensification.

There is a need also to help the public understand the reality of farming which they may find frightening because of the large machines and chemical applications while their expectation of the rural idyll can differ greatly.

Claas has had 100 years of growth based on the efficiency and productivity of harvesters which has increased from 2 t/h to over 100 t/h. Size matters but harvesters are now at the maximum size that can be driven on the road so other solutions are needed and digital sensing and analysis gives the opportunity to be more precise.

In the 1990s there could have been too many misconceptions about what Precision Farming could achieve but now there are breakthroughs with wholistic solutions.

A particular problem has been the legal need to reduce emissions which are still not finished. From 2020 there will be a push to reduce CO₂. Process efficiency has a big impact on CO₂ emissions and even if machines are not individually optimised they can be effective in combination with other equipment in the complete system.



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EurAgEng is the European Network for Engineering and Systems in the Rural Sector

... [the seminar] recognised the important role that innovative engineering has in promoting the sustainable intensification of agriculture

PROF MARK KIBBLEWHITE discussed the strategic challenges including the “perfect storm” of the effect of climate-change on the interlinked energy-water-food needs.

Mark's background is with soil and water research and so his presentation discussed the resource challenges and the need to achieve a sustainable intensification.

There is a possible requirement to develop entirely new agro-ecosystems to obtain a step change in yields with less environmental impact. Engineering is the likely enabler of intensifying existing agro-ecosystems but there is a need to imagine new agro-ecosystems and make them happen using engineering science and design.

MICHEL BERDUCAT looked at the move from auto-guided mobile platforms to robotic platforms and the scientific and technical challenges that need addressing.

There are many reasons why agricultural robotics will provide a solution for future mechanisation and in open fields, with little structure, this is still a great challenge although there are a few commercial units appearing. Path following and obstacle detection are important and we are at about the “conditional automation” level where the operator does not have to continuously monitor the system. The next level of challenges is to enable the robot to react to unforeseen events.

Robot = Ability to react itself to unforeseen events

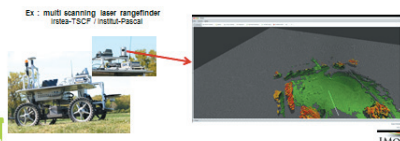
«From an Auto-guided mobile platform to a Robotic Platform»

Challenge N°2 : To continuously identify and control the environment all around the machine under a large area in an anticipative manner

Examples of solution :

- Dynamic mapping of the environment
- Construction / updating of Digital Terrain Models (DTM: obstacles, traversability, relief shape)

Ex : multi scanning laser rangefinder (range-finder) / multi-camera



The European Machine Directive gives guiding principles that can be applied to robotics and there is a draft NF EN 18497 standard for considering safety of highly automated agricultural machinery. However it is not just a technical challenge; there are many other challenges including economic adoption.

Electronics are key drivers of innovation and, as **CARSTEN HÜHNE** said, “the keyword is ISOBUS”.

ISOBUS is strategically important for all manufacturers but there has been slow progress since the launch in 2001/03 so AEF was established in 2008 to share and agree details. AEF's first priority is ISOBUS but it has a more general objective of coordinating international development of agricultural electronics for the 170+ companies and organisations that are already members.

AEF Certified Label

→ The new AEF Certified Label states that the respective ISOBUS component is in compliance with the ISO standard 11783 and moreover, with the additional AEF Guidelines. The product has successfully passed the AEF certification process.

AEF Certified

ISOBUS

www.aef-isobus-database.org



AEF has a series of conformance tests that lead to an EAF Certified ISOBUS label and a database to enable access to manufacturers' information and machine compatibility. The database was launched publicly at SIMA 2015 and it received a 'Citation' from the Awards Committee.

Further presentations were from:

- **GILBERT JOUAN** of Sulky on the innovations they have including the many additions to enable variable rate technologies to be quick, straightforward and 'user friendly';
- **SEPP KNÜSEL** and **ROBERT KAUFMANN** of RigiTrac / Agroscope on innovations in tractors and other machines for hillsides (but a Swiss 'hillside' for those of us from most other areas of Europe is very, very steep - check the slides);

Strengths when mowing on a steep slope




- **MARTIN KREMMER** of John Deere covered briefly the last century, then moved into the last decade for legal impact, fuel efficiency, productivity comfort and the technology leadership image with SIMA innovation award winning examples from today and a look ahead into the near future;

Example2 - AUTOMATION John Deere AutoConnect

AutoBackup
No driver interaction
Transmission control
Steering control

AutoConnect
Mechanics
PTO
Hydraulics
Pneumatics
Electrics
ISOBUS

AutoSetup
ISOBUS implements



- **J-F GOUPILLON** of the French agricultural machinery trade association, AXEMA, gave an overview of French agriculture and mentioned not only the advantages of precision farming but the reasons that it still has limited impact and ended by asking how the EurAgEng community can contribute to dissemination of the new practices and technologies?

The conclusions pointed out to the high number of innovative technological solutions within agricultural systems and precision agriculture as well as the need to promote training programs to farmers and operators in order to increase further the widespread successful adoption of existing and future innovative technologies.

We enjoyed preparing the seminar and we all trust that you find the presentations interesting, useful and thought provoking. Follow the link to [presentations] on www.eurageng.eu.

We all agreed that it was well worthwhile and the EurAgEng Executive plans another 'EurAgEng Rendezvous' at SIMA in 2017. We hope to see you there as we are already keeping a note of potential speakers for important and exciting topics (for instance a major producer of agro-chemicals and their group looking at 'disruptive' technologies and a major software provider with a growing interest in environmental, and agricultural, matters).



Musings by Professor Mark Kibblewhite, President IAgRE, UK; soil scientist and biosystems engineer

I was at SIMA 2015 to make a presentation at the EurAgEng seminar and afterwards spent some happy hours exploring the exhibits.

The EurAgEng seminar was on 'How engineers [can best] contribute to innovation for the sustainable intensification of agriculture' - it's the big issue for our discipline and the getting on for two thousand exhibits at SIMA were a perfect chance to catch-up on the state of the art.

Let's start by walking slowly through some of the big boys' stands each aglow with their distinctive pallet of colours. The stands have been set up to impress, almost overwhelm, and they do just that but with some intriguingly different messages.

The **John Deere** stand is extraordinary: it has an almost family atmosphere and aims at responses to human emotions as much as technology. A big video screen shows an anxious woman watching her partner setting off from the farm gate with a super-size forage harvester, followed by reassuring scenes of him washing it down after returning safely.

Good for Deere: these large machines are hazardous and engineers should have safety at the heart of development and product features. Their new AutoConnect which automates the pick-up and connection of towed vehicles won a SIMA Silver award. Of course, a good part of their stand was communicating that it really is fun to have a Gator and wear green overalls.

Now we are at the **Claas** stand and here are the panoramic cabs for which they just got a Gold medal but, joy of joys for me as a soil scientist, a 50 metre path crosses the stand diagonally and is devoted to soil, with sec-

tions imaging different soils and information boards set up for each one.

I read them all carefully and checked; Claas really do know their Luvisols from their Nitisols and Phaeozems! The only disappointment is that none of the hundreds of visitors around me are showing any interest because they are blinded by machine lust. It is a pity because the strap line was spot on: 'Optimum yields from all soils'.

The soil display was exactly in-line with the brand image I took away, which could be summed up as 'We stay calm but are technically exciting and optimise performance through technological sophistication.' It puts engineering and science centre stage and I like it a lot.

From a business perspective, once again I was intrigued and impressed by **AGCO's** carefully promoted set of brands, each with a definite market segment. I reckon that works well in a fragmented and complex global market.

The best projection of scale and power was by the **Case** and **New Holland** stands which were packed when I got there, including by young boys sitting in cabs actually controlling articulation.

And for the exotic, nothing beat the Italians in cowboy hats on the **Lamborghini** stand.

Well I could go on and on because the tractor and combine stands were endless. Actually, as a Danish colleague remarked to me at tea time, all tractor stands are great because one can never tire of looking at tractors. And it was easy to see who was selling the most tractors, namely the numerous stalls selling models and toys for grown-ups!

Now let's walk around the hundreds of smaller stands.

It is shocking for a soil scientist to see so many powered harrows that literally pound soil to bits. It is encouraging, however, that one of the big current themes is soil management and the tools to process and incorporate crop residues and minimise soil disturbance. There appears to be a quiet revolution going on in the development of mulchers and crimpers and as a Bavarian visitor told me: "There are some interesting British innovations in cultivators", although the number of cultivator brands is large and the competition very keen.

Precision soil-plant interaction is not done yet although there is new attention to precise seed depth placement and efficiency - witness Deere getting a Gold medal for their high speed precision drill.

On we go, and here is a large crowd pressed several deep around the small **Garford** stand. They are transfixed by videos of mechanical inter-row weeding and have 'I am seriously interested in buying one of these' facial expressions. It looks like a winner. There is, however, competition from **Carre** who have won a Special Mention award for their robot for hoeing.

Talking of robots, **Energreen's** tracked autonomous mowers look man enough to be useful in grassland agriculture and are definitely up to it for amenity management, although whether they can operate truly autonomously it is not possible to discern from a static display. They do look handy for small and often steep-sloped grassland fields. And the Swiss also have something to offer: it's a fully articulated, low centre of gravity, tractor (the **Rigitrac**) with implements to match.

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The Innovation Winners (including a few speakers from the EurAgEng seminar)

I was on the lookout for water management technology but only found one trenching machine for drain installation and although the irrigation exhibits were substan-



Deep discussion on 'will it work for my crops?'

tial, they were not exciting and strangely calm because they had hardly any customers on them. That contrasted with the area devoted to precision agriculture software which was buzzing and full of earnest demonstrators with hands on mice. Software demonstrations without real data are generally not satisfying - but perhaps I moved on a bit too quickly.

The machinery were the main actors at SIMA but other things were important to note.

Firstly, many stands had job adverts pinned up for engineers and

for sales representation out-side France; I picked up a list of more than 100 current technician and sales position vacancies from SEDIMA (Syndicat National des Entreprises de Service et Distribution du Machinisme Agricole et des Espaces Verts).

Secondly, I saw little evidence of whole agricultural system thinking and its application. The focus remains on metal and machines, albeit with digital controls. In my view, increasing yields to match much higher future food demand while reducing Greenhouse Gas emissions and other environmental impacts requires a holistic application of biological systems engineering, supported by innovation of appropriate tools.

The current technological path that is just doing more of the same but better is not going to take us where we need to get. There may even be space for new global companies to emerge that embrace a truly ecological systems approach, if the existing ones do not wake up soon.

From the Secretary General

GEARING UP FOR CIGR-AGENG-NJF 2016

I know that we haven't had the Land.Technik-AgEng 2015 conference yet but the Executive met in Aarhus, Denmark in March to discuss CIGR-AgEng-NJF 2016 and see the facilities.

It will be a great University campus for a conference and quite close to the centre of the interesting old city with many restaurants for those 'networking' meetings with old friends and new collaborators!

Be sure that the EurAgEng 'Email Updates' will have important news but here are some dates for your diary; it will run 26 - 29 June 2016 and abstract submission is from 1 December 2015 until the deadline on 15 February 2016.

Further information at <http://conferences.au.dk/cigr-2016>.

If you would like to have:

- a project meeting or
- a simultaneous thematic conference or
- know an organisation that would like to sponsor such a prestigious conference

then please contact me (secgen@eurageng.eu) or the conference President, Morten Dam Rasmussen (mdr@eng.au.dk). Of course if you are asked to join the scientific committee then please help out.

POLITICIANS, SIMA AND THE 'EURAGENG RENDEZVOUS'

It seems that agricultural engineering is attracting more attention.



David Tinker

The organisers of the SIMA exhibition in Paris asked EurAgEng if we would like to organise a technical seminar there. That was too good an opportunity to miss and although there was a hiccup while the seminar time was 'adjusted' (which was bad news) it was caused by French Government Ministers realising that they needed to be seen at such an important gathering of agricultural engineers, machinery manufacturers and farmers (which is good news that politicians realise agriculture is important).

There is a report on the topics covered elsewhere but it was a useful event and the EurAgEng Executive decided that there will be a 'EurAgEng Rendezvous' at SIMA in 2017. We thank the SIMA organisers for asking us to be involved and also for providing such good support.

Now that we have closer links with the SIMA organisers expect more information and earlier for February 2017 so be ready to put the date in your diary and organise a trip to the 'EurAgEng Rendezvous' at SIMA.

HIGH-TECHNOLOGY, AGRICULTURE, FUEL EFFICIENCY, ENGINEERING AND CPD

There are plenty of specialised events in addition to the AgEng series of conferences.

Smaller, specialised events are particularly worthwhile for Continuing Professional Development (CPD). CPD is the ongoing process of tracking and documenting the skills, knowledge and experience that you gain both formally and informally as you work and is of increasing importance to show professionalism and develop a career.

As part of my CPD I have taken the chance to go to various events including a seminar on the Internet of (Agri) Things and I was impressed by the organisations that attended. This was in Cambridge, UK, which has high technology companies around the University including one of the Microsoft Research labs.

The evening was organised by an independent, business-focussed organisation, Agri-Tech East, which brings together farmers and growers with scientists, technologists and entrepreneurs to create an innovation hub in agri-tech. The event attracted Microsoft Research for the key note talk and other presentations included one on a very low power wireless system.

The Chief Executive of the UK's Institution of Agricultural Engineers, Alastair Taylor, reminded those attending from outside of agriculture that, amongst other things, there is a need for technicians, who understand agriculture and technology, to be able to install, operate, maintain and repair the equipment that will provide the Internet of (Agri) Things as well as the engineers who understand how to extract the useful data and provide 'Precision Decisions' without 'Analysis Paralysis' from an overload of data.

The audience was slightly unusual for an agricultural dissemination event but I anticipate that there will be even more high-technology engineers from outside of traditional agricultural engineering at the Land.Technik-AgEng conference this November. Maybe they will get a surprise at how many high-tech engineering solutions have already been applied to agriculture, by agricultural engineers, and, as I heard at another Agri-Tech East meeting, how companies, such as chemical suppliers, are looking for disruptive technologies that are different to their core business. They want to avoid the Kodak effect (which largely disappeared when digital cameras 'disrupted' conventional processed film) and respond to changing needs such as achieved by IBM which has sold its hardware

business and become a 'computer services supplier' and is again worth more than Microsoft.

As Alastair Taylor said **"The Internet of (Agri) Things isn't just to connect and see performance of machinery."**



"Nor just to obtain data from agricultural resources and the weather."



"But it also involves the farmer and his team of advisers, operators and technicians".



I also attended the 'Efficiency of Mobile Machines and their Applications, A Contribution to the Reduction of GHG' which was organised by the Institute of Mobile Machines and Commercial Vehicles at the Technical University of Braunschweig, Germany.

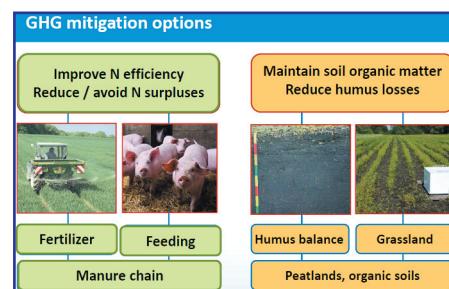
The latest EU climate targets for the year 2030 require a 40% reduction of CO₂ emissions compared to 1990. This might be achievable but only under great effort from all those involved especially manufacturers of off-highway machines, whether for agriculture or construction.

Since the market for these machines is very diverse and the applications for amenity use, construction and agriculture are even more varied. This symposium looked at exchanging information across the sectors about efforts and opportunities to increase efficiency of machines and processes.

The papers discussed the role of agricultural and construction machinery in context of the EU climate targets, what measures will contribute to a reduction of CO₂ emissions

and how this may be evidenced. Intelligent solutions for the technology as well as for any regulatory demands are required and since a single target for CO₂ emissions is not reasonable, manufacturers are beginning to prepare solutions for a voluntary commitment. Some of the first concepts were presented including increasing efficiency by improving the productivity and the use of resources as well as by reducing the emission of greenhouse gases.

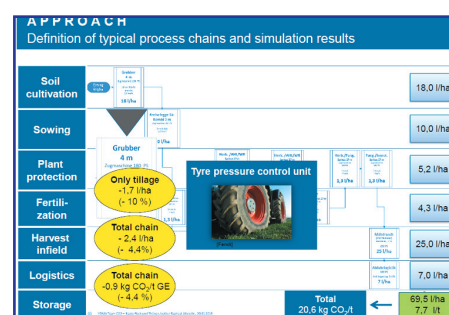
Specific papers covered the "global context of GHG-emissions and climate change", "approaches to reducing GHG in agriculture" and "how to better manage energy- and carbon footprint in the building sector".



From 'Approach to reducing GHG in agriculture' Dr. A Freibauer (Thünen Institute)

Potential improvements in efficiency from both the viewpoint of the construction and agricultural machinery industries included the "potential of ICT-digital farming for improving efficiency in agriculture" and "sustainable energy storage methods for mobile machines".

These technical aspects were followed by a more sociological reminder of "what prevents us from using more efficient technology?" and some results on quantifying CO₂ emissions from agricultural and construction machinery by modelling particular systems. This led to a summary of the "need for smart regulation for mobile machines".



From "CO₂-quantification of agricultural machinery" by B Fleck (CLAAS KGaAmbH) and S Hanke (TU Braunschweig)

The full presentations are under Proceedings at <https://www.tu-braunschweig.de/imn/emma>

Anyway I hope to meet many of you in Hannover this November for Land.Technik-AgEng and apart from enjoying yourselves I know that you will be remembering that the information gathered is good for CPD and your future career.

David Tinker

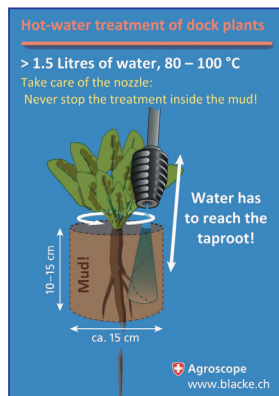
Dock control for organic farmers

From an idea to practice

Roy Latsch, Agroscope, Tänikon 1, CH-8356 Ettenhausen / Switzerland

Broad-leaved dock (*Rumex obtusifolius*) is still one of the most problematic weeds in organic farming.

It is valueless as a fodder plant, occupies valuable space for wanted forage plants and



can cause health problems when fed to dairy cattle in higher doses. The removal of its taproots is hard work. The dream of many farmers, that one day a robot will accomplish broad-leaved dock's control, still

seems to be in the remote future.

Nevertheless, there is good news. Two years ago, a new technology found its way

into Swiss organic farming. Researchers at the Swiss federal research institute, Agroscope, developed the 'hot-water treatment' of dock plants that uses a hot-water high-pressure cleaner to control dock plants.

The mechanism of action is to affect the plant's ability to sprout from the hypocotyl region of its root with hot water. Therefore, a minimal amount of 1.5 litres of water with a temperature of 80-100°C has to be applied directly into the first 10-15 cm of the underground organs. The roots need to be surrounded with hot water, so that the outer parts of the root are heated to the point of protein degeneration. The treatment is proven to work with a kill rate of 80%.

Since 2013 'Bachmann Hochdruck-Anlagen AG' (www.blackvernichtung.ch), located in the Swiss canton of St. Gallen has produced a hot-water high-pressure cleaning unit that is made especially for dock control. By using a three-phase generator to power the machine it can also be plugged into a farm's power network and be used as a normal high-pressure cleaner.

The special machine setup controls the water temperature with minimal variation, a feature

which is important for the success of the treatment. The hose is 20m long and gives a wide treatment range for the operator. A special rotary nozzle guarantees the proper function of breaking up the soil and applying the water to the roots.

Already 60 machines have been sold, and are in use, and sales are still increasing. And this will not be the end; Agroscope is still investigating a robust way to detect dock plants under field conditions.

Maybe, one day the dock-weeding robot will become reality...



The 43rd International Symposium 'Actual Tasks on Agricultural Engineering'

24th - 27th February 2015, Opatija, Croatia

The 43rd International Symposium on Actual Tasks on Agricultural Engineering was held during February in Croatia.

Organised principally by the Agricultural Engineering Department, University of Zagreb they were supported by other Universities, research organisations and societies from Slovenia, Hungary as well as Croatia. CIGR, EurAgEng and AAEE also supported this truly international event which had 76 participants from 9 countries.

Apart from the Opening Session there were six Topic Sessions covering all the broad subject-areas that fall under the scope of Agricultural Engineering.

At the Opening Session prof. dr. Daniele De Wrachien, former president of the EurAgEng, highlighted the main historical steps of the symposium emphasising its significant role as a gathering event for scientists, engineers and dealers from south-east Europe.

Prof. dr. sc. Vlado Guberac, dean of Faculty of Agriculture, University J.J. Strossmayer, Osijek greeted the audience and emphasised the work and long tradition of high quality papers and the importance of the symposium within the south European area. The Convenor, dr. sc. Igor Kovacev ended the Opening Session with

the greetings from the Croatian Society of Agricultural Engineering.

A number of lectures followed with presenters from as far north as Lithuania, west to Italy, and nearer neighbours from Austria, Czech Republic, Serbia and Romania.

The range of topics included: Sprinkler jet flow; Emission of CO₂ from lights soils; Soil physical parameters in alternative farming; Harvest residue bio-treatment for soil improvement; Managing weeds in potatoes in low input systems; Greenhouse cooling systems; Vertical green systems for building climate control; SWOT analysis and land management of plastic wastes in agriculture, and much more.

The national petro-company, Maziva Zagreb d.d.-INA group, presented results from field testing their latest synthetic and bio-degradable oils emphasising the progress made in keeping pace with the well-known global brands. Especially interesting was an Open debate on 'The cooperative organisation as a function of better resource use in agriculture'. This was moderated by Prof. dr. sc. Miroslav Tratnik and gathered Croatian experts from mid-range agricultural enterprises and representatives of leading machinery producers.

The Topic Sessions each started with a



review report and 81 papers were presented. For the Closing Session the Convenor emphasised the role of EurAgEng and CIGR in the ecologically sustainable development of agriculture and in the preservation of the rural cultural heritage within the East-European countries. The Proceedings amount to 884 pages from the 83 peer reviewed papers and have been indexed in Thomson Reuters (The Conference Proceedings Citation Index, part of Web of Science® database) since 1997.

A downloadable electronic version of the proceedings is available at the symposium's website <http://atae.agr.hr/proceedings.htm>. Information for the 44th Symposium of this successful series is available at the website: <http://atae.agr.hr>

Dr. sc. Igor Kovacev, Convenor of the Symposium
Prof. Daniele De Wrachien, Past President of EurAgEng

EVENTS

EURAGENG EVENTS

NOVEMBER 2015

6-7 Land.Tech AgEng 2015
Hannover, Germany
www.vdi.de/landtechnik-ageng

JUNE 2016

26-29 4th CIGR International - AgEng Conference 2016 - Robotics, Environment and Food Safety
Aarhus, Denmark
<http://conferences.au.dk/cigr-2016/>



SPONSORED EVENTS

JUNE 2015

22-23 New Frontiers of Biosystems and Agricultural Engineering for Feeding the Planet
Naples, Italy
<http://www.aiaa2015.eu/>

JULY 2015

12- 16 10th ECPA meeting 'Precision agriculture for efficient resources management under changing global conditions'
ARO Volcani Centre, Israel
<http://www.ecpa2015.com/>

19-23 GreenSys 2015
Evora, Portugal
www.greensys2015.uevora.pt

SEPTEMBER 2015

8-10 Construction, Technology and Environment in Farm Animal Husbandry

Friesing-Weihestephan, Germany
<http://www.btu-tagung.de/>

9-11 International Symposium on Animal Science 2015
Novi Sad Serbia
<http://www.livestocksym.com/>

OCTOBER 2015

9-10 2nd International Symposium on Agricultural Engineering
University of Belgrade, Serbia

11-16 Synergy in the Technical Development of Agriculture and Food Industry IV International Conference
Gödöllő Hungary
synergy@gek.szie.hu
Submission of abstracts by 27 July 2015

30-1/11 ISB-INMA TEH' 2015 Agricultural and Mechanical Engineering
Bucharest, Romania
<http://isb.pub.ro/isbinmateh.html>

NOVEMBER 2016

25-27 7th Scientific Symposium 'Farm Machinery and Processes Management in Sustainable Agriculture'
Gembloux, Belgium
<http://www.kemiz.up.lublin.pl/index.php?id=konferencje>

FEBRUARY 2016

23-26 44th Actual Tasks on Agricultural Engineering
Opatija, Croatia
<http://atae.agr.hr/>

SEPTEMBER 2016

3rd Conference Biogas Science
Szeged Hungary

OTHER EVENTS

JULY 2015

26-29 ASABE 2015 Annual International Meeting
New Orleans Louisiana
<http://www.asabe.org/meetings-events.aspx>

SEPTEMBER 2015

2-5 IV International Conference RAGUSA SHWA Safety Health Welfare in Agriculture Agro-Food and Forestry Systems
Ragusa Italy
<http://www.ragusashwa.it/>

17-20 7th International Conference on Information and Communication Technologies in Agri-culture, Food and Environment (HAICTA 2015)

Kavala, Greece
<http://2015.haicta.gr/>

OCTOBER 2015

11-14 2nd International Conference on Global Food Security
Cornell University, New York
www.globalfoodsecurityconference.com/index.html

21-23 ISTVS (International Society for Terrain-Vehicle Systems) Rome 2015
Rome, Italy
<http://conference.istvs.org/>

22-24 Soil and Food Resources for a Healthy Life
Iasi, Romania
<http://www.uaiasi.ro/congres/index.php?lang=en&pagina=taxe-date.html>

NOVEMBER 2015

1-4 3rd International Engineering and Technical Education Conference (IETEC'15) and 7th Balkan Region Conference on Engineering and Business Education (BRCEBE)
Sibiu, Romania
<http://conferences.ulbsibiu.ro/ietec-brcebe/index.php>

19-20 7th International Conference Rural Development 2015
Aleksandras Stulginskis University Kaunas, Lithuania
https://www.ruragriera.net/lw_resource/datapool/_items/item_91/rd2015_conference_announcement.pdf

View all forthcoming events online, visit: www.eurageng.eu/events

6-7 November 2015, Hannover, Germany prior to AGRITECHNICA 2015

LAND. TECHNIK AgEng 2015

Innovations in Agricultural Engineering for Efficient Farming

Important registration information.

EurAgEng members need to put "EurAgEng number xxxx" in the [Comment] and then click [yes] for [I am a VDI member] and use "1111" in the [My membership Number] box. This way you will get the reduced member rate. Early registration is advised as the last conference was oversubscribed. See you there!

Organised in cooperation with the VDI - MaxEyth Society for Agricultural Engineering (VDI-MEG) and the European Society of Agricultural Engineers (EurAgEng), this conference is arranged every two years as a prelude to AGRITECHNICA (Nov 8-14), the world's leading exhibition for agricultural machinery and equipment.

The LAND. TECHNIK AgEng conference, immediately before AGRITECHNICA, on 6-7 November is on 'Innovations in Agricultural Engineering for Efficient Farming'. It underlines



one of the main aims of agricultural engineering: efficient and sustainable production of high quality food.

The conference will give an excellent platform for discussing new technologies, processes and machines for efficient farming. In 2013 LAND. TECHNIK AgEng attracted over 950 international participants from education, academia and industry.

TOPICS INCLUDE:

- Tractors
- Power train, electric drives and mobile hydraulics
- Agricultural information technology,

precision farming, software engineering and data handling

- Automation, electronic components and sensors, locating, tracking and navigation
- Technology of soil protection, tillage and sowing
- Harvesting technology
- Sustainable energy for agricultural applications
- Industrial product development and market service

More information at
www.vdi.de/landtechnik-ageng

Quick reminders and follow-ups:

- Use the Member Login on the EurAgEng website to find people and to use the FREE CABI agricultural engineering abstracts.
- Don't forget to send CABI copies of your seminar or conference proceedings and any important (public) reports.
- Check the 'Events' for ideas about where to present work.
- Innovations for SIMA are still available from <http://en.simaonline.com/sima-show-agricultural-machinery-live-stock-events/innovation-awards-results>
- *Biosystems Engineering* is the official journal of EurAgEng and welcomes scientific papers and is looking for papers for Special Editions on Reducing Spray Drift and Robotic Agriculture for Crops. See www.journals.elsevier.com/biosystems-engineering
- Encourage your colleagues and contacts to join their national society and to ask to be a member of EurAgEng. Check links at <http://www.eurageng.eu/natsocs> or email secgen@eurageng.eu with any queries.
- Membership of EurAgEng gives discounts* for many conferences and enables you to support younger agricultural and biosystems engineers starting out on an exciting and valuable career. *Generally a single conference discount is several times greater than the membership subscription!

AEF: this is the Agricultural Industry Electronics Foundation and was formed by seven international agricultural equipment manufacturers and two associations in 2008.



It is an independent initiative that provides resources and know-how for the increased use of electronic and electrical systems in farming. At the start it focussed on ISOBUS but now the standardisation of agricultural applications has created additional challenges in farm management information systems (FMIS), electric drives, camera systems, high speed ISOBUS and wireless in-field communication which are now included as areas of interest for AEF. Check its 11 projects, which organisations are members and get news of Plugfests. www.aef-online.org

CEMA: 'the voice of the European Agricultural Machinery Industry' has a mission to work towards a balanced legislative and regulatory framework in the EU that:

- supports the competitiveness of the industry in Europe and
- enables the industry to provide smart solutions to help farmers worldwide to grow food affordably and sustainably.

CEMA is formed of eleven national agricultural trade associations and associated members.



A recent published document is on 'Towards a New Strategic Agenda for the Common Agricultural Policy (CAP) after 2020; CEMA's contribution to the Mid-term Review of the CAP' which, important for many EurAgEng members, includes the need to increase R&D expenditure. Check them out at <http://cema-agri.org>

Finally I hope that we will meet up at Land. Technik-AgEng 2015 and that some of you were able to support recent events including Congreso Ibérico de Agroingeniería; the Field Robot Event in Slovenia and the Controlled Traffic Farming event in the Czech Republic (with technical tours in Denmark and the UK). Other events are in the Events section. Look at it now to see what is about to happen and which is the best fit for your project results and clever engineering design!

David Tinker

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