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1. CIGR NEWS

CIGR Presidium’s Action Plan

In a rapidly developing world, the expectations for CIGR involvement have been constantly changing. In particular, over the last decade, there have been remarkable changes in many new regions, including the third world. Thus, CIGR has become a truly international organization.

The Presidium’s action plan for the near future includes the following main points:

- Promote educational and scientific initiatives
- Expand the participation of members in developing countries
- Improve the financial situation of the society
- Promote and facilitate collaboration among members of the society as an association of regional and national members
- Improve stakeholder access to the CIGR knowledge resources

The general strategy of the Presidium is as follows:

- Create a new and improved Web presence for CIGR
- Establish and use collaboration platforms for CIGR members to improve the frequency and quality of contacts based on the activities of CIGR Section Boards and Working Groups
- Support management tools for the CIGR E-Journal leading to a more expeditious review and publication process
- Increase the profits of CIGR by exploring and effectively utilizing e-commerce to market CIGR products as well as to increase donor contributions
- Create a public directory of CIGR members
- Conduct an analysis of the geographic distribution of members, identify gaps and establish contacts with groups and individuals for their incorporation into CIGR
- Assist in the coordination of international symposiums, conferences and congresses and avoid unnecessary duplication of themes in the same year
- Update the CIGR statutes

From the Chair of the Ad Hoc Committee for the Revision of CIGR Statutes

The CIGR statutes were revised after six years, and it was effective in January 2001. Again, a few years later, a new revision was in progress; this was the initiative of Prof. Luis Pereira during his term as president. The revised draft was ready in November 2005. To complete the draft, an ad hoc committee was appointed for the revision of the CIGR statutes. On 1 July, at the first meeting held in Glasgow, the ad hoc committee was established with President Irenilza de Alencar Nääs, Brazil; Past Secretary Peter Schulze Lammers, Germany; Prof. Osamu Kitani, Japan; and incoming President Søren Pedersen, Denmark, as working chairman. At the end of 2007, the draft was discussed by the ad hoc committee members, the presidium and the executive board; the draft is now ready for discussion and planned approval at the general assembly in Brazil in September 2008.

Based on the discussions of the statutes that have taken place over the past ten years, it can be said that arriving at an agreement on the statutes is no easy task; this is because members participating in meetings do not remain constant over time. Each meeting has new members who voice new and differing ideas. The goal at present is to enter into a fruitful discussion in the next half year in order that the draft can be approved in September 2008.

Overall, at present, the draft appears to be in good agreement with the CIGR strategy for the next decade.

Some of the important key points in the present draft for discussion (draft 2, July 2007; review, September 2007) are as follows:

- In the old statutes, the working area for the CIGR was always provided as agricultural engineering. Due to general developments that have taken place worldwide, the area in the draft has been extended to ‘Agricultural and Biosystems Engineering’.
- Members of the Technical Board are appointed for a four-year contract at the CIGR Congresses; after two years of service, their performances are evaluated by the presidium and, if necessary, members can be replaced by new members. It was discussed that section board members should be elected every two years (2005 draft); however, experience tells me that this is not practical. Members should be replaced after two years only in the case of non-performance.
It is recommended that all those who have questions to be addressed by or opinions to make to the ad hoc committee should do so prior to the meeting in Brazil in September 2008.

Prof. Soren Pedersen
Chair of Ad Hoc Committee for Revision of CIGR Statutes
Incoming President of CIGR

CIGR World Congresses and Conferences, 2008–2014

2nd CIGR International Conference of Agricultural Engineering 2008
XXXVII Congresso Brasileiro de Engenharia Agrícola
31 August–4 September 2008, Iguassu Falls City, PR, Brazil
http://www.acquacon.com.br/icae/

The Venue was Shifted from Rio de Janeiro to Iguassu Falls City, Brazil

In December 2007, the Brazilian Association of Agricultural Engineering (SBEA) informed the CIGR of a change in venue for the upcoming CIGR and SBEA meetings. After careful deliberation, the CIGR Presidium accepted the change based on the following explanation provided by the SBEA:

The purpose of this letter is to inform you that the Executive Board of the SBEA has decided—during an Extraordinary Assembly—to change the venue of the 2nd CIGR International Conference of Agricultural Engineering 2008 (CIGR 2008) and the Meeting of the Brazilian Agricultural Engineering Association (CONBEA 2008) from Rio de Janeiro to Foz do Iguacu for the purpose of security.

Although instances of violence in Rio de Janeiro is not a novelty, new incidents involving tourists have led to the discussion of this specific topic at SBEA. Four years ago, when plans were first made to promote the CIGR Conference in Rio de Janeiro, violence was under control; however, the last six months has witnessed a change for the worst. From the viewpoint of safety, the first move undertaken by SBEA to resolve this matter was changing the venue from a hotel downtown to a hotel located further away. This was not an easy decision for the SBEA Executive Board.

The SBEA decided to shift the venue of CIGR 2008 and CONBEA 2008 from Rio de Janeiro to Foz do Iguacu City, Paraná, which is a very beautiful and scenic place, considered to be one of the most important and safe sites for holding international meetings in Brazil.

The city of Foz do Iguacu, with its diversity of attractions, represents one of the world’s most beautiful tourist destinations. It is complete with natural wonders, such as the Iguacu Waterfalls and the Iguacu National Park, which is declared as Natural Patrimony of the Humanity.

Another point to be mentioned is that the state of Paraná is one of the most important Brazilian states in terms of grain and poultry production. CIGR 2008 participants are likely to visit these sites of agricultural development. We certainly hope that this decision, which was taken towards providing a safer stay in Brazil for our colleagues and participants from around the world, is accepted by the CIGR.

Prof. Marcos Vinícius Folegatti
President of the Brazilian Association of Agricultural Engineering—SBEA

BRAZIL

Convent Centre
The venue of ‘CIGR 2008’

Photo by Wikipedia
Call for Papers

The deadline has been extended to 30 March 2008

Dates and Deadlines:
- 10 November 2007 to 30 March 2008: Submission of papers (please use template file)
- 30 April 2008: Notification of acceptance
- 15 June 2008: Registration for authors with discount
- 15 June 2008: Final program

Venue of CIGR 2008:
Bourbon Cataratas Resort & Convention Center

Technical Exhibition:
By means of booth rentals, all participants—companies; government, state and city administrations; the community; research centres; and universities—will have the opportunity to showcase their best practices, technologies developed and lessons learned and employed with regard to agricultural engineering issues and its several applications and utilizations. The Technical Exhibition will serve as a major opportunity to close business deals. A total of 25 booths are available, each of 9 sq. m. (9,688 sq. ft.); these are being sold for USD 3,000.00 and are inclusive of the following:
- voltage: 110/220 V
- carpeted floor; 1 table and 2 chairs
- side walls measuring 2.20 m. (7.2 ft.)
- lighting: 1 bulb for every area of 3 sq. m. (32.3 sq. ft.); 2 lighting outlets
- header without the company logo

For more information, write to
Mr Rodrigo Cordeiro
Acqua Consultoria
Rua Candido Espinheira, 560 conj. 32
05004-000 – São Paulo – SP - Brasil
Phone/Fax: 55 11 3871 3626
E-mail: icae@acquacon.com.br
http://www.acquacon.com.br/icae/

Details of CIGR 2008

Chair: J.M. Tarjuelo (Jose.Tarjuelo@uclm.es)
Co-Chair: Marcos Vinicius Folegatti (esalq/usp) (mvfolega@esalq.usp.br)
Potential Topics for Discussion

- Waste Management: Use of wastewater in irrigated agriculture; water treatment and reuse in domestic, industrial and agricultural water systems; effects of the use of wastewater and sludge on both the soil and crops; effect of the use of wastewater on irrigation systems
- Use and Control of Water Systems: Innovative approaches and tools for planning and managing water use; integrated strategies for water saving; remote sensing and GIS for monitoring and managing irrigated lands; on-farm water management: water conservation and irrigation water
• Environmental Impact on Agricultural Production: Soil processes and land degradation; monitoring and assessment; agricultural water management, nitrates and agrochemicals; environmental upgrading in rainfed agriculture: soil and water conservation; socio-economic and environmental aspects of sustainable water management

• Land and Water Use and Impact: Soil, water and landscape conservation; risk assessment in land use planning from the perspective of coping with floods and droughts; land use conservation issues for agricultural marginal lands; hydrological and environmental impacts of land use; land use planning tools and techniques; development of a suitable methodology for areas suffering from water stress

• Water Resources Management: Integrating land and water use; technical and institutional issues; water resources management at water-stressed basins; sanctioned water laws; from theory to implementation; water investments to guarantee water resources demands and ecosystem sustainability; biofuels and water resources; payment for ecosystem services: experiences, drawbacks and perspectives; decision management tools for water resources management

A2-1: American Society of Agricultural and Biological Engineers (ASABE) - International Livestock Environment Symposium (ILES VIII-)

Chair: Richard Gates (gates@bae.uky.edu)
Co-Chair: Daniella Jorge De Moura (unicamp)
(daniella.moura@agr.unicamp.br)

Potential Topics for Discussion

• Advancement in precision livestock production (management practices, surveillance, modelling of animal responses, forecasting, environmental control, robotic cleaning or air cleaning etc.)

• Advancement in means to minimize the impacts of hot or cold climate on animal well-being and production performance

• Air pollution mitigation techniques to improve indoor air quality and animal health

• Alternative sensors for improved assessment and control of animal environment and health (image analysis of group behaviour, vocalizations, locomotion, CO₂ gas sensors, NH₃ gas sensors etc.)

• Behavioural, physiological and production responses of farm animals to environmental factors or stimuli (thermal factors, light, gases, dust, sound/noise, group size etc.)

• Effectiveness of alternate/new housing and environmental control systems towards enhanced animal welfare, improved indoor air quality, product quality and sustained production economics (enriched cage-laying system, free range system, loose housing, air distribution system etc.)

• Heat and moisture production of farm animals and their housing systems under different housing systems and climates

• Impacts of indoor air quality on farm animals and caretakers

• Innovative techniques to objectively assess animal behaviour and/or welfare (e.g. pain or discomfort, fear, motivation, preference)

• Welfare issues related to animal transport and/or animal holding

A2-2: VIth International Symposium on Cement-Based Materials for Sustainable Agriculture—CSA ’2008

Chair: H. Savastano Jr. (usp) (holmersj@usp.br)
Co-Chair: N. de Belie (nele.debelie@ugent.be)

Potential Topics for Discussion

• Concrete structures for animal husbandry, agriculture, horticulture, manure storage and silage structures

• Durability, sustainability and quality aspects of cement-based materials in agriculture

• Use of concrete for general animal welfare and energy saving

• Use of concrete for water and wastewater management

• New developments in material and design

• Concrete and the environment

A3: Processing Conference—4th CIGR Section VI

International Symposium on Food and Bioprocess Technology

Chair: Da-Wen-Sun (Ireland) (dawen.sun@ucd.ie)
Co-Chair: Amauri Rosenthal (Brazil)
(arosent@ctaa.embrapa.br)

Potential Topics for Discussion

Food

• Physical properties and structure

• Food processing

• Food innovations

• Food equipment, process control and automation

• Food safety and security

• Preservation, storage and distribution

• Emergent natural ingredients for food and beverages

• Applied nanotechnology

• Non-thermal processing and emerging technologies

• Mathematical modelling and simulation

Environment

• Post-harvest effects

• Post-harvest handling systems

• Non-destructive testing

• Sensors, sensing technology and process control

• Applied nanotechnology

• Product monitoring in the supply chain

• Preservation, storage and distribution

• Tracking and traceability

Agriculture

• Sustainability in food production

• Agri-food waste treatment and management

• Renewable energy resources

A4-1: Power and Machinery Conference

Chair: Daniel Marçal De Queiroz (Brazil) (queiroz@ufv.br)
Co-Chair: John Schueller (USA) (schuejk@ufl.edu)

Potential Topics for Discussion

Equipment engineering for plants: harvesting, precision agriculture, soil dynamics, tractive and transport efficiency, agricultural equipment automation, crop planting, chemical application, machinery management, safety for agricultural equipment

• Information systems: simulation and modelling; decision support system and management zones; geospatial
application; GIS/GPS; variable rate technology; yield monitoring; environmental issues; traceability; technology for quality detection; technology for stress, pests and disease detection; wireless communication; information technology data management; weather networks; site-specific management for quality enhancement; precision livestock production; applied nanotechnology; systems design and automation; geotechnology
• Educational aspects: E Ag business; production chain management; education/training methods for new production technologies

**A4-2: ATOE ’2008**

**Chair:** John Reid (USA) (j-reid1@uiuc.edu)

**Co-Chair:** Paulo Graziano Magalhães (Brazil) (graziano@agr.unicamp.br)

**Potential Topics for Discussion**

- Autonomous vehicles
- Automatic guidance system
- Equipment for off-road environment
- Machine vision
- Real-time monitoring of off-road equipment
- Robot farming
- Vehicle modelling

**A5-1: Interdisciplinary Issues**

**Chair:** Fedro H. Zazueta (fsz@ufl.edu)

**Co-Chair:** Hans Raj Gheyi (UFCG) (Brazil) (hans@agriambi.com.br)

**Potential Topics for Discussion**

- Climate and agriculture
- Agricultural and biological engineering education and extension
- Information technology and applications
- Mapping tools and remote sensing

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**Temporary schedule of CIGR International Conference 2008**

<table>
<thead>
<tr>
<th>30 Aug.</th>
<th>31 Aug.</th>
<th>1 Sept.</th>
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<th>3 Sept.</th>
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<tr>
<td><strong>P M</strong></td>
<td>CIGR Presidium Meeting*</td>
<td>Registration Exhibition</td>
<td>Section Board M. (7rooms)*</td>
<td>Working Group Meeting (7rooms)*</td>
<td>CIGR GA*</td>
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<td><strong>E V e n i n g</strong></td>
<td>Executive Board Meeting*</td>
<td>Opening Session</td>
<td>Welcome Cocktail</td>
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**The XVII CIGR World Congress 2010**

**Québec, Canada, 13–17 June 2010**

[http://www.bioeng.ca/Events/CIGR/index.htm](http://www.bioeng.ca/Events/CIGR/index.htm)

CIGR ([http://www.ucd.ie/cigr/](http://www.ucd.ie/cigr/)) will hold its 17th World Congress in *Québec, Canada, on 13–17 June 2010*. The host party will be The Canadian Society for Bioengineering—Société Canadienne de Génie Agroalimentaire et de Bioingénierie (CSBE/SCGAB) ([http://www.bioeng.ca/](http://www.bioeng.ca/)). The theme of the congress is ‘Sustainable Biosystems through Engineering’. The local organizing committee is planning several exciting events that will make your stay in Quebec City a truly memorable one. Quebec is one of the oldest cities in North America, celebrating its 400th anniversary in 2008. Eastern Canada offers excellent opportunities for technical, historical and natural science exploration.

Start making arrangements to share your most recent discoveries in the areas of agriculture, food and biosystems engineering with your colleagues across the world. Set yourself a reminder of the dates (13–17 June 2010) so you can participate in the progress and development of trends in your area of research.

More detailed information about the 17th CIGR World Congress 2010 will appear on this website shortly.
NEWS FROM REGIONAL AND NATIONAL SOCIETIES

Co-sponsors
- China Association of Agricultural Machinery Manufacturers
- China Food and Packaging Machinery Industry Association
- Local government offices and local, regional and international associations, societies and institutions engaged in agricultural engineering, which will be included later.

Organizers as the local organizing committee of CIGR
- Chinese Academy of Agricultural Mechanization Sciences (CAAMS)
- Chinese Academy of Agricultural Engineering (CAAE)
- China Agricultural University

Topics
- Land and water engineering
- Farm buildings, equipment, structures and environment
- Equipment engineering for plant production
- Rural electricity and other energy resources
- Management, ergonomics and systems engineering
- Post-harvest technology and processing engineering
- Information systems

The detailed programme will be finalised later by the concerned CIGR sections.

Sponsors
The sponsors of the CIGR World Congress 2014 will include many national and international organizations engaged in Agricultural and Biosystem Engineering. The proposed sponsors are as follows:

- CIGR
- Chinese Society for Agricultural Machinery (CSAM)
- Chinese Society of Agricultural Engineering (CSAE)

2. NEWS FROM REGIONAL AND NATIONAL SOCIETIES

The Asian Association for Agricultural Engineering (AAAE) Hosted the 9th International Agricultural Engineering Conference (IAEC), 2007, at the Asian Institute of Technology, Bangkok, Thailand

The AAAE Secretary General, Dr Peeyush Soni, reported the following summary note on the conference activities arranged on 3–6 December 2007.

The AAAE organized a four-day IAEC, the ninth in its series, at the AIT Conference Center on 3–6 December. This biennial event, convened by Prof. V.M. Salokhe, witnessed nearly 130 participants from over 25 countries. At the opening ceremony, introductory remarks were made by Dr H.P.W. Jayasuriya, the Chair of the Conference Organizing Committee. The AAAE President, Prof. Nobutaka Ito, followed by Mr Yoshisuke Kishida, the AAAE president elect, delivered their welcome addresses. Dr Peeyush Soni proposed a vote of thanks; he also announced the Executive Council election results and the winners of two AAAE awards. The first AAAE-Sakai Science & Technology Award was conferred upon Prof. V.M. Salokhe. Furthermore, the AMA-Shin-Norinsha-AAAE Young Researcher Award was bestowed upon Dr Sreekala Bajwa.

Subsequently, six keynote lectures were given by experts from specialized fields of Agricultural Engineering (AE). A new beta version of the online submission and review system for AAAE-published International Agricultural Engineering Journal was introduced to the participants.

The second and third days of the IAEC comprised paper and presentations, followed by the closing ceremony and a special session where the winners of the AAAE awards were announced. The conference concluded with a gala dinner and a farewell party.
poster presentations. These were arranged across seven technical sessions, namely agricultural machinery and management; soil and water engineering; food engineering and bioprocess technology; contemporary topics in AE; soil, tillage and general agricultural research; irrigation and drainage engineering; and post-harvest technology. A conference banquet was hosted on 4 December, at which Thai traditional dances and other cultural activities were showcased. The last day of the conference included a field visit to an agricultural machinery exhibition at Kasetsart University, a leading Thai agricultural university. The conference, whose theme was ‘Cutting Edge Technologies and Innovations on Sustainable Resources for World Food Sufficiency’, concluded with the achievement of its professional objectives.

For more information or queries, please visit http://www.aaae.ait.ac.th

The translation of the CIGR Newsletter is in regular print in Russia

I would like to inform you that under the support of Dr Leonid Orsik, the Chairman of the National Committee of Agricultural Engineering of the Russian Federation, the translations of CIGR Newsletters are scheduled for regular printing by the State Scientific Institution, ‘Rosinformagrotech’ (Russian Institute of Information and Engineering and Economic Research in Agro-Industrial Complex) under the guidance of Dr. Viacheslav Fedorenko, a member of the CIGR VII Section Board.

The printed copies will be circulated to related research, engineering and educational institutions in Russia.

Prof. Vladimir Popov

Letter from ANAFID

Association Nationale des Ameliorations Fondieres, de l’Irrigation et du Drainage (ANAIF) is scheduled to organize an electronic conference on the topic ‘Saving Water in Irrigation’, in collaboration with FAO and IPTRID, from Monday 11 February to Friday 14 March 2008.

This electronic conference will be held after ANAFID’s success the previous year on ‘Impact of Irrigation and Farming Intensification on Water Quality’. This will serve as an occasion to engage in an extensive debate on the subject of topicality and capital importance for majority of the countries; this is due to climatic changes and agricultural production, the importance which is increasing.

El Hassan EL MAHRAZ
General Secretary of ANAFID
10 January 2008

3. NEWS FROM SECTIONS AND WORKING GROUPS

Invited Paper
CIGR Climate Change Issue
Section Board II

Impact of Global Warming on the Health, Welfare and Productivity of Livestock and Plants in Agricultural Buildings

Tadeusz Kuczynski¹, Victoria B. Vidal², Baoming Li³, Richard S. Gates³, Irenilza D. Nääs⁵, Daniella J. Moura⁵, Daniel Berckmans⁶ and Thomas M. Banhazi⁷

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²Department of Agricultural Engineering, Research Centre Bygholm, University of Aarhus, Horsens (Denmark)
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⁵Agricultural Engineering College, State University of Campinas, Campinas, São Paulo, (Brazil)
⁶M3-BIORES, Katholieke Universiteit Leuven, Kasteelpark Arenberg 30, Leuven (Belgium)
⁷Livestock Systems Alliance, South Australian Research and Development Institute, Roseworthy Campus, Adelaide University, Roseworthy SA 5371 (Australia);

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E-mail: Banhazi.thomas@saugov.sa.gov.au

1. Introduction

Temperature is one of the most important environmental variables that can affect the health, welfare and production efficiency of domesticated animals; it can also influence the health and productivity of plants kept in agricultural buildings. The CIGR Electronic Journal (E-journal) will soon publish an article which will review the process of climate change and its potential effect on animals and plants kept indoors. More specifically, the article will review (1) the manner in which climate change can impact variables which, in turn, affect the internal building environment; (2) the different effects of internal climate changes on the productivity, health and welfare of animals and plants; and (3) the scientific work that is necessary to adopt counter measures and re-design agricultural buildings to cope with the changing external climate.
2. The impact of increasing temperatures by global warming

The earth receives energy from the sun, which radiates energy at very short wavelengths. Approximately one-third of the earth’s incident solar energy is reflected and back-scattered within the atmosphere; this energy does not reach the surface of the earth. The remaining solar energy is absorbed primarily by the earth’s surface and, to a lesser extent, by the atmosphere. The earth also radiates energy, though at much longer wavelengths compared to those of the sun; these radiations are primarily in the infrared part of the spectrum. Much of the thermal radiation emitted by the land and ocean is absorbed by the atmosphere, including clouds and water vapor, and radiated back to the earth. Using an analogy to the physical processes that take place in a typical greenhouse, this phenomenon is called the greenhouse effect. It refers to the effect by which part of the short wavelength radiation hitting the earth from the sun is sent out by the earth in long wavelengths; it is therefore reflected by the clouds.

Consequently, there is an increase in temperature on earth, which enables life on earth. The energy that is eventually absorbed by the earth’s surface and atmosphere is estimated to be approximately 240 W·m⁻². The global mean surface temperature is actually reaching approximately 15°C, which is a significant surplus of the energy absorbed by the earth’s surface and the atmosphere.

Greenhouse gases are components of the atmosphere that contribute to the greenhouse effect. Without the greenhouse effect, the earth would be uninhabitable as its mean temperature would be approximately −19°C (−2°F, 254 K) rather than the present mean temperature of approximately 15°C (59°F, 288 K). Greenhouse gases come from natural sources and human activity.

The global mean surface temperature has been maintained at a relatively stable level for thousands of years because the concentration of greenhouse gases has remained relatively stable for this long.

However, since around the 1950s, there has been a strong increase in global fossil carbon emissions and, most importantly, in greenhouse gases: CO₂, methane, nitrous oxide, CFC-11 and CFC-12. Global warming caused by humans has resulted primarily from the increase in the amounts of greenhouse gases in the atmosphere and from changes in land use. The oceans and plants also affect the atmospheric concentrations of greenhouse gases. For example, plants absorb CO₂ from the atmosphere and convert it, using water, into carbohydrates via photosynthesis.

Increasing the production rate of greenhouse gases in the atmosphere intensifies the greenhouse effect, thus resulting in the warming of the earth’s climate. For example, the importance of CO₂ dramatically increased during the industrial era, and human consumption of fossil fuels elevated CO₂ levels from a concentration of approximately 280 ppm (250 years ago) to more than 379 ppm (at present).

An increase in the greenhouse effect can have many effects on different complex processes on earth, with various feedback mechanisms acting at different scales. Certain weather phenomena become increasingly frequent and more intense (e.g. longer and more intense heat waves, heavy and longer duration of rainfall, increased incidence of floods, increased incidence and duration of droughts, more frequent and intense forest fires, heavier tropical storms and hurricanes), while others have become less frequent and intense (e.g. extreme cold events). Global warming can be linked to events such as retreating glaciers, thinning and reduction in the area of Arctic sea ice, melting ice cover, and consequently, rising sea levels.

Data collected in more than 29,000 observational data series from 75 studies show significant changes in many physical and biological systems; over 89% of these are consistent with the direction of change expected as a response to global warming. The consistency between the observed and modelled changes in several studies and the spatial agreement between significant regional warming and consistent impacts at the global scale are sufficient to conclude with high confidence that anthropogenic warming over the last three decades has had a discernible influence on many physical and biological systems.

The literature on this subject has provided several scenarios for the future in order to provide a better understanding. Three general conclusions can be drawn from all the reports:

- For the next two decades, a warming of about 0.2°C per decade is projected for a range of emission scenarios.
- Even if all radiative forcing agents remain constant at year 2000 levels, a further warming trend will occur in the next two decades at a rate of about 0.1°C per decade; this is mainly due to the slow response of the oceans.
- Continued greenhouse gas emissions at or above the current rates will cause further warming and induce many changes in the global climate system in the twenty-first century; it is likely that these changes will be larger than those observed in the twentieth century.

3. The impact of increasing temperatures on animals

Temperature is one of the most important environmental factors affecting the health, welfare and performance of livestock and plants. On the global scale, increasing temperatures have led to longer and higher temperatures in many countries during the summer. The most direct effect of high temperature on animals is heat stress. When effective environmental temperature becomes so high that the animal must invoke one or more thermoregulatory process in order to maintain homeothermy, the animal is said to be undergoing heat stress. Heat stress can be quantified in terms of its intensity and duration.

The literature has suggested that rectal temperature is a very good physiological parameter by which to objectively monitor animal welfare in hot environments. Rectal temperature cannot be simply measured in ranging animals because longer animal responses to micro-environmental variables are studied at the laboratory scale. Most of the studies are conducted on animals under steady state.
4. Impact of higher temperatures on livestock in buildings

Environmental and management stressors erode efficiency and cost livestock production enterprises billions of dollars each year in lost potential profitability. For example, summer heat stress results in annual losses to the dairy industry, totalling $5–6 billion; this is caused by reduced milk production and decreased productive potential. Estimations were conducted for cows producing 15, 20 and 25 kg milk/day: the conclusions revealed a decline in milk production under the scenario of global change.

The heat wave that hit Europe in the summer of 2003 generated losses amounting to approximately €42 million in the poultry production industry alone. In France, 4 million broiler chickens died and the flocks presented a loss in productivity of 15%. Spain witnessed a mortality of 15%–20%, while productivity decreased from 25% to 30%. In the USA, the economical loss of livestock was estimated by performance reduction based on a decline in the growth rate, feed ingestion, milk and egg production, mortality and loss in reproduction; there was also a temperature humidity index (THI) decrease reported by 257 weather stations. Average losses were found to vary from 120 to 900 million dollars for broilers, pigs, cattle and dairy cows. In 1977, over 700 dairy cows died during a heat wave in California. In both 1992 and 1999 in Nebraska, and in 1995 in Iowa and Nebraska, heat waves led to livestock production losses amounting to $20 million. THI values were important in determining the environmental characteristics of these heat wave events. High THI values can occur during the night (>70); as a result, the animals are unable to cool down and may suffer from heat discomfort.

5. Counter measures: Reducing heat stress

The article describes the most important countermeasures to alleviate heat stress for animals and plants: provision of shade, provision of sufficient (drinking) water, provision of nutritional balance, evaporative cooling pad system or sprinkling system, cooling floor systems, utilization of bedding materials and tunnel ventilation with drip cooling or improved control of ventilation.

Finally, this article provides suggestions for R&D needs in order to anticipate problems related to global warming.

*Full paper will be published in the E-journal.*
CIGR-SPONSORED ACTIVITIES

CIOSTA conference in Vienna, including any collaboration with Der Arbeitskreis Arbeitswissenschaften im Landbau (AKAL): www.vdi.de/Arbeitswissenschaften

Mathias Schick announced that the next AKAL (Arbeitswissenschaftliches Seminar) meeting will be held in March 2009.

4. CIGR-SPONSORED ACTIVITIES

International Symposium on Innovation Technology to Empower Safety, Health and Welfare in Agriculture and Agro-Food Systems
15–17 September 2008, Ragusa, Italy
http://www.ragusashwa.it

CIGR V and AIIA are honoured to invite you to the ‘International Symposium on Innovation Technology to Empower Safety, Health and Welfare in Agriculture and Agro-food Systems’, which will be held on 15–17 September 2008 at Ragusa, Italy. The town of Ragusa is known for its Baroque architecture; it is a beautiful town situated to the south-east of the greatest island of the Mediterranean sea and Ibla, an ancient town.
The scientific programme will include a plenary session, parallel oral sessions and poster sessions. Furthermore, a technical tour will be organized based on the interests of the participants.

Topics for Discussion
1. Work safety in agricultural building and forest and agro-food processes
2. Food safety and traceability
3. Pollution in fields and greenhouses and the housing of animals
4. Assistive technology
5. Logistics in agro-food supply chains
6. Agricultural mechanisation and management
7. Prevention and risk analysis, work organization system engineering, health protection
8. Automation, robotics and remote controls
9. Machine milking and animal welfare
10. Open topics

Language: English
Deadlines:
Decision of Scientific Committee: 28 February 2008
Submission of abstracts and camera-ready manuscripts: 30 May 2008

Giampaolo Schillaci
Coordinator

5. OTHER ACTIVITIES

19th Philippine Agricultural Engineering Week; 58th PSAE Annual National Convention; 6th International Agricultural Engineering Conference & Exhibition;
University of the Philippines Los Baños Centennial Celebration
Electrical Engineering Building
University of the Philippines Los Baños, College,
21–25 April 2008, Laguna, Philippines
http://www.psae.net/

Theme:
‘Agricultural Engineers: Leading the Development of Green Energy to Ensure Climate Change Mitigation and Adaptation’.

On 21–25 April 2008, the PSAE will celebrate the 19th Agricultural Engineering Week; the highlights of this week will be the 58th PSAE Annual National Convention and the 6th International Agricultural Engineering Conference and Exhibition at the UPLB Electrical Engineering Building, Los Baños, Laguna, Philippines. This event will form part of the centennial celebrations of the University of Philippines.

The weeklong activities will include an eco-tour, exhibits, business fora, trade matching, a tractor rodeo, a design contest of engineering innovations/inventions and video and technical paper presentations on the development and trends in agricultural engineering and allied fields.
The presentations will discuss new developments, technologies and trends in agricultural engineering, particularly in the following areas:
• Renewable energy and agricultural electrification
• Environmental and waste management
• Agricultural machinery, equipment and power units
• Irrigation, soil and water conservation
• Post-harvest technology, agricultural processing and food engineering
• Agricultural buildings and structures
• Allied fields

For further information, write to
Prof. Bernardo D. Tadeo
President of Philippine Society of Agricultural Engineers,
First Level, ATI Building, Elliptical Road, Diliman, Quezon City, Metro Manila, Philippines.
Website: www.psae.net,
E-mail: psae0107@yahoo.com; bern.tadeo@psae.net;
berntadeo@gamail.com
Announcement on ISO/TC 190  
Title: Soil Quality

The next plenary meeting of ISO/TC 190 and meetings of its sub-committees and working groups, including an informal joint meeting of CEN/TC 345.

We are pleased to inform you that NEN, The Netherlands, has offered to host the 2008 plenary meeting of ISO/TC 190 and meetings of its sub-committees and working groups on 17–21 November 2008. All SC secretaries are requested to inform their SC members, WG convenors and project leaders accordingly. All necessary details about the venue and accommodation will be sent to you in due course.

Saskia Schulten  
Secretary ISO/TC 190

Invitation from the OECD  
The Next Annual Meeting of the Representatives of the National Designated Authorities for the OECD Standard Codes for the Official Testing of Agricultural and Forestry Tractors*

www.oecd.org/tad

It is my pleasure to inform you that the next Annual Meeting of the Representatives of the National Designated Authorities for the OECD Standard Codes for the Official Testing of Agricultural and Forestry Tractors will be held on 26–27 February 2008 in Paris at the International Energy Agency (IEA), IEA Conference Centre 9, Rue de la Federation, 75015 Paris Metro: Passy or Duplex.
The meeting will begin at 1000 on Tuesday 26 February. A copy of the draft agenda and some practical information are attached for your information.

In view of your organization’s interest in the themes to be discussed, it is my pleasure to invite you to nominate a representative to attend this meeting.

I would be grateful if you would inform Mr Michael Ryan, Head of Codes & Schemes (Tel. 33.1.45.24.85.58; Fax: 33.1.44.30.61.17; E-mail: Michael.Ryan@oecd.org) about your organization’s decision to participate in the OECD Tractor Meeting.

Stefan Tangermann
*Prof. Oleg Marchenco will attend the meeting as the delegate of the CIGR.

WAFL 2008  
4th International Workshop on the Assessment of Animal Welfare at Farm and Group Levels  
10–13 September 2008, Ghent, Belgium  
http://www.wafl2008.com

Registration for the 4th International Workshop on the Assessment of Animal Welfare at Farm and Group Levels (WAFL-2008) is now open.

WAFL-2008 will take place in Ghent, Belgium, on 10–13 September 2008. This combination of congress and workshops will be of significant interest to scientists, practitioners and other stakeholders involved in the assessment of the welfare of farmed, laboratory and other animals that are housed and managed in groups.

General topics
- Development, validation and automated measurements of indicators of animal welfare
- Development and improvement of welfare assessment protocols
- Application of welfare assessment protocols

Specific topics
- Assessing the emotional state of animals
- Improving animal welfare by adapting animals to their environment
- Assessing health status of groups of animals in relation to welfare
- Stakeholders’ views on animal welfare

Important dates
- Opening of registration and call for papers on 1 December 2007.
- The deadline for abstract submission is 15 March 2008.
- Authors will be notified of the status of their abstracts by 1 May 2008.
- If revisions are required, the revised abstract should be re-submitted by 21 May 2008.
- The final notification will be sent to the authors by 15 June 2008.
- The deadline for registration with a discount is 1 July 2008.
- For abstracts to be included in the Book of Abstracts, the presenting author must be registered as participant of the congress before 15 August 2008.

Further information
Frank Tuyttens (frank.tuyttens@ilvo.vlaanderen.be) or Dominiek Maes (dominiek.maes@ugent.be)

Prof. Dr Bart Sonck (Honorary Member of CIGR)  
& Frank Lunn (Past Secretary of CIGR)

Institute for Agricultural and Fisheries Research, ILVO,  
Scientific Institute of the Flemish Government,  
Food & Technology Unit, Agricultural Engineering,  
Burg. Van Gansberghelaan 113, 9820 Merelbeke, Belgium

2nd International Symposium on Water Resources and Renewable Energy Development in Asia  
Furama Resort, Danang, Central Vietnam  
10–11 March 2008  
http://www.hydropower-dams.com

Technical and social programmes, as well as details of study tours, exhibitions, accommodation and registration, are now available for ASIA 2008. The Final Bulletin can also be viewed at www.hydropower-dams.com.

Following the success of the ASIA 2006 Symposium in Bangkok, ASIA 2008 promises to be a valuable gathering of around 500 experts from across 45 countries; these experts
are involved in renewable energy (hydropower, in particular) and water resources development in Asia. The meeting venue, the elegant Furama Congress Centre and Resort, situated just beside the South China Sea, is a central region involved in a major hydropower development programme. ICOLD, IWRA, ICID, UNESCO, FAO and the Mekong River Commission are some international/regional professional associations participating in ASIA 2008. The world’s leading research institutes, universities, consultants and manufacturers will also be well represented.

The key topics for discussion will be water resources challenges; concerns and implications of climate change; predicting and managing floods; seismic design of water infrastructure; hydro potential and development; social and environmental issues like resettlement; rural electrification; challenging site conditions; marine energy; pumped storage; cascade hydro developments; reservoir operation; materials for building dams (RCC and CFRDs).

We look forward to welcoming you to Danang. Register now at www.hydropower-dams.com.

The ASIA 2008 Management Team
Aqua-Media International Ltd.
Westmead House, 123 Westmead Road
Sutton, Surrey SM1 4JH, UK
Tel: + 44 20 8643 4727 or + 44 20 8643 5133
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E-mail: danang2008@hydropower-dams.com

6. PUBLICATIONS

CIGR E-journal
(Reviewed Articles)

The E-journal continues to progress very well. The papers published since the last newsletter are listed below. This brings the total number of published papers to 373 original research articles and 110 invited overviews of authors from 55 countries. These papers are all available on the website (cigr-ejournal.tamu.edu) and are free of charge for both authors and readers.

Peer Reviewed Original Research Articles Published since October 2007:


83. S. Sule, J.S. Jatau and M.G. Yisa. Development of a


Invited Overview Articles:

Agricultural Engineering International—The CIGR E-journal

Dr Lingjuan Wang, Editor-in-Chief
http://cigr-ejournal.tamu.edu
ISSN 1682-1130
Send manuscripts for peer review to stout@tamu.edu

The CIGR E-journal has completed its ninth year of publication. It has expanded from modest beginnings to become a journal that now attracts many quality manuscripts. All the published papers are available free of charge on the website: cigr-ejournal.tamu.edu. The following is a summary of the number of papers published to date:

Peer reviewed original research papers (total: 373):

Vol. I (1999)----7
Vol. II (2001)----10
Vol. III (2003)----23
Vol. IV (2002)----25
Vol. V (2003)----29
Vol. VI (2004)----44
Vol. VII (2005)----53
Vol. VIII (2006)----68
Vol. IX (2007)----91 plus 16 ATOE papers plus 7 CIOSTA papers (total: 114)

Peer reviewed invited overview papers (total: 110):

Vol. I-------2
Vol. II-------4
Vol. III-----8
Vol. IV-------20
Vol. V-------24
Vol. VI-----6
Vol. VII-----10
Vol. VIII-----23
Vol. IX-----13

As is expected, the published papers come from a broad international base: 55 countries.

Peer Reviewed Original Research Papers:


Peer Reviewed Invited Overview Papers:

Australia: 1, Bangladesh: 2, Brazil: 3, Canada: 3, China: 5, Denmark: 2, Egypt: 1, FAO: 3, France: 1, Germany: 12, Greece: 1, India: 7, Indonesia: 1, Israel: 1, Italy: 16, Japan: 4, Kenya: 1, Mexico: 1, Morocco: 1, Netherlands: 3, Nigeria: 13, Oman: 3, Palestine: 1, Poland: 1, Portugal: 1, Russia: 1, Swaziland: 2, Taiwan: 1, Thailand: 3, UK: 3, USA: 18, Yugoslavia: 2, Zimbabwe: 1

I invite all of you to submit your manuscripts for peer review and publication. There is no cost involved in publishing or accessing and printing papers. The website has all the details regarding manuscript format, submission instructions etc. If you have any questions, please e-mail me at stout@tamu.edu.
What is the Balance between Developing and Industrialized Countries?

The balance between developing and industrialized countries remains very good. There are a total of 110 manuscripts in various stages of review with the following Sections:

Section Board I: LW----25; Section Board II: BC----18; Section Board III: PM----20; Section Board IV: EE-----13; Section Board V: MES---1; Section Board VI: FP-----23; Section Board VII: IT------6; Invite Ov------4
TOTAL-------110

All published papers are copied on CDs. Vol. IX contains 91 original research papers, 16 papers from the Automation Technology conference, 7 papers from the CIOSTA conference and 13 invited overview papers. I have created a CD of Vols. I–IX and will be sending it to libraries for permanent archiving as usual.

Answered by Prof. Bill Stout

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### CIGR Section Boards (Elected in September 2006)

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<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Chair</th>
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<tbody>
<tr>
<td>Section I</td>
<td>Land and Water Engineering</td>
<td>Jose M. Tarjuelo (Spain)</td>
</tr>
<tr>
<td>Section II</td>
<td>Farm Buildings, Equipment, Structures and Environment</td>
<td>Daniel Berckmans (Belgium)</td>
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<tr>
<td>Section III</td>
<td>Equipment Engineering for Plants</td>
<td>Arturo Lara-Lopez (Mexico)</td>
</tr>
<tr>
<td>Section IV</td>
<td>Rural Electricity and Other Energy Sources</td>
<td>Mikio Umeda (Japan)</td>
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<tr>
<td>Section V</td>
<td>Management, Ergonomics and Systems Engineering</td>
<td>Pietro Piccarolo (Italy)</td>
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<tr>
<td>Section VI</td>
<td>Post-harvest Technology and Process Engineering</td>
<td>Jozef Grochowicz (Poland)</td>
</tr>
<tr>
<td>Section VII</td>
<td>Information Systems</td>
<td>Fedro Zazueta (USA)</td>
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All correspondence and information on forthcoming activities should be sent to
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SATAKE AUSTRALIA PTY. LTD.

Scope of Business

Flour Milling
Satake has developed PeriTec, an epoch-making system that is the major breakthrough in flour milling for over a century.

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Satake is a technology leader in optical sorters to improve the quality of products such as seeds, beans, nuts, rice and cereal grains.

Rice Processing
Satake has established a firm position in the rice industry as the all-round world leader in systems for processing rice.

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Satake contributes to environmental preservation through the marketing of biomass power plants, compost plants etc.

Food Products
Satake produces and markets various food and household product, including instant rice, instant pasta and kitchen rice mills.

Industrial Machinery
Satake motors have the ability to start at low amperage while producing high torque. These motors are being used in air compressors on farms.