

International Commission of



Agricultural Engineering

CIGR

Newsletter Quarterly

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February 2008

Since 1930–2008
78 Years of CIGR

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CIGR Website: <http://www.cigr.org/>

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 Web portal using state-of-the-art information technologies
- Proactively seek professionals and organizations in regions where Agricultural and Biosystems Engineering is underrepresented in CIGR



Prof. Irenilza Naas

• Proactively seek participation in professional events
The following specific actions will support the above strategy:

1. Create a new and improved Web presence for CIGR
2. 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
3. Support management tools for the CIGR E-Journal leading to a more expeditious review and publication process
4. Increase the profits of CIGR by exploring and effectively utilizing e-commerce to market CIGR products as well as to increase donor contributions
5. Create a public directory of CIGR members
6. Conduct an analysis of the geographic distribution of members, identify gaps and establish contacts with groups and individuals for their incorporation into CIGR
7. Assist in the coordination of international symposiums, conferences and congresses and avoid unnecessary duplication of themes in the same year
8. Update the CIGR statutes

*Irenilza de Alencar Naas
 President of CIGR*

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



Prof. Soren Pedersen

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.

- With regard to expanding the CIGR via its seven sections, the section chairs found it preferable that the sections have short names that are easy to remember; these can be followed by text that provides a broader description. Here, it is important to avoid overlap between sections. The proposals for the short names for the sections could be as follows: I, Soil and Water; II, Farm Buildings; III, Plant Production Technology; IV, Rural Energy; V, System Engineering; VI, Post-Harvest Engineering; and VII, Information Technology.

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

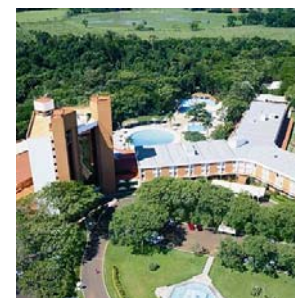
Another point to be mentioned is that the state of Paraná is

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*



Photo by Wikipedia



Convention Centre
The venue of
'CIGR 2008'



INTERNATIONAL CONFERENCE OF AGRICULTURAL ENGINEERING XXXVII CONGRESSO BRASILEIRO DE ENGENHARIA AGRICOLA
31 AGR 04 SET 2008 BRAZIL

CENTRAL THEME:
Technology for All: Sharing the Knowledge for Development

BOURBON CATARATAS HOTEL, IGUAÇU FALLS CITY, PARANÁ STATE - BRAZIL
August 31st to September 04th, 2008

CALL FOR PAPERS
The International Conference of Agricultural Engineering invites you to submit paper to the Conference.

DEADLINE FOR SUBMISSION:
March 30th, 2008

EVENTS - CIGR'2008

- ASABE's - ILES VIII - ASABE's International Livestock Environment Symposium (Deadline expired)
- CSA'2008 - VIth International Symposium on Cement Based Materials for a Sustainable Agriculture
- EnviroWater'2008 Soil, Water & Environment Management
- Processing Conference 4th CIGR Section VI International Symposium On Food And Bioprocess Technology
- Power and Machinery . ATOE'2008
- Interdisciplinary issues . Biofuels Symposium

CIGR'2008

A1, A2, A3, A4, A5

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

A1: Soils, Water & Environment Management—Envirowater '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

savings; new technologies for irrigation management at the plot level; participatory management of water users

• **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)

(arosen@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

Agriculture

• Pre-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

Environment

• 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

- Energy applied in agricultural production
- Agricultural and biological engineering policy
- General interdisciplinary topics in agricultural and biological engineering

A5-2: Biofuels Symposium

Chair: Evandro Mantovani (Brazil)

(evandro.mantovani@embrapa.br)

Co-Chair: Axel Munack (Alemanha) (axel.munack@fal.de)

Potential Topics for Discussion

- Technical aspects: raw material sources; biomass and biofuels research; biofuel technology and technical challenges; ethanol fuel and applications; biodiesel fuel and its application; successful experiences; biomass conversion; bio-refineries; mutual optimization of fuels and engines
- Environmental aspects: transition to post-fossil energy; green energy supply and management; hybrid engine applications; emissions and health effects of the application of biofuels; actual and prospective scenarios in countries
- Economical aspects: governmental policies; actual and prospective scenarios in countries, sustainable biofuel production
- Global trends: potentials—national and international considerations; certification; sustainability; life-cycle analyses
- Future research: prospects for ‘second generation’ feedstock technologies; biofuel challenges and future opportunities

For further information, write to Prof. Marcos Vinicius Folegatti—SBEA President of Local Committee mvfolega@esalq.usp.br

Temporary shedule of CIGR International Confenence 2008

* CIGR meetings

| | 30 Aug. | | 31 Aug. | | 1 Sept. | 2 Sept. | 3 Sept. | 4 Sept. |
|---------------------------------|------------|----------------------------------|--|----------------------------|--------------------------|---------------------------------|--|----------------|
| A M | Exhibition | Ad Hoc Com.of Revi. of Statutes* | Exhibition | Technical Board Meeting* | A1-A5 -Oral Presentation | A1-A5 -Oral Presentation | A1-A5 -Oral Presentation | Technical Tour |
| P M | | CIGR Presidium Meeting* | Registration Exhibition | Section Board M. (7rooms)* | -Poster Session | -Poster Session | -Poster Session | |
| E v e n i n g | | Executive Board Meeting* | Opening Session ----- Welcome Cocktail | | | Working Group Meeting (7rooms)* | CIGR GA* ----- Award Ceremony* ----- Farewell Dinner | |

**The XVII CIGR World Congress 2010
Québec, Canada, 13–17 June 2010**

<http://www.bioeng.ca/Events/CIGR/index.htm>

CIGR (<http://www.ucd.ie/cigr/>) will hold its 17th World Congress in **Québec City, 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/>).

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.

You can also contact the following persons:

Chair of the local organizing committee
Dr Stéphane Godbout, ing., agr., Institut de Recherche et de Développement en
Agroenvironnement stephane.godbout@irda.qc.ca
Chair of the scientific program committee
Dr Philippe Savoie, ing., agr., Agriculture and Agri-Food Canada, savoiep@agr.gc.ca

3rd CIGR International Conference 2012

Several societies have submitted applications to host the CIGR International Conference 2012, and these offers were discussed at the CIGR meeting in Glasgow. The host will be determined at CIGR 2008 at Iguassu Falls City, Brazil.

XVIII CIGR World Congress 2014 September 2014, Beijing, China

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)

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.

Time and venue

September 2014, Beijing

Since the 2008 Olympics will be held in Beijing, there will be a larger availability of convention centres and hotels with excellent facilities for holding large-scale meetings. Many more options will become available according to the scale and activities of the CIGR Congress.

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



Mr. Yoshisuke Kishida, elected president of the AAAE

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

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 (ANAFID) 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. Gates⁴, Irenilza D. Nääs⁵, Daniella J. Moura⁵, Daniel Berckmans⁶ and Thomas M. Banhazi⁷,

¹Department of Environmental Engineering, University of Zielona Gora, Z. Szafrana 1, Zielona Gora (Poland)

²Department of Agricultural Engineering, Research Centre Bygholm, University of Aarhus, Horsens (Denmark)

³Department of Agricultural Structure and Bioenvironmental Engineering, China Agricultural University, Beijing 100083, P. R. (China)

⁴Biosystems & Agricultural Engineering, 128 CE Barnhart Building, University of Kentucky, Lexington, KY 40546-0276, (USA)

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 $240 \text{ W}\cdot\text{m}^{-2}$. 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: CO_2 , 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 CO_2 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 CO_2 dramatically increased during the industrial era, and human consumption of fossil fuels elevated CO_2 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

conditions. There should be a larger number of studies on the dynamic responses of animals to variations in micro-environmental variables since this is the basis for the development of new sensors and for better control.

More work needs to be done at the scale of *animals in buildings or enclosed structures* like transport systems. At the laboratory scale, several measuring techniques are used with implanted, injected sensors or infrared thermography. It is necessary to monitor different physiological responses to stressors and develop and implement this technology in such a way that it can be applied at a wide and practical scale at a low cost; this is one of the focus areas of precision livestock farming.

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 Section V: Management, Ergonomics and Systems Engineering Minutes of the Board Meeting on 17 September 2007 in Nitra, Slovakia

Chairman: Prof. Pietro Piccarolo, Italy

Secretary: Prof. Ladislav Nozdrovicky, Slovak Republic

Interim Referent: Dr Claus Grøn Sørensen, Denmark

Proposals Aiming to Improve CIGRV Activities from 2008 to 2010

One of the main activities of Section V involves continuing to organize the CIOSTA conference every two years. This conference involves core scientific reporting on the activities taking place with regard to the themes mentioned in Section V. As an interim activity, Piccarolo proposed that an international conference within the auspice of Section V be held in 2008. Prof. Giampaolo Schillaci from The Department of Agricultural Engineering, University of Catania, will serve as the coordinator of the conference, which is called 'Innovation Technology to Empower Safety, Health and Welfare in Agriculture and Agro-food Systems'; this conference will take place in Ragusa (Italy), on 15–17 September 2008. The following will be the topics discussed:

- work safety in agricultural building and forest and agro-food processes
- food safety and traceability
- pollution in the field, greenhouses and housing of animals
- assistive technology
- logistics in agro-food supply chains
- agricultural mechanisation and management
- prevention and risk analysis, work organization,
- system engineering, health protection
- automation, robotics and remote controls
- machine milking and animal welfare

Report of the XXII CIOSTA–CIGR V Conference in Nitra

Ladislav Nozdrovicky reported that the XXII CIOSTA–CIGR V Conference in Nitra had 80 participants from 19 countries. The programme discussed the following topics:

- Methods and modelling
- Process engineering and controlling
- Calculation and planning
- Farm planning
- Ergonomics and work place design
- Work safety, prevention and risk analysis

Proposal for the XXIII CIOSTA–CIGR V Conference

Pietro Piccarolo announced a proposal for the next CIOSTA conference 2009 to be held in Reggio Calabria, Italy, under the auspice of Prof. Gennaro Giametta at the Faculty of Agricultural Science, The University of Reggio Calabria. Tadeusz proposed that the CIOSTA Conference 2011 should be held at the Agricultural University of Vienna. Elisabeth Quendler will inquire about the possibilities for arranging the

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.

*Dr Claus Grøn Sørensen
Vice Chairman of Section Board V
27 December 2007*

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.

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E-mail:

bern.tadeo@psae.net;

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 Tuytens (frank.tuytens@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 115, 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, UNESCAP, 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

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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:

63. R. Yadav and S. Pund. Development and Ergonomic Evaluation of Manual Weeder. Manuscript PM 07 022. Vol. IX. October, 2007.

64. M. Keramat Jahromi, S. Rafiee, R. Mirasheh, A. Jafari, S.S. Mohtasebi and M. Ghasemi Varnamkhasti. Mass and Surface Area Modeling of Bergamot (*Citrus medica*) Fruit with Some Physical Attributes. Manuscript FP 07 029. Vol. IX. October, 2007.

65. S. Agostini. Learning Sustainability of Rural Tourism: Farm Competitiveness and Landscape Health Risk Assessment. Manuscript MES 07 001. Vol. IX. October, 2007.

66. S.K. Chapagain, G. Du Laing, M. Verloo, S. Shrestha and F. Kazama. Monitoring of Arsenic Occurrence in Intertidal Sediments of River Scheldt (Belgium). Manuscript LW 07 009. Vol. IX. October, 2007.

67. J. Uziak and I.A. Loukanov. Performance Evaluation of Commonly Used Oil Ram Press Machines. Manuscript PM 07 019. Vol. IX. October, 2007.

68. M.S. Sevda and N.S. Rathore. Studies on Semi-Cylindrical Solar Tunnel Dryer for Drying Di-basic Calcium Phosphate. Manuscript EE 07 001. Vol. IX. October, 2007.

69. F. Oluwole, A. Abdulrahim and R. Olalere. Evaluation of Some Centrifugal Impaction Devices for Shelling Bambara Groundnut. Manuscript PM 07 007. Vol. IX. October, 2007.

70. F. Oluwole, N. Aviara and M. Haque. Effect of Moisture Content and Impact Energy on the Crackability of Sheanut. Manuscript FP 07 002. Vol. IX. October, 2007.

71. M.A. Eltawil and D.V.K. Samuel. Performance and Economic Evaluation of Solar Photovoltaic Powered Cooling

System for Potato Storage. Manuscript EE 07 008. Vol. IX. November, 2007.

72. O.K. Owolarafe and C. Arumughan. Technological Capability of Palm Oil Mills under the Contract-Growers Scheme in India. Manuscript MES 07 003. Vol. IX. November, 2007.

73. S.E. Obetta, O.J. Ijabo and A.A. Satimehin. Evaluation of a Ventilated Underground Storage for Cocoyams (Taro). Manuscript FP 07 017. Vol. IX. November, 2007.

74. X. Zheng and Y. Lan. Effects of Drying Temperature and Moisture Content on Rice Taste Quality. Manuscript FP 07 023. Vol. IX. November, 2007.

75. S. Nayak, M.K. Ghosal and G.N. Tiwari. Performance of Winter Greenhouse Coupled with Solar Photovoltaic and Earth Air Heat Exchanger. Manuscript EE 07 015. Vol. IX. November, 2007.

76. T.Y. Tunde-Akintunde and B.O. Akintunde. Effect of Moisture Content and Variety on Selected Physical Properties of Beniseed. Manuscript FP 07 021. Vol. IX. November, 2007.

77. T.Y. Tunde-Akintunde, B.O. Akintunde and O.J. Oyelade. Effect of Moisture Content on Terminal Velocity, Compressive Force and Frictional Properties of Melon Seeds. Manuscript FP 07 022. Vol. IX. November, 2007.

78. H.Q. Wang and P. Chen. Fault Diagnosis of Centrifugal Pump Using Symptom Parameters in Frequency Domain. Manuscript IT 07 005. Vol. IX. November, 2007.

79. A.A.M. Haque, H.P.W. Jayasuriya, V.M. Salokhe, N.K. Tripathi and P. Parkpian. Assessment of Influence and Inter-Relationships of Soil Properties in Irrigated Rice Fields of Bangladesh by GIS and Factor Analysis. Manuscript LW 07 022. Vol. IX. November, 2007.

80. J.A. Hogan, D.G. Watson and T.V. Harrison. Data Points and Duration for Estimating Fuel Consumption of a LPG Engine. Manuscript PM 07 017. Vol. IX. November, 2007.

81. P.G. Oguntunde, O.J. Olukunle, O.A. Ijatuyi and A.A. Olufayo. A Semi-Empirical Model for Estimating Surface Albedo of Wetland Rice Field. Manuscript LW 06 019. Vol. IX. November, 2007.

82. S. Sule, M.G. Yisa and C.N. Ohanwe. Effect of Ploughing Speed on Stress Development on the Steyr Tractor Lift System on Clay Loam Soil Of Bauchi-Nigeria in the Northern Guinea Savannah. Manuscript PM 07 029. Vol. IX. November, 2007.

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

Model Stress Equation for the Steyr Tractor Lift System. Manuscript PM 07 030. Vol. IX. November, 2007.

84. J.S. Alakali and A.A. Satimehin. Moisture Adsorption Characteristics of Bambara Groundnut (*Vigna subterranea*) Powders. Manuscript FP 07 005. Vol. IX. November, 2007.

85. P. Tassinari, D. Torreggiani and S. Benni. Agriculture and Development Processes: Critical Aspects, Potential and Multilevel Analysis of Periurban Landscapes. Part I. Manuscript MES 07 005. Vol. IX. November, 2007.

86. P. Tassinari, D. Torreggiani and S. Benni. Periurban Landscapes: Critical Aspects, Potential and Multilevel Analysis of Development Processes. Part II. Manuscript MES 07 006. Vol. IX. November, 2007.

87. H. Tanaka, A. Oida, M. Daikoku, K. Inooku, O. Sumikawa, Y. Nagasaki and M. Miyazaki. DEM Simulation of Soil Loosening Process Caused by a Vibrating Subsoiler. Manuscript PM 05 010. Vol. IX. November, 2007.

88. M. Fadel. Date Fruits Classification Using Probabilistic Neural Networks. Manuscript IT 07 003. Vol. IX. December, 2007.

89. M.Z. Hossain and T. Sakai. A Study on Pullout Behavior of Reinforcement Due to Variation of Water Content of Soil. Manuscript LW 07 011. Vol. IX. December, 2007.

90. O.J. Alamu, M.A. Waheed, S.O. Jekayinfa and T.A. Akintola. Optimal Transesterification Duration for Biodiesel Production from Nigerian Palm Kernel Oil. Manuscript EE 07 018. Vol. IX. December, 2007.

91. R. Remesan, M.S. Roopesh, N. Remya and P.S. Preman. Wet Land Paddy Weeding: A Comprehensive Comparative Study from South India. Manuscript PM 07 011. Vol. IX. December, 2007.

Advances in Labour and Machinery Management for Profitable Agriculture and Forestry:

1. P. Busato, R. Berruto and C. Saunders. Optimal Field-Bin Locations and Harvest Patterns to Improve the Combine Field Capacity: Study with a Dynamic Simulation Model. Manuscript CIOSTA 07 001. Vol. IX. December, 2007.

2. J. Havránková, V. Rataj, R.J. Godwin and G.A. Wood. The Evaluation of Ground Based Remote Sensing Systems for Canopy Nitrogen Management in Winter Wheat—Economic Efficiency. Manuscript CIOSTA 07 002. Vol. IX. December, 2007.

3. L.A. Jensen, C.G. Sørensen and R.N. Jørgensen. Real-time Internet-Based Traceability Unit for Mobile Payload Vehicles. Manuscript CIOSTA 07 003. Vol. IX. December, 2007.

4. G. Vitner, A. Bechar, A. Kiryati, O. Eshet and O. Shental. Quality and Productivity Improvement of Wax Flowers. Manuscript CIOSTA 07 004. Vol. IX. December, 2007.

5. E. Quendler, R. Martetschläger, J. Baumgartner, M. Koller, M. Schick, J. Boxberger and I. Mösenbacher. Logging of Time Elements with Digital Video Technology in Baby Piglet Production. Manuscript CIOSTA 07 005. Vol. IX. December, 2007.

6. M. Zagórda and M. Walczykova. Estimation of Costs at Application of Precise Fertilizers Spreading. Manuscript CIOSTA 07 006. Vol. IX. December, 2007.

7. R.J. Godwin. Advances in Labour and Machinery Management. Manuscript CIOSTA 07 007. Vol. IX. December, 2007.

Invited Overview Articles:

13. G. Liu, R. Zhang, Z. Sun, X. Li and R. Dong. Research Progress in Anaerobic Digestion of High Moisture Organic Solid Waste. Invited Overview. Vol. IX. November, 2007.

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 (2000)---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:

Australia: 2, Austria: 1, Bangladesh: 1, Belgium: 4, Botswana: 2, Brazil: 8, Canada: 13, Cameroon: 3, China: 9, Czech Republic: 3, Denmark: 14, Egypt: 3, Estonia: 5, Ethiopia: 2, Finland: 2, France: 1, Germany: 23, Greece: 10, India: 20, Indonesia: 3, Ireland: 2, Iran: 4, Israel: 3, Italy: 14, Japan: 37, Lebanon: 2, Lithuania: 3, Mexico: 4, Netherlands: 3, Nigeria: 55, Pakistan: 1, Poland: 7, Portugal: 6, Serbia: 1, Slovak Republic: 1, Spain: 7, Sweden: 4, Tanzania: 2, Thailand: 11, Turkey: 3, United Arab Emirates: 2, United Kingdom: 1, USA: 28

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.

*Dr Bill A. Stout, PhD, P.E.
Coordinator, CIGR E-journal
and Honorary President CIGR
31 December 2007*

Does the CIGR E-journal Have an Impact Factor?

The CIGR E-journal is not yet included in the ISI database; therefore, it does not have an impact factor. Although we applied to the ISI almost two years ago, our application was denied on the grounds of insufficient citations. ISI stated that we could reapply in two years; we will be undertaking this after one or two months. We have now published 373 original research papers and 110 invited overviews with authors from 55 countries. I am quite confident that ISI will approve our application this year. The E-journal is indeed expanding very well. Prof. Fedro Zazueta is currently setting up the Open Journal System for the E-journal. This will be a necessity once we acquire ISI approval.

Answered by Prof. Bill Stout

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

| CIGR Section Boards (Elected in September 2006) | |
|--|--|
| Section I: | <i>Land and Water Engineering</i> (Chair: Jose M. Tarjuelo (Spain)) |
| Section II: | <i>Farm Buildings, Equipment, Structures and Environment</i> (Chair: Daniel Berckmans (Belgium)) |
| Section III: | <i>Equipment Engineering for Plants</i> (Chair: Arturo Lara-Lopez (Mexico)) |
| Section IV: | <i>Rural Electricity and Other Energy Sources</i> (Chair: Mikio Umeda (Japan)) |
| Section V: | <i>Management, Ergonomics and Systems Engineering</i> (Chair: Pietro Piccarolo (Italy)) |
| Section VI: | <i>Post-harvest Technology and Process Engineering</i> (Chair: Jozef Grochowicz (Poland)) |
| Section VII: | <i>Information Systems</i> (Chair: Fedro Zazueta (USA)) |

All correspondence and information on forthcoming activities should be sent to
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Professor Dr. Emeritus Takaaki Maekawa, Secretary-General
University of Tsukuba

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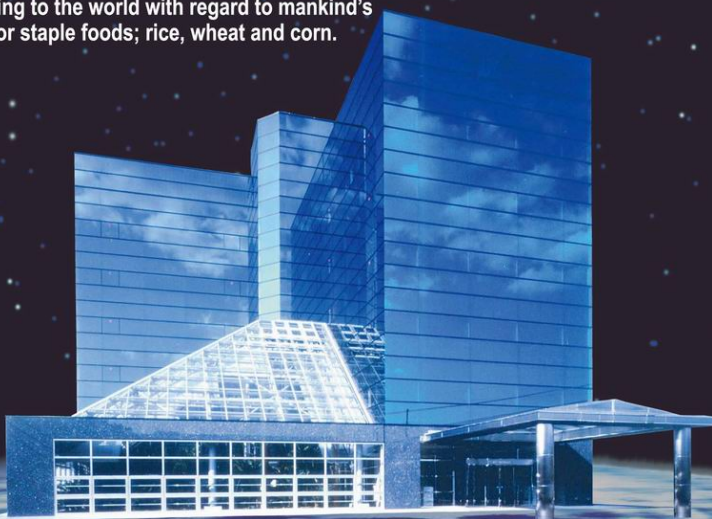
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SATAKE USA INC.
SATAKE (CANADA) INC.
SATAKE AMERICA LATINA LTDA.
SATAKE INDIA ENGINEERING PVT. LTD.
SATAKE (THAILAND) CO., LTD.
SATAKE INTERNATIONAL BANGKOK CO., LTD.
SATAKE MANUFACTURING (SUZHOU) CO., LTD.
SATAKE AUSTRALIA PTY. LTD.

Scope of Business

Rice Processing

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



Flour Milling

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



Vision Systems

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



Rice

Flour

Vision
Systems

Environmental Systems

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



Environment

Food

Industrial
Machinery

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 trains.



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