



International Commission of Agricultural and Biosystems Engineering

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Newsletter 131

"...to serve - on a world-wide basis and through its members - the needs of humanity by fostering mutual understanding, improvement and rationalisation of sustainable biological production systems while protecting nature and environment and managing landscape through the advancement of engineering and allied sciences..."

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Web: www.CIGR.org

Journal: www.CIGRjournal.org

Contact us: secretarygeneral@CIGR.org

Report on CIGR World Congress, Kyoto.



Noboru Noguchi
Congress General Chair
Hokkaido University
Japan

The CIGR World Congress held during December 5th through the 10th, 2022 was a great success. It was co-organized with the support and cooperation of the Science Council of Japan and the Japan Association of International Commission of Agricultural and Biosystems Engineering.

There was a total of 677 participants including 137 online. A total of 81 sessions were held including 13 keynote sessions, 36 general sessions, 29 organized sessions and 3 poster sessions. The total number of presentations was 456, including 26 keynote presentations, 279 oral face-to-face presentations, 105 online presentations and 72 posters.

Sessions included

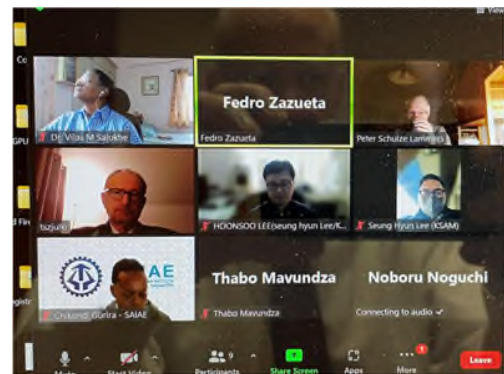
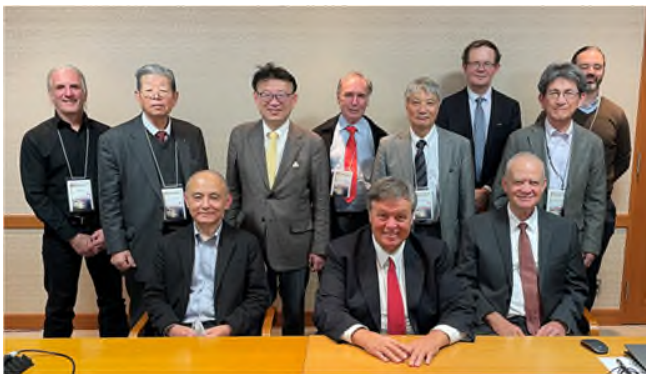
1. TS II: Structures and Environment; Developing Digital Twins for Agricultural Buildings
[Session description](#)
2. WG5: Image Analysis for Agricultural Processes and Products; VIII International Workshop on Image Processing and Spectroscopy in Agriculture
[Session Description](#)
3. WG6: Food Safety, FSWG; Application of Effective Food Safety Management Systems to Promote Better Health and Sustainable Global Food Trade
[Session Description](#)
4. WG12-1: Artificial Intelligence and Data Science; Machine Learning Innovations in Biosystems Engineering
[Session Description](#)
5. WG12-2: Artificial Intelligence and Data Science; Proximal sensing and artificial intelligence in high throughput plant phenotyping
[Session Description](#)
6. WG9: Plant Factory and Intelligent Greenhouse; Perspective of AI, ICT and mathematical model based practical agricultural production in plant factory and greenhouse: On the earth, in space, and the science bridging them
[Session Description](#)
7. AI, IoT and Robotics in Agriculture and Livestock Farming
[Session Description](#)
8. Robotics and Sensing Technology for Smart Vineyards and Orchards
[Session Description](#)
9. Agricultural Robotics for Field Operations and Sensing
[Session Description](#)
10. Food and Agricultural Waste Valorization through the Global Food System
[Session Description](#)
11. Mobile Robotics in Smart Vineyards
[Session Description](#)
12. WG4: Rural Landscape Protection and Valorization; Rural Landscape, Structures and Infrastructure Planning and Valorization
[Session Description](#)
13. Prediction and Evaluation the Microbial Safety and Quality of Food
[Session Description](#)
14. Small Robot and Deep Learning in Agriculture
[Session Description](#)
15. Eco-friendly Technology for Food and Biomass Utilization
[Session Description](#)
16. Paddy-based Agriculture and Water Environment towards Achieving SDGs
[Session Description](#)
17. Smart Agriculture with Robots and ICT in Japan
[Session Description](#)
18. Development of Data-Driven Agricultural Technologies that Contribute to Increase Profits for Agricultural Business through Improving Productivity and Efficiency of Distribution
[Session Description](#)

From the XX CIGR World Congress

Kyoto International Conference Center



CIGR Executive Board Meeting



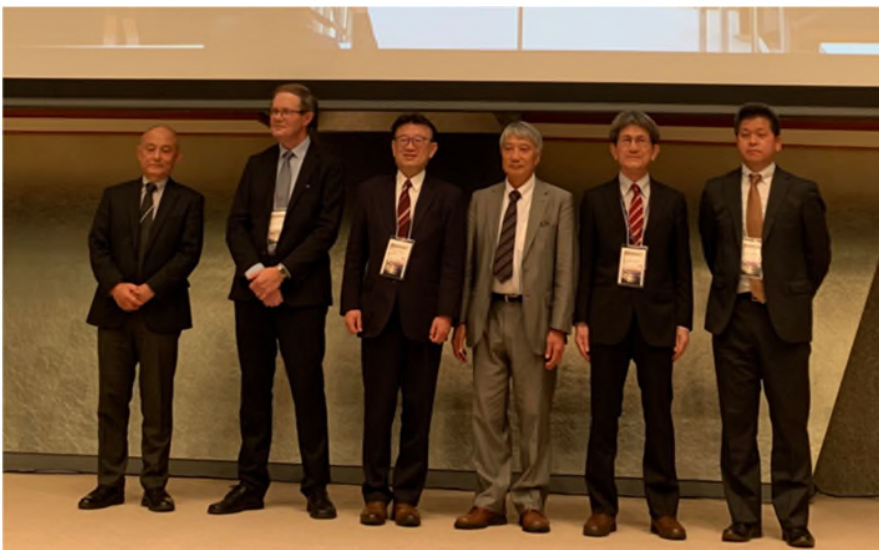
Congress Opening



Technical and Networking Sessions



Awards





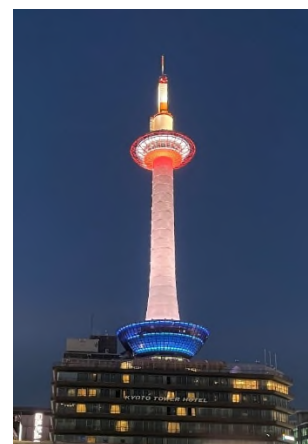
Banquet



Until the very end...

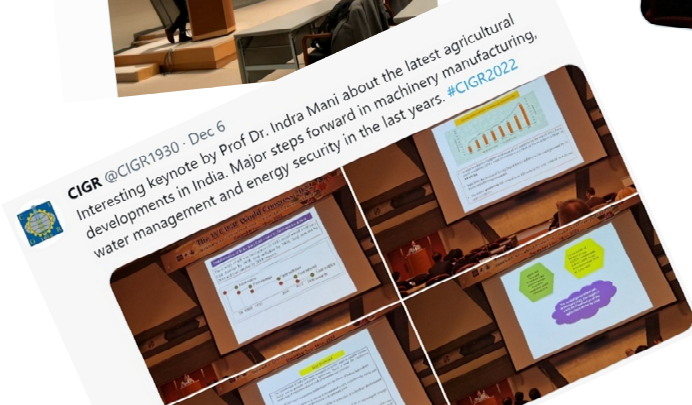


Beautiful Kyoto



Tweets from the World Congress in Kyoto

Join CIGR on Twitter at <https://twitter.com/CIGR1930>



Invitation to 2024 CIGR International Conference in Jeju Island, Korea.

Dr. Kangjin Lee
Organizing Committee Chair
Korean Society for Agricultural Machinery President

On behalf of KSAM, KSAE, and KSBEC, it is a great honor to cordially invite you to attend “The XXI CIGR World Congress 2024”, to be held May 19th – 22nd, 2024 at ICC Jeju, Jeju Island, Republic of Korea.

The Theme for the Conference will be: Digital Agriculture (Feed the Future) Date: May 19th – 22th, 2024 Venue: ICC Jeju, Republic of Korea Organized by: Korean Society for Agricultural Machinery (KSAM) The Korean Society for Agricultural Engineers (KSAE) The Korean Society for Bio-Environment Control (KSBEC) In the 21st century, the era of 4th industrial revolution, the CIGR has promoted exchanges of agricultural information, seminars on the development and utilization of technologies, discussions about mutual interests, and research on measures for future advancement. Climate change is of global significance as it adversely impacts on the market economy of every country through unpredictable natural disasters, the resulting political crisis and social instability. In the face of such general crisis, the agriculture industry takes particular importance in providing life-saving food for people. It is essential to create the sustainable values of survival and advances for the future livelihood of the people everywhere. The theme of this CIGR World Congress is “Digital Agriculture (Feed the Future)”. Dynamic thought leaders, scientists, and researchers will share and exchange the information about the *Jeju International Convention Center*

latest agricultural technologies in this congress. In addition, this congress will provide an excellent



platform for communication with all participants from around the world and the various technical and academic sessions. The session will be consisted of 8 potential sessions (1. Novel Technology and Innovation in Agricultural Machine, 2. Structures and Climate, 3. Sustainable Plant Production, 4. Artificial Intelligence and Data Science, 5. Machine Vision System for Agricultural Processing, 6. Robotics and Sensing Technology, 7. Food Safety, Processing, and Engineering, and 8. Smart Livestock Farming). These sessions will be valuable forums for the exchange of recent research findings in the various academic fields. Jeju is the island of symbol of peace on the Korean Peninsula and a treasure island of the world, with a unique mixture of culture and nature that is blessed by heaven. Jeju would serve as an excellent platform for exchange of information and personnel related to the agricultural engineering research and industry. All the people of the organization societies are expecting the day when this top networking opportunity will be held in Jeju, where we will share the value and meaning of agriculture. As well as we hope all participants will enjoy the contents of the congress.

Technical Sections Report



Tomas Norton
CIGR Workgroups Coordinator
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Belgium

Reporting period May 2021 – December 2022

Technical Section I: Land and Water (Chair José Manuel Gonçalves)

Promote the advance of the engineering science in the area of land and water use in agriculture and in rural areas, giving special attention to the conservation of resources, the preservation and reestablishment of environmental balances, and the social and economic impacts of applications in order to realize sustainable development for both urban and rural societies. New members to TSI: Karima Sebari, from IAV Hassan II, Morocco; Lineu Rodrigues, from EMBRAPA, Brazil. New Board: Chair – Claudio Garcia, from INIA, Uruguay; Vice-chair – Lineu Rodrigues, from EMBRAPA, Brazil; Secretary – Karima Sebari, from IAV Hassan II, Morocco. Activities i) Section I organized the 6th Inter-Regional Conference on Land and Water Challenges, in the framework of the Interregional Conference Sustainable Production in Water-Scarced Agroecosystems (SUPWAS), on 5-7 September 2022, in Albacete, Spain. ii) Section I is cooperating with the 10th International Micro Irrigation Conference (www.10imic.ma), organized by ANAFIDE and ICID, to be held in January, 25th-27th, 2023, in Dakhla, Morocco, by proposal of Dr. El Houssine Bartali, namely through the event diffusion and a Side-event to present Section I. iii) Section I is cooperating with INOVAGRI and the National Congress of Irrigation and Drainage of Brazil, to organize the 2023 - 7th Inter-Regional Conference on Land and Water Challenges, in Fortaleza, Brazil.

Technical Sections II: Structures and Environment (Chair Tomas Norton)

Optimizing the interaction of living organisms with their individual micro-environment by using structures and guaranteeing the long term sustainability (product quality and safety, human/animal health and welfare), of these biological systems in their surrounding environment. TSII membership: Anders Adamsen is stepping down from the CIGR board and Li Rong has been nominated to replace him. Li Rong is working in building ventilation, animal response to climate, and emissions from animal buildings. She introduced her background and was welcomed by the board. Peter Demeyer, Melynda Housanna, Salva Calvet have joined TSII. TSII initiative Sub-groups: Precision Animal Management sub-group. First aim to evaluate different approaches towards PLF education in universities. A web application (hosted by CIGR) that could be used by anyone interested in PLF career to identify the courses needed for a certain career path: who delivers the courses and who are the potential employers. Supported by knowledge clips. Paper on sub-group presented at ECPLF 2022. Greenhouse and Vertical Farming sub-group: Thomas Bartzanas to organize group of young researchers to discuss this topic. 1st meet at ISHS meeting in August. 18 positive replies for people working both in research and industry for taking part in the group. 10 in attendance. The plan is to have ready during the CIGR conference a white paper in the field indicating research priorities, industry needs, vision and collaboration opportunities. Webinar ideas, an idea was proposed by Tami and Tomas to create a Youtube channel with CIGR content. The idea is to have members contribute short videos on livestock production within their region. Videos will be broken out by species and segmented by production phase. Video should be no longer than 3-5 minutes. An example outline was proposed. (See below). The idea is to create these videos as a virtual “world tour” of production systems. These videos could be used for teaching or simply to understand the production systems and the limitation of emerging technology. Basics of swine production

- Segmenting of the ages
- In the US – farrowing, nursery, grow finish (or nursery to finish).
- House configurations
- Ventilation used
- US mostly negative pressure, however some are trying positive pressure and filtering air in breeding herds
- New Challenges facing the industry
- More towards group gestation
- Farrowing crate changes

Tami to supply a sample video to be shared with the group and with CIGR leadership. Hot Climate working group. Vasco will organize a workshop on thermal stress to be held in Thailand in July 2022 and Sept or Oct 2022 in Rio de Janeiro, Brazil. This will be a hybrid workshop to allow others to attend.

Technical Sections III: Plant Production (Chair Francisco Rovira Más)

Engineering of equipment and systems to produce plants, including equipment design, manufacture, and use to establish plants, protect plants, harvest plant products, and transportation of agricultural produce. Engineering of components and systems for improved productivity, efficiency, and sustainability. Two new members will join the section with the purpose of assuming the tasks of chair and secretary in the renewal of the Board. The current secretary will take the role of vice-chair. As we are at the end of the term 2018-2022, there will be a renewal of the Board. As the current vicechair (Dr. Markus Demmel) cannot assume the role of chair because he just took a highly demanding position and cannot chair the section, a new chair will be appointed. The secretary Andrew Guzzomi will move to vice-chair, and a new secretary will join the section. The nominations are as follows:

- Chair: Prof. Manoj Karkee, Washington State University
- Vice-chair: Prof. Andrew Guzzomi, The University of Western Australia
- Secretary: Prof. Hiwa Golpira, The University of Kurdistan, Iran

There will be a Section III General Meeting on 5 December 2022 in Room 101 of the Kyoto Conference Center at 14:00. The meeting will be in hybrid format.

The continuity of the Next Leader Programs will be discussed on the General Meeting in Kyoto.

Technical Sections IV: Energy in Agriculture

The Section IV of CIGR Energy in Agriculture deals with the actual problems of the rational and economical applications of electricity and other energy sources in connection with the electricity in the agriculture, especially with the rational use of the renewable energy sources considering the aspects of the protection of the environment. The chair of TS IV, Assoc. Prof. Dr. Prof. Károly Petróczki retired and terminated his works in CIGR. To determine a new Chair, I will invite the members to make an election and inform about the result when completed. TSIV organized and announced the international conference called “The International Conference of CIGR Section IV, Energy in Agriculture: Bioenergy, Renewable Energy Systems, Transmission and Storage of Electricity” at Warmia and Mazury University in Olsztyn, Poland but we could not realize it because of pandemic problems. TSIV plan to organize this event again and have been studying it. TSIV Supported activities: Workshop with international participation “Difficulties of Preparing the Spent Coffee Grounds, Spent Tea Wastes and Plant Residues for Pelletizing and Pyrolysis Process”

Organization institutions:

- Ege University
- ATB – Leibniz Institute for Agricultural Engineering and Bio economy e.V. (ATB)

Place & Date: Bornova, İzmir, September 22, 2022

Awareness studies:

- CIGR Section IV was introduced in all meetings related to Renewable energy activities: meetings, lectures, etc.

Technical Sections V: System Management (Chair Dionysis Bochtis)

Optimization of farm management and work organization by use of operations planning, logistics and system engineering, while improving the operations efficiency, economics, health, ergonomics, and workers' safety. No updates communicated.

Technical Sections VI: Bioprocesses (Chair Oliver Schluter)

Advance of engineering and technology in post-harvest and agri-food processing with particular focus on properties of products, unit operations, equipment, process control and traceability in respect to ensure the high quality and safety of food. Advance the development and effective use of information and communication technologies in all areas of agriculture in order to increase its sustainability, quality of operations and produce, productivity and profitability of the businesses. Target those technologies to every

link of the production chains, education, research and policy making. No updates communicated.

Technical Sections VII: Information Technology (Chair Patrizia Busato)

Advance the development and effective use of information and communication technologies in all areas of agriculture in order to increase its sustainability, quality of operations and produce, productivity and profitability of the businesses. Target those technologies to every link of the production chains, education, research and policy making. No updates communicated.

Working Groups Report



Claus Grøn Sørensen
Incoming CIGR President
Workgroups Coordinator
Aarhus University
Denmark

The CIGR Working Groups are important building blocks of the CIGR organization. In order to further enhance the important role of the WG in CIGR, CIGR Working Groups are encouraged to:

- Increase their visibility and functionality in CIGR;
- Establish more close links with CIGR Sections;
- Sponsor or co-organize relevant CIGR Section Symposiums;
- Organize WG national or international workshops;
- Publish CIGR Booklets/Handbook on WG area of interests;
- Organize Special Issue in your WG area for CIGR E-Journal; and
- Conduct actively other relevant activities.

A key pending task is the alignment of the WGs with the strategic goals of CIGR. Preliminary strategic goals drafted at the Antalya meeting 2018, form the basis for this work. Further elaborations on the strategic goals will provide a precise base for the aligning the WGs with these.

Currently, 12 working groups are listed in CIGR:

1. Animal Housing in Hot Climate
2. Cattle Housing
3. Agricultural Engineering University Curricula Harmonization
4. Rural Landscape, structures and infrastructure Planning and Valorization
5. Image Analysis for Agricultural Processes and Products
6. Food Safety
7. Logistics
8. Precision Aerial Application
9. Plant Factory and Intelligent Greenhouse (PFIG)
10. Functional/Wellness Foods and Nutrition (FWFN)
11. Rural Development and Preservation of Cultural Heritage
12. Artificial Intelligence and Data Science

**AN INVITATION TO PARTICIPATE IN A
CIGR WORKGROUP**

If you have an interest in the subject matter of a CIGR WG, please follow the link related to your WG of interest. You will see details about its mission, goals, and objectives as well as activities currently underway.

Please contact the WG Chair in case of interest.

In Table 1 below is listed the status for each WG.

WG 1: Animal Housing in Hot Climate Working Group

Introduction

The group was established in 2003 by joining researchers from different institutions, countries and continents. The aim of the group enhancing CIGR actions on Animal Housing in hot climate by solving the problems in barns in hot regions. That per pass the different CIGR Sections considering different supply chains and systems, it aims at contributing with discussions, planning and actions to ensure good environmental for animals all over the world. The Hot Climate Working Group CIGR Section II is a worldwide group of experts interested solving problems related to managing livestock under hot climate conditions.

Mission

To Improve understanding of controlling the animal's environment

- To enhance the scientific knowledge and contribute to technological advances for assuring livestock under hot climate conditions
- To better understand the problems and improve environment basis.

Objectives

The CIGR-Section II Hot Climate WG has led and organized a number of interesting workshops all over the world. However, the intention of the WG is to generate project opportunities based on funding available in countries that are faced with hot climate problem.

The group might create visibility in the EU, America (North and South) and China to submit proposals for

funding and generate some focused research to find implementable solutions.

Scope

- Technologies, methods, practices and analyses for ensuring interested solving problems related to managing livestock under hot climate conditions.
- Avoiding and /or minimizing and predicting risks related to hot climate, environment, and gases hazards

Activities

- Member meeting was conducted in Iguassu Brazil in 2008.
- Member meeting was conducted in Valencia, Spain, July 2012

The new focus of the Working Group will be on "application" and the next workshop will be an "extension related conference".

Israeli colleagues at the Volcani Institute have been asked if they are willing to organize the fourth Hot Climate workshop. As an alternative, the workshop can also be organized by Prof. El Houssine Bartali from Morocco.

Status: Active

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WG 2: Cattle Housing Working Group

Introduction

The WG is composed of several experts (researchers, engineers, extension service persons) working in different fields (behaviour, environment, climate conditions, construction...) around cattle housing. The aim of the WG is to analyse and provide references on housing conditions and building construction for cattle (dairy, beef, calves) in different climate regions of the world.

Mission

The aim of the WG is to analyse and provide references on housing conditions and building construction for cattle (dairy, beef, calves) in different climate regions of the world. The Cattle Housing Work Group writes comprehensive guidebooks for beef and dairy cattle housing and short notes on more specific technical topics.

Objectives

Provide references for cattle housing aspects useful for extension services and farmers.

Scope

Cattle housing: dairy cows, beef and suckler cattle, calves. Topics worked on: behavioural needs of animals, general housing conditions, feeding, milking, handling equipment...

Dear to the COVID-19 situation, the Cattle Housing Group did not meet in the year 2020 and did not do any work. We meet once per year, if possible, either in person or using a video-conference tool.

Status: Active

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WG 3: Agricultural Engineering University Curricula Harmonization Working Group

Introduction

The process of international harmonization of the degree study programs in Agricultural/Biosystems Engineering (ABE) was started by Prof. Giuseppe Pellizzi during CIGR 1989 Conference and was continued by Prof. Pierluigi Febo in the EU, within EurAgEng SIG RD12 - Education and Communication, and also elsewhere, within CIGR WG1 - Agricultural Engineering University Curricula Harmonization.

Then, four thematic networks were effective:

1. USAEE-TN (University Studies of Agricultural Engineering in Europe - A Thematic Network), comprising 31 institutions from 27 countries, from 2002 to 2006;
2. Consortium POMSEBES (Policy Oriented Measures in Support of the Evolving Biosystems Engineering Studies in USA - EU), comprising eight EU and four USA institutions, from 2006 to 2008;

3. ERABEE-TN (Education and Research in Biosystems Engineering in Europe - A Thematic Network), comprising 35 institutions from 27 countries, from 2007 to 2010;
4. Consortium TABE.NET (Trans-Atlantic Biosystems Engineering Curriculum and Mobility), comprising four EU and two USA institutions, from 2009 to 2013.

Mission

The mission is to show the state of the art on Agricultural/Biosystems Engineering (ABE) degree study programs 20 years after the last overview, presented during AgEng2000 Conference. In fact, the book and CD-ROM "The University Structure and Curricula on Agricultural Engineering" - an overview of 36 countries were presented by Prof. Pierluigi Febo during the AgEng 2000 Conference, held in Warwick (UK).

Objectives

The major objectives achieved by the above thematic networks were to:

- define and develop core curricula of 1st and 2nd cycles, to be used as benchmarks for degree study
- programs in Agricultural Engineering in Europe (USAEE-TN);
- develop a web-based database including the courses or modules of the above degree study programs, in order to facilitate the recognition of the core curricula and, therefore, promote the student mobility in the EU (USAEE-TN);
- perform studies on accreditation procedures of the above degree programs in the EU (USAEE-TN);
- perform studies on the transition of curricula from the traditional Agricultural Engineering to the broader Biosystems Engineering (ERABEE-TN);
- establish the recognition procedures of new European degree study programs in Biosystems Engineering by FEANI and EurAgEng, based on the core curricula developed by USAEE-TN (ERABEE-TN);
- promote the mobility of researchers and students within the EU, as a consequence of the development of compatible degree study programs in Biosystems Engineering and the enhancement of their attractiveness (ERABEE-TN);

- define and develop 11 Agricultural/Biosystems Engineering degree study programs, satisfying FEANI (European Federation of National Associations of Engineers) and EurAgEng criteria, in the EU (ERABEE-TN).

Scope

The scope is the state of the art on Agricultural/Biosystems Engineering (ABE) degree study programs.

Activities

Some examples of significant changes relevant to ABE degree study programs occurred in the EU after the end of ERABEE-TN project are the curricula established by the Higher Education Institutions (HEIs) of seven countries.

Even if the monitoring of ABE degree study programs in the EU is still in progress, the Universities of some countries (e.g. Czech Republic, France, Germany, Lithuania, Netherlands, Norway and Portugal) offer BSc. and MSc. curricula in this area, while the HEIs of other countries (e.g. Austria, Denmark, Finland and Italy) offer BSc. and MSc. curricula including subjects related to Agricultural Engineering and Applied Agricultural Engineering as at least 30% of the total ECTS study load.

At present the harmonization process of Agricultural/Biosystems Engineering degree study programs in Europe benefits from the results of the projects of USAEE and ERABEE thematic networks.

Other important contributions towards the harmonization of the European curricula in Agricultural/Biosystems Engineering were achieved through the cooperation between EU and US Higher.

Education Area institutions, during the projects of POMSEBES consortium and TABE.NET one.

However, the above process is still in progress and will be also performed through the dissemination activities of ERABEE-TN and future projects, which will be submitted to the EU by the partners of this network.

The last accomplished activity was the update of ERABEE Network, at the beginning of 2022, that was the task of CIGR WG3 chair, so that now this network is constituted by the following 37 partners and 2 stakeholders.

Upon invitation of Prof. Umezuruike Linus Opara, Chair of DSI-NRF SARCHI Postharvest Technology and Director of Africa Institute for Postharvest Technology, Faculty of AgriSciences, Stellenbosch University, the CIGR WG3 chair is writing the chapter "Curricula design and reform", within the book "Agricultural and Biological/Biosystems Engineering Education: Global Perspectives and Current Practice", to be published by CRC Press, Taylor & Francis Group. This book chapter will show the state of the art on degree study programs in Agricultural and Biological/Biosystems/Bioresources Engineering (ABE) in EU member and candidate states.

On this purpose, a survey on the ABE degree study programs offered by Universities of EU member and candidate states is in progress, in order to focus on the evolution and status of ABE education in these countries. This survey is based on the data provided upon request by at least one University delegate per each country and on the information retrieved from the websites of the HEIs of the above 15 EU member and candidate states (Belgium, Czech Republic, Denmark, Estonia, France, Germany, Ireland, Lithuania, Netherlands, Norway, Portugal, Romania, Slovenia, Spain and Turkey). Thus, it is possible to measure the study load of the subjects related to Agricultural Engineering and Applied Agricultural Engineering, within the BSc and MSc degree study programs offered by the above Universities.


Publications

- 1) P. Febo, D.W. Sun, The University Structure and Curricula on Agricultural Engineering - An Overview of 36 Countries. FAO, CIGR, EurAgEng. 1-236 pp., 2000.
- 2) A. Comparetti, P. Febo, Harmonisation of Higher Education in Agricultural/Biosystems Engineering, EurAgEng 2018 Conference, Wageningen, the Netherlands, 8-12 July 2018.
- 3) A. Comparetti, P. Febo, Harmonization of Higher Education in Agricultural/Biosystems Engineering, CIGR Newsletter 115 - December 2018. URL: https://cigr.org/sites/default/files/newsletters/CIGR_NL115.pdf, 4-6.
- 4) A. Comparetti, P. Febo, State of the Art on Degree Study Programs in Agricultural/Biosystems Engineering in EU. In EurAgEng 2021 Conference. Évora, Portugal, 4-8 July 2021.

Status: Active

Chair: Dr. Antonio Comparetti fra 01.11.2020
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WG 4: RESTART - "Rural landscape, structures and infrastructure planning and valorization"

Status: Active

Chair: Prof. Patrizia Tassinari

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What is RESTART?

The RESART WG focuses on rural landscape analysis, monitoring, planning and design, by means of a transdisciplinary approach, also in relation to climate change, regeneration, ecosystem services, green systems, urban-rural connections, rural metabolism.

The WG is intended as a platform to promote various types of activities, such as:

- Promotion of virtual and real discussions and workshops
- Creation of new research, education, and dissemination opportunities
- Networking

Mission

The themes of the protection and valorization of the physical integrity of landscape, of its historical and cultural sedimentations, of the different environmental resources, and of the impact of the various productive activities that have profoundly transformed landscape over time, are often addressed by specific disciplines in a sectorial way. Only more recently landscape protection and valorization issues have been approached with a less sectorial approach. However, the challenges posed by the evolution of social, economic, environmental and climatic dynamics, as well as by the acknowledgment of the sustainability principles, require an increasingly multi-cross-inter-disciplinary approach to the study of landscape, going beyond descriptive approaches. The study of landscape becomes an even more urgent need for rural landscape, where agriculture, animal husbandry and forestry represent the main productive activities, as well as for peri-urban fringes, where those activities must find a balance with others more linked to human settlement and other productive activities or services for the community. We believe that the CIGR scientific community, given its wide range of expertise in many fields, may and should play a key role in addressing the issues related to landscape transformations compatible with the many challenges that agriculture, animal husbandry and forestry are facing, often also in conflict with other productive activities.

The WG aims to promote the alignment of visions and mutual exchange of knowledge from different contexts, and to facilitate the preparation of joint research, innovation and demonstration projects, as well as publications and dissemination activities. The WG will

address the rural landscape domain with a clear focus on environmental, economic and social sustainability.

Objectives

The Rural Landscape Protection and Valorization Working Group is aimed at facilitating a transdisciplinary approach to rural landscape studies, and at representing a permanent forum for the discussion about rural landscape analysis, monitoring, planning and design. The WG aims at gathering scholars from different disciplines and backgrounds, covering the geographical and socioeconomic diversities, promoting virtual and real discussions and workshops, with the aim to create new research, education and dissemination opportunities that would not be possible within each single discipline.

Scope

The WG will focus on the agriculture/landscape nexus, and on bridging landscape protection and valorization through innovation, considering both the economic importance of a well-planned and managed rural landscape for the production and valorization of food, fiber, and other plant and animal products, its strategic environmental relevance related to the provision of ecosystems services, as well as the key role related to social and cultural issues and the benefits descending from the production of immaterial goods.

Activities

The WG will first of all collect the expression of interests from the CIGR community across the various disciplines and establish an initial group of members. The group will be always open to new members in the future, and we count on a progressive involvement of new members by means of the words spread by the members themselves. An initial meeting, scheduled on the occasion of a CIGR event, will officially launch the new WG.

Since the Rural Landscape Protection and Valorization domain covers a very wide range of topics, the WG would be organized according to the following tasks:

- Rural landscape and climate change
- Rural landscape regeneration

- Rural landscape and ecosystem services
- Rural landscape and heritage
- Rural landscape and tourism
- Rural landscape planning and design
- Rural landscape and education

Subgroups may be defined, focused on the aforementioned tasks, with one or more persons coordinating each subgroup.

Expected outcomes

The constitution of the working group may be started by proposing some themes for a comparison aimed at indicating which are the main challenges to be faced, as well as the methods and the expected results, for each of the above-mentioned tasks (with modalities to be defined: website, etc.)

The product of this work may then be discussed with other WGs to receive critical contributions, integrations, improvements, or amendments, also in order to create synergies between the WGs.

The outcomes that could arise from the discussions and comparisons could also be problem statements, technical notes, comparisons on analysis methodologies, and methodological exchanges with other disciplines, in order to define transformation scenarios based on the environmental and technological challenges that agriculture, animal husbandry and forestry must face in different geographical and climatic contexts. Those thematic contributions may also be related to scenarios already developed by other scholars.

In addition to the outcomes related to interdisciplinary research, the WG may also provide outcomes for the education field, to be implemented in existing first, second and third level programs, as well in vocational courses, or in new programs and curricula.

The WG could also enhance synergies with other international networks active in the field of landscape.

Current status/activities:

- 13.05.2021: first meeting of the CIGR working group “Rural landscape, structures and infrastructure planning and valorization”. Participated by 40 researchers and members of various institutions. Many other scholars were not able to attend but

have joined the WG. Workshops and seminars have been proposed and a call for project partners has been launched. The acronym of the CIGR WG has been voted: “RESTART” (Rural landscapE STructures vAloRizaTion).

- 22.06.2021: Webinar “Rural green energy” organized by the PhD “Health, safety and green systems” of the University of Bologna with the CIGR WG RESTART, and in collaboration with the Working group ‘Rural buildings and landscape’ of EurAgEng and Ambassade de France en Italie / Institut français d’Italie.
- 9.10.2021: PhD Event to present young researchers’ studies to organizations, companies and institutions, organized by the PhD “Health, safety and green systems” of the University of Bologna, in collaboration with the CIGR WG RESTART
- 15.10.2021: CIGR WG RESTART Webinar “Regenerative approaches for wastescapes in peri-urban areas. The case-study of the Metropolitan Area of Naples”, organized by L. Amenta (University of Naples).
- 27.05.2022: CIGR WG RESTART Webinar “Benefits and shortcomings of tourism as a sustainable development solution for landscapes – The draft ICOMOS International Cultural Heritage Tourism Charter”, organized by G. Reher (Pontifical University of Comillas).
- May/June 2022: Realization of the WG website: <http://restart.cigr.org/>
- December 2022: CIGR WG RESTART Session organized in the XX CIGR World Congress, Kyoto

WG 5: Image Analysis for Agricultural Processes and Products Working Group

Introduction

Established in 2008 by joining researchers from different institutions, countries and continents with the aim of enhancing CIGR actions for the collaboration between institutions, enterprises and individuals in the field of computer vision and image analysis in agriculture. The WG is open to all researches interested in optical systems for agricultural products and processes. This technology has grown considerably in

recent years due to the increase of their technological capacity and lower prices of equipment.

These systems allow the automation of tasks and analysis in regions of the electromagnetic spectrum that are invisible to the human eye, are capable of monitoring from far distances, can penetrate into the tissues and allow inspecting products at a high speed that would otherwise not be possible. There is a need to develop new methods, systems and algorithms capable of deal with the large amount of information provided by these systems, and to create innovative developments that can be transferred to the industry.

Mission

- To advance on new image processing technologies for the inspection of the quality and safety of agricultural products.
- To enhance the scientific knowledge and contribute to technological advances for field monitoring using remote sensing technologies.
- To facilitate the introduction of new technologies and applications based on computer vision in the agricultural processes, from the field to the table.

Objectives

- To meet recent demands on process monitoring in agricultural production, during storage and processing of raw material
- To develop objective, sensitive, and reliable optical tools for receiving analytical data in a non-destructive way
- Applications of machine vision and image processing in the agricultural and food industry

Scope

Monitoring

- Gathering recognition parameters for image processing in on-site monitoring of plants and animals
- Interdisciplinary exchange and development of advanced image processing methods in different applications
- Exchange between science and industry for bringing new optical compounds in the focus of scientific working groups supporting new applications

- Technologies: Fluorescence, near infrared, colour, real-time, multispectral, hyperspectral and thermal imaging, satellite imaging X-Rays, magnetic resonance imaging, microscopic imaging

Process management

- Terrestrial and aerial mapping of natural resources
- Non-destructive, on-site inspection of product properties and quality control
- Crop monitoring, precision agriculture, precision horticulture and automatic guidance
- Robotics or any other process automation
- Changes of recognized parameters in on-site monitoring as a function of time
- Livestock farming (both on and off farm applications)
- Classification in processing lines based on external and internal quality
- Real-time automatic inspection of fresh and processed agricultural products
- Image processing with respect to geometric and structure analyses
- Development of phantoms (gold standards)

Activities

- Organization and contribution with events together with CIGR Sections and other organizations
- Organise and operate groups of discussion
- Capture the state-of-the-art of image analyses applications in agronomy
- Enhancement of the collaboration of industry and scientists
- Publication of recent trends and future needs of industry on Image Processing in Agriculture under the guidelines of the CIGR
- Promote research partnership

A new website has been developed that can be visited at <http://cigr-imageanalysis.com>. All information about the working group, including past and future events organized by the working group and also others closely related to our activities are listed. In addition, the articles presented in the workshops that have been organized by the working group to the present are available for download in pdf format. Also, software and image databases are available for free download from this website.

Events Organized

- I CIGR International Workshop on Computer Image Analysis and Spectroscopy in Agriculture. Potsdam (Germany), 27 - 28 August 2009.
- II CIGR International Workshop on Computer Image Analysis and Spectroscopy in Agriculture. Budapest (Hungary), 26 - 27 August 2010.
- III CIGR International Workshop on Computer Image Analysis and Spectroscopy in Agriculture. Adelaide (Australia), 8 - 12 July 2011.
- IV CIGR International Workshop on Computer Image Analysis and Spectroscopy in Agriculture. Special Parallel Conference of Joint CIGR-AgEng 2012. Valencia (Spain), 8 - 12 July 2012.
- V CIGR International Workshop on Computer Image Analysis and Spectroscopy in Agriculture. Special Event under Annual ASABE Meeting. Montreal (Canada), 12 - 13 July 2014.
- VI CIGR International Workshop on Computer Image Analysis and Spectroscopy in Agriculture. Special Parallel Conference of Joint CIGR-AgEng 2016. Aarhus (Denmark), 26 - 29 June 2016.
- VII CIGR International Workshop on Computer Image Analysis and Spectroscopy in Agriculture. Special Parallel Conference of CIGR World Congress 2018. Antalya (Turkey), 22 - 25 April 2018.

Upcoming Events

- The VIII Workshop has been already agreed to be held under the umbrella of the next XX CIGR World Congress 2022 in Kyoto (Japan) 5-9 December 2022.

Cancelled

The Workshop initially planned under the umbrella of the AgEng 2020 in Evora (Portugal) during 5-9 July 2020 has been definitively cancelled due to the pandemic.

Publication of a Special Issue "Selected papers from the IV International Workshop on Computer Image Analysis and Spectroscopy in Agriculture". Aleixos, N., Blasco, J., Molto, E. (Eds) (2014) Biosystems Engineering. Special Issue on Image Analysis in Agriculture. Volume 117.

Publication of a Special Issue "Application of Computer Vision on Quality Monitoring of Agricultural Products". Aleixos, N., Blasco, J., Park, B. (Eds) (2021) Under edition.


In the information section of this SI is stated that "This Special Issue is part of the activities of the CIGR Working Group on Image Analysis for Agricultural Processes and Products."

https://www.mdpi.com/journal/agronomy/special_issues/Computer_Monitoring_Agricultural_Products.

Status: Active

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WG 6: Food Safety Working Group

Mission

- To Improve understanding of hazards and their risks and control measures along food production chains
- To enhance the scientific knowledge and contribute to technological advances for assuring food safety
- To better understand the consumer perception of risks and improve risk communication

Objectives

- Gathering, generating and disseminating information on predicting and monitoring the behaviour and fate of emerging biological and chemical hazard
- Divulging advances on risk assessment and risk-benefit evaluation
- Disseminating information on tools, preservation practices and processes to ensure safety along the food chain
- Understanding and addressing consumer concerns with food safety issues

Scope

- Technologies, methods, practices and analyses for ensuring food safety from farm to fork;
- Avoiding and /or minimizing and predicting risks related to biological, chemical and physical hazards

Activities

- Organization and contribution with events together with CIGR Sections and other organizations
- Organise and operate groups of discussion;
- Promote research partnership

Status: Active


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WG 7: Logistics Working Group

Mission

In-farm, extra farm and regional logistics

- Service operation logistics
- Biomass & forage supply-chain
- Grain supply-chain
- Slurry management
- Storage and operation design

Delivery of high-value produce through the supply-chain

- Local produce
 - Information sharing
- Information streaming along the supply-chain
Traceability performance for the supply chain

Objectives

- To meet recent demands on machinery management in complex agricultural operations related to harvest, distribution and transport of produce (grain, biomass, slurry)

- To share the state-of-the art technology for the optimal management of on-farm, extra-farm and regional logistic operations
- To develop methods and tools to improve the efficiency of the logistic operations
- To set-up standard parameter for comparison of logistic operations
- To optimize, with a system approach, the performance of the working chains, under many viewpoints, considering technical, economic and environmental aspects.

Scope

- To organize within CIGR specific workshops on the topic
- To interact with other CIGR Working Groups and Sections
- To provide reports on state-of-the-art of the topics
- To develop a network among the people working on logistic topics within CIGR
- Cooperate with E-Journal with papers on the topic and with a pool of expert reviewers for the subject
- To promote the activity among industry researchers and agriculture extension services specialists
- To develop contacts with similar international organization

Activities

The WG will discuss and promote the following methods and techniques (and will not be limited to):

- Set-up of field trials with standard conditions
- Intermodal operation (e.g. wagon-truck, truck-barge, etc)
- Innovative handling systems and technologies
- Storage management and agricultural facility planning
- Euristic and scheduling tools
- Discrete event simulation modeling
- Linear, mixed, integer programming
- Analytical models, statistical tools
- Vehicle route planning and logistic networks
- Management resource planning and JIT methodologies
- Lean Thinking applied to streaming of information and goods

The WG has a website, cigrlogistics.org.

Status: Active but under evaluation

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WG 8: Precision Aerial Application

Mission

The mission of the Precision Aerial Application Working Group is to develop and implement new and improved precision aerial application equipment for safe, efficient, and sustainable crop production and protection.

Objectives

The overall objective of this group is to provide precision aerial application solutions for aerial applicators using cutting edge technologies. The first variable-rate aerial application system was developed about a decade ago in the USA and since then, precision aerial application has benefitted from these technologies. Many areas around the world rely on readily available agricultural airplanes or helicopters for pest management, and variable-rate aerial application provides a way of making effective and precise application of agrochemicals. In the context of precision aerial application, variable-rate control can simply mean terminating spray over field areas that do not require inputs, terminating spray near pre-defined buffer areas determined by Global Positioning, or applying multiple rates to meet the variable needs of the crop. Prescription maps for precision aerial application are

developed using remote sensing, Global Positioning, and Geographic Information System technologies. Precision aerial application technology has the potential to benefit the agricultural aviation industry by saving operators and farmers time and money.

Scope

As the first International Precision Aerial Application Group, this new CIGR working group will serve as a valuable resource to the aerial application community. By coordinating research projects across multiple institutions, the role and impact of precision application will increase in aerial application situations.

Status: Active

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WG 9: Plant Factory and Intelligent Greenhouse (PFIG) Working Group

Mission

- Improve understanding of the uniqueness of agricultural production including facilities, instrumentations, energy and water use in plant factory and intelligent greenhouse.
- Improve understanding of plant's environmental response under artificial growing conditions, which must be investigated from the point of view of plant physiology and ecology.
- Improve understanding of the importance of mechanization and automation to improve labor productivity in plant factory and intelligent greenhouse.
- Improve understanding of the effectiveness of computing and modeling to find a way to increase productivity in plant factory and intelligent greenhouse.
- Improve understanding of the availability of cutting-edge information technologies, i.e. artificial intelligence and bioinformatics, in plant factory and intelligent greenhouse.

Objectives

The objective of this working group is to provide an open platform for researchers who are interested in the agricultural production of plant factory and intelligent greenhouse. And this working group aims to promote R&D, communication and education in this field by enhancing information sharing among the researchers, relevant professionals, and consumers and eventually promote the international standing of the CIGR's plant factory and intelligent greenhouse working group in the field. Furthermore, younger generation play an important role in such a new agricultural production in plant factory and intelligent greenhouse, therefore the younger generation initiated researches and communications are strongly encouraged.

Scope

By organizing workshops and seminars on plant factory and intelligent greenhouse, effective collaborative R&D among industry-academia-government must be accelerated. Furthermore, activity of younger generation researchers in this field would be enhanced.

1. By publishing special issues in CIGR-Journal on plant factory and intelligent greenhouse, understanding of agricultural production in plant factory and intelligent greenhouse will be improved.
2. By updating the working group website, prompt sharing of up-to-date knowledge in this field is ensured.
3. Increase in the number of individual member associate with CIGR.

Activities

The plant factory and intelligent greenhouse (PFIG) working group is responsible for all the activities relating to plant factory and intelligent greenhouse in CIGR with close relationships with the existing TSs and WGs. The relevant TSs are TS II, TS III and TS VII. The TS II "Structure and Environment" put attention on traditional structure and environment for animal husbandry and cattle housing (our PFIG working group can provide a specific information on plant factory and intelligent greenhouse), the TS III provides technology and equipment for wide-range of plant production (our PFIG working group can promote the plant production under artificially controlled environment), the TS VII covers all the information technology (our PFIG working group intensively deals with application and implementation of information technology to plant factory and intelligent greenhouse). The chairs and the key steering committee members will create and activate a new PFIG working group to accomplish the above mentioned purposes through the following activities:

1. Workshops/Seminars: The events will be held every two years, covering the main trends and new developments in the field worldwide. Internationally prominent experts in the field will be invited as invited speakers. Some sessions might be organized by younger generation researchers. Generally, the events will be held in the form of on-site meetings.

2. Website: The website of PFIG working group will be created on the web server of the research center for high-technology greenhouse plant production in Ehime University (JAPAN) and linked to the main CIGR website. The PFIG working group website consist of R&D trends, technical reports, events, networks, information on trainings and courses, case studies, links to relevant websites.
3. Working group activities: Regular group meeting is conducted by skype and email to discuss the action plan of working group and share the latest information.
4. Administration support for the development of outreach materials/activities, partnerships, and collaborations.

Website

<http://jsabees.org/CIGR-PFIG/index.html>

Key members

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Vice-chair: Dr. Esteban José Baeza Romero (Wageningen University, The Netherlands)

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Secretary: Dr. Kotaro Takayama (Ehime University, Japan)

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Steering Committee Members (in alphabetical order by surname)

1. Dr. Chun, Changhoo (Seoul National University, Korea)
2. Prof. Dongxian He (China Agricultural University, China)
3. Prof. Eldert van Henten (Wageningen University, The Netherlands)
4. Dr. Jong-seok Park (Chungnam National University, South Korea)

WG 10: Functional/Wellness Foods and Nutrition (FWFN) Working Group

Introduction

Globally, human populations pursue overall well-being, independence, and quality of life. Front-end innovation in the food industry is essential to achieve these outcomes.

Growing and aging global population, hectic life schedules, increasing healthcare costs, global food security challenges, consumer's awareness of the close relationship between diet and health stimulate the transformation of traditional everyday foods into new category foods that promote nutritional well-being and reduce the effects of stress and disease. "Functional/wellness foods" hold enormous promise in this regard. These foods are an important part of an overall healthy lifestyle, and their abilities to influence human wellness are closely associated with their interactions with other constituents in the diet, as well as the consumer's physical state, behavior, lifestyle and genetics.

Nutrition is crucial to maintaining lifelong health and wellness. Consumers respond differently to diet/foods, and such responses vary with their genetic, epigenetic and metabolic phenotype status as well as lifestyle and environment factors. Personalized nutrition represents a promising approach and "the way forward" research area for addressing individual needs. There has been a significant shift in consumers' dietary food choices from personal preference to personal health. Personalised nutrition is on the rise.

Mission

Promoting nutritional well-being through incorporating "functional/wellness foods" into a balanced diet and lifestyle is imperative to all populations. However, translating relevant scientific advances into real consumer products in the form of "functional/wellness foods" is highly challenging. Our vision is to establish a global Functional/Wellness Food & Nutrition platform, in which academic and industry professionals as well as consumers will have access to our scientific publications, information, products, services and

activities related to functional/wellness food R&D and regulation.

Objectives

- Improve understanding of the specific role of individual bioactive components for their health-promoting, performance-improving or disease/illness-preventing function, as well as relevant metabolic kinetics, ethical or toxicological issues.
- Improve understanding of the interactions among the dietary constituents in a single functional/wellness food, and the ultimate contribution of such interactions to the overall efficacy of the whole diet.
- Improve understanding of consumer acceptance and biological availability of the physiologically active components in various functional/wellness foods based on individual physiological, metabolic, psychological, cultural and social differences.
- Improve understanding of the nutritional requirements for the modern populations who differ in age, physical state, behavior, lifestyle and genetics, and how functional/wellness foods satisfy the requirements of different populations.

Scope

The Overarching Objective of this working group is to provide leadership and oversight to create a professional network for R&D professionals and specialists in the field of Functional/Wellness Foods & Nutrition, to guide R&D direction and trends in the field, to promote R&D, communication and education in the field, to capture frontier discoveries and the latest advancements/trends related to foods for human health and wellness, to recognize individual or team achievements and capabilities in the field, to foster joint research and other forms of collaboration across sectors and countries, and ultimately, to improve the international standing of the CIGR's FWFN Working Group in the field.

The Working Group is responsible for the overall administration of all the Functional/Wellness Food & Nutrition Programmes for CIGR, in close association with Technical Sections (e.g. Section VI "Bioprocesses"), as well as other Working Groups (e.g. Food Safety Working Group).

Activities

We promote R&D and education across countries in the area of Functional/Wellness Foods & Nutrition through workshops/seminars (e.g. as part of CIGR congress or CIGR Technical Symposium), digital newsletters (e.g. as part of the Working Group or CIGR newsletters), website (e.g. as part of the CIGR website), and other working group activities (including face-to-face meetings, skype meetings, webinars, joint publications, and joint funding applications).

FWFN working group members have promoted our working group inside and outside CIGR, and established collaborations among the FWFN working group members and with wider CIGR members. Since 2016, FWFN working group have generated 5 book chapters through collaborations, and had a strong presence at CIGR and non-CIGR conferences through keynote/invited speeches, concurrent oral papers, poster presentations, and session chairship.

Activities and achievements in 2020-2022 on FWFN Working Group:

1. Prof. Dongxiao Sun-Waterhouse

- In 2020, 2021 and 2022, named in the Stanford University's 2020 list of Top 2% scientists in the world.
- From 2021, Editor-in-Chief of Food Chemistry Advances (a Scopus indexed new journal of Elsevier)
- From 2021, Senior Editor of Food Chemistry journal (impact factor 9.231)
- From 2021, Scientific Editor of Journal of Future Foods (a Scopus indexed new SCI journal)
- From 2019, Scientific Editor of Food Science and Human Wellness (impact factor 8.022).
- She was invited to give a plenary lecture "Human health is the ultimate measure of dairy product innovation and industry development" at the Asia Dairy Expo & the first Asian Dairy Innovation and Development Summit Forum (China, 2021, September 25).
- In 2020-2022, published 86 SCI papers (25 papers with impact factor > 10; 48 papers with impact factor >8; 75 papers with impact factor > 4;)
- Recommend CIGR members to be on the editorial boards of different important food and health journals: Dr. Amauri Rosenthal, Editorial Board Member of Food Science and Human Wellness (impact factor 8.022); Dr. Yukiharu Ogawa, Editorial Board Member of Food Chemistry Advances; Dr. Claus Aage Grøn Sørensen, Associate Editor of Journal of Future

Foods; Dr. Amauri Rosenthal, Dr. Rosires Deliza, Dr. Yukiharu Ogawa, and Dr. Adam Ekielski, Editorial Board Members of Journal of Future Foods.

2. Prof. Jozef Grochowicz

I have finished my regular university work by 2020 (with pandemia), but I am in permanent contacts and cooperation with my maternal university (University of Life Sciences in Lublin), where all colleagues of my staff from time when I had managed - became a regular professor now.

During time 2019 -2022 my activity connected with FF is as below:

- organization of 2 national conferences (culinary heritage, functional value of regional and traditional food etc.)
 - attendance in 6 international / national conferences with contributions (as invited speaker or with keynote speech -e.g.: "Actual level of knowledge and its application in manufacturing of functional food dedicated to seniors"
 - publication of four considerable positions:
 - a/ book (170pp) on culinary tourism and promotion of healthy food in Kurpie Region in Poland,
 - b/ paper in proceedings from international conference on obesity
 - c/publication on hazardous contaminants present or appearing in food products during processing
 - d/ paper (with prof. Ekielski) on problem with food and nutrition of seniors, for that I received special congratulation and information that this paper is involved into list of publications important for global society
- Journal of Future Foods, Volume 1, Issue 2, December, 2021, Pages 146-155, Importance of physical and functional properties of foods targeted to seniors
- elaboration - peer review of 4 papers to be published in FABT, JFE
 - appreciation of achievements and qualification to the scientific degree of professor (scientists involved into research on functional and nutritive value of food)
 - honourable nomination (by voting) on position of Vice-President Of AAEE for 2 years cadency

3. Dr Yukiharu Ogawa

In the year 2021, I worked as a secretary of FWFNWG and a technical board member of section VI. I also

worked for domestic societies as vice chair (Japanese Society of Taste Technology), councilor (The Japanese Society of Agricultural Machinery and Food Engineers), and executive director (The Society of Agricultural Structures, Japan). I have been an editorial board member for domestic journals; Journal of the Society of Agricultural Structures, Japan; Food Science and Technology Research; Engineering in Agriculture, Environment and Food; and international journals; Journal of Future Foods. I published 9 papers, including 1 domestic paper, as shown in the link of "<https://researchmap.jp/ogwy?lang=en>".

4. Dr Rosires Deliza

This year I worked as a member of the scientific committee of the SenseLatam 2022 (Latin America Congress on Sensory Evaluation and Consumer Science), and as an executive committee member of the Pangborn Sensory Sci. Symposium. I am an associate editor of the International J. Gastronomy and Food Sci, and of a special issue of the Frontiers in Nutrition; an editorial board member of the Food Quality and Preference, J. of Future Foods, and Economia Agroalimentare. I have also been working as a member of the Brazilian Association of Technical Standards (ABNT).

5. Dr Adam Ekielski, professor of WULS (SGGW)

Event participation:

2022-01-10: Jury member of TSW Fair prize. The jury of the competition honored the most innovative products beneficial for gardening, the environment and society, submitted by exhibitors.

2022-02-10: Participant at Polish project "SIMBIO". At a meeting of the working group, he gave a lecture entitled: "Composite materials with a biodegradability trigger - a case study".

2022-03-02: Participant, co-host of the discussion panel "Evolution of the food value chain in Africa in the coming decade". The Polish-African Economic Forum, which took place during the World Exhibition Expo in Dubai, 2022.

2022-10-12: Chairman of 3 competitions organized annually by The Polish Chamber of

Commerce of Agricultural Machines and Facilities.

2022-11-10: Participant of the Polish economic mission as an industry expert at EIMA Bologna 2022.

Projects:

- Grant leader: Production of biodegradable binder with limited hydrophobic properties.
- Principal researcher in the task: "Design and implementation of a microwave processor for food processing". Polish Government project.
- Principal researcher in the task: "Design of a line for the production of beta glucan isolate". Polish Government project.
- Researcher in the task: "Development of a technology for the production of functional feed for sport horses, preventing and treating gastric ulcers in horses". Polish Government project.
- Researcher in the project (Grant Agreement no 731101, Horizon 2020): Wastewater treatment (LNEG 5).

Awards:

- Distinction in the competition of inventions in Poland for: "biodegradable UV radiation sensor".
- Gold medal at EINA, Germany: Biodegradable, disposable UV radiation counter.
- Award of the Rector of the Warsaw University of Life Sciences for scientific and research achievements.

Publication:

- Co-author of 7 publications in scientific journals on the JCR list.
- Speaker at 5 conferences (Poland, Italy, Romania, Czech Republic).

Chair: Dr. Dongxiao Sun-Waterhouse (New Zealand and China; Email address: dxsun72@hotmail.com).

Vice-Chair: Dr. Jozef Grochowicz, University of Hotel Management, Catering Industry and Tourism, Chodakowska 50, 03-816 Warsaw, Poland

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Secretary: Dr. Yukiharu Ogawa

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E-mail: ogwy@faculty.chiba-u.jp

Steering Committee Members: To be appointed.

Current members (in alphabetical order by surname):

- Dr. Margaret Barth (Appalachian State University, USA)
- Dr. Sara Bußler (Leibniz Institute for Agricultural Engineering, Germany)
- Dr. Rosires Deliza (Embrapa, Brazil)
- Dr. Karina dos Santos (Embrapa, Brazil)
- Dr. Adam Ekielski (Warsaw University of Life Sciences, Poland)
- Dr. Teodoro Espinosa-Solares (Universidad Autónoma Chapingo, Mexico)
- Dr. Tatiana Koutchma (Agriculture and Agri-Food Canada, Canada)
- Dr. Yukiharu Ogawa (Chiba University, Japan)
- Dr. Svetlana Rodgers (South Australian Research and Development Institute, Australia)

According to our WG's objectives and work plan, I have been working with my WG members to promote the "Functional/Wellness Food & Nutrition" platform inside and outside CIGR. And I've facilitated the collaborations among this WG members and with wider CIGR members.

2019 September – 2020 November Activities of WG10 Functional/Wellness Foods and Nutrition (FWFN) Working Group reported by Prof. Dongxiao Sun-Waterhouse on 2020-11-26:

1. The "2019 International Joint Conference on JSAM, SASJ and 13th CIGR VI Technical Symposium joining FWFNWG and FSWG workshops" (September 3rd-6th 2019, Sapporo, Japan): FWFN Working Group worked closely with Technical Section VI "Bioprocesses" and "Food Safety" (FS) Working Group to organize this conference. The conference covered research areas such as "Postharvest Machinery", "Postharvest Facility", "Postharvest/Food Technology and Process Engineering", "Food Quality", "Food Safety", "Food Function/Nutrition".
- Chair of FWFN Working Group Prof. Dongxiao Sun-Waterhouse also acted as a Honorary Chair, FWFN Working Group Secretary Dr. Yukiharu Ogawa acted

as the Local Committee member, and Dr. Rosires Deliza, Prof. Adam Ekielski and Prof. Teodoro Espinosa-Solares and Prof. Jozef Grochowicz acted as International Scientific Committee members (Prof. Jozef Grochowicz was unable to attend).

- Together with Vice Chair of Technical Section VI (Dr. Alaa El-Din Bekhit) and Chair of FS Working Group (Dr. Amauri Rosenthal), Dr. Dongxiao Sun-Waterhouse gave opening speeches in the Opening Ceremony.
- Prof. Dongxiao Sun-Waterhouse gave a Keynote Lecture "An Integrative R&D Approach for Addressing Ever-Increasing Consumer Demands for Food Nutrition and Safety".
- Dr. Yukiharu Ogawa and his research group presented 15 oral presentations on various topics: "Effect of Processing Conditions on Bioactive Compounds and Antioxidant Activities of Tea Infusion" "In Vitro Release Characteristics of Sugars and Hydrolysis of Starch During Simulated Digestion of Saba banana at Different Maturity Stages", "In Vitro Examination of Starch Digestibility and Antioxidant Activities of Amaranth Grains", "Effects of Cell Structure Changes of Citrus Peel on the Digestibility of Intracellular Antioxidants during in vitro Digestion", "Efficient Filtering of Live Escherichia coli by Using 60 GHz CMOS Sensor",
- "Stationary Machine Vision Based RealTime Estimation of Japanese Black Cattle Serum Vitamin A using Eye Fundus Color", "Myanmar Mango Maturity Prediction Based on Skin Color Using Machine Vision System",
- "Measurement of Chicken Eggshell Optical Properties Using Terahertz Spectroscopy", "Thermal oxidation stability assessment of extra virgin olive oil using fluorescence and transmittance imaging system",
- "Chalkiness Index of Sake Rice " Yamada Nishiki" Using Ultraviolet-Near-Infrared Transmission", "Impact of Crystallinity Change During In Vitro Digestion on Starch Digestibility of Microwave- and Steam-Cooked Black Rice, "Study of Static In Vitro Digestion of Japanese Pickled Plums on the Change of Polyphenols and Antioxidant Activity", and "Segmentation of common scab lesion on intact potatoes using single near-infrared image".
- Dr. Rosires Deliza gave an oral presentation on "The Influence of The Front-of-Pack Nutrition Labelling Schemes on Helping Healthier Food Choices by Consumer".

- Prof. Teodoro Espinosa-Solares gave an oral presentation on "Influence of Maturity Stages on Postharvest Respiration Rate and Mechanical Properties of Peach Fruit".
- Prof. Adam Ekielski gave a talk on "Key Process Variables Affecting the Formation of Chloroquine Compounds During Baking of Cereal Products".
- Dr. Yukiharu Ogawa is continuously editing a special issue for this conference: This special issue will be published in the journal "Engineering in Agriculture, Environment and Food (EAEF)", published by the Asian Agricultural and Biological Engineering Association (AABEA) which is jointly organized by the CIAM (The Chinese Institute of Agricultural Machinery), JSAM (The Japanese Society of Agricultural Machinery) and KSAM (The Korean Society for Agricultural Machinery). It has accepted 13 papers by November 2020.

2. Other important activities:

- Prof. Dongxiao Sun-Waterhouse has been invited to give a Keynote Lecture on "The discovery, biological evaluation and biotechnological delivery of natural therapeutics for precision medicine & personalized healthcare" at the GBAS 2019 6th World Nobel Laureate Biomedical Summit on 21-22 September 21, 2019, China.
- In Autumn 2019, Prof. Jozef Grochowicz have organized in Myszyniec (with the local authority) II Regional Conference "Traditional and Regional Kurpian Food Products in Context of Culinary Heritage"
- (Grochowicz J., 2019: Kurpiowskie Produkty Tradycyjne i Regionalne w kontekście Ochrony Dziedzictwa Kulinarnego), as the promotion of very specific, old historical Green Kurp's Regional cuisine, where his contribution "The role of culinary heritage , its promotion and influence on culinary tourism" is published in Proceedings. Myszyniec 2019, pp 11-24. ISBN 978-83-935646-8-2 (printed in Polish only).
- In October 2019 Prof. Jozef Grochowicz attended (also as the member of the scientific committee) II International Conference "Psyche and the Obesity" (Psychika a Otyłość, 26-10-2020) , where he presented a paper "The role and place of bioactive components in prevention and curing of the obesity" (E-book , ed.Palga I. European University in Radom, 2019. ISBN: 978-83-956489-0-8).
- Prof. Jozef Grochowicz presented a keynote speech entitled "Actual state of the research and their implementation in manufacturing of functional food" at XXI National Conference "Advance in Food Engineering and Commercialization of Research" (Grochowicz J., 2019: Współczesny stan wiedzy i praktyki badawczo-wdrożeniowe w wytwarzaniu żywności funkcjonalnej dla seniorów.)
- Dr. Yukiharu Ogawa has been proceeding with a study connecting to the activity of our working group that is to control the starch digestibility of rice by a modification of heating treatment during a postharvest drying process. He has applied for the funding opportunity by JSPS, Japan, that can use for international research collaborations like this working group, book publication or organizing a special issue for the appropriate journal, etc.
- Dr. Rosires Deliza presented a paper "Trends and challenges in the food industry: from the selection of professionals to the application of new technologies" at the International Agribusiness Congress. Science, Technology and Innovation: From Field to Table, Online Conference, Brazil, 2020.
- Dr. Rosires Deliza presented a talk "Using emojis to assess emotional associations with foods with different nutritional labels" at Brazilian online Congress on Cereals and Bakery Technology, Brazil, 2020.
- Dr. Rosires Deliza presented a paper "Innovation in Sensory Analysis and Consumer Studies" at the National Symposium on Innovation in Engineering and Food Science, Brazil, 2020.
- Dr. Rosires Deliza presented a talk "Nutritional labelling: Contribution of Consumer Science to the formulation of public policies" at SenseLatam - Latin American Congress on Sensory Sciences and Consumer.
- During 2019-2020, Prof. Adam Ekielski and his research team has been developing a new method to obtain nanolignin and nanocellulose particles, and they use the NL and NC

composites as a safe and cheap bioactive material for production of the food packaging. They are also using lignins as the key element of a biosensor (on the UV, D65 light and contact with formaldehyde resin) useful for the food control under food storage conditions. They have resolved the problem of poor mechanical properties of lignin composites through cross-linking of lignin compounds.

3. Journal publications:

- J Zhang, D Sun-Waterhouse, G Su, M Zhao. 2019. New insight into umami receptor, umami/umami-enhancing peptides and their derivatives: A review. *Trends in Food Science & Technology* 88, 429-438. (impact factor: 11.077)
- Z Qiu, Z Zheng, B Zhang, D Sun-Waterhouse, X Qiao. 2020. Formation, nutritional value, and enhancement of characteristic components in black garlic: A review for maximizing the goodness to humans. *Comprehensive Reviews in Food Science and Food Safety* 19, 801– 834. (impact factor: 9.912)
- X Rong, D Sun-Waterhouse, D Wang, Y Jiang, F Li, Y Chen, S Zhao, D Li. 2019. The significance of regulatory microRNAs: Their roles in toxicodynamics of mycotoxins and in the protection offered by dietary therapeutics against mycotoxin-induced toxicity. *Comprehensive Reviews in Food Science and Food Safety* 18: 48-66. (impact factor: 9.912)
- C Chen, D Sun-Waterhouse, J Zhao, M Zhao, GIN Waterhouse, W Sun. 2020. Soybean protein isolate hydrolysates-liposomes interactions under oxidation: Mechanistic insights into system stability. *Food Hydrocolloids* 106336. <https://doi.org/10.1016/j.foodhyd.2020.106336>. (impact factor: 7.053)
- D Wang, Y Jiang, D Sun-Waterhouse, H Zhai, H Guan, X Rong, F Li, J Yu, D Li. 2020. MicroRNA-based regulatory mechanisms underlying the synergistic antioxidant action of quercetin and catechin in H₂O₂-stimulated HepG2 cells: Roles of BACH1 in Nrf2-dependent pathways. *Free Radical Biology and Medicine* 153, 2020, 122-131. (impact factor 6.170)
- G. Su, Xin Zheng, Jin Zou, GIN Waterhouse, D Sun-Waterhouse. 2020. Insight into the advantages of premixing yeast-wheat gluten and combining ultrasound and transglutaminase pretreatments in producing umami enzymatic protein hydrolysates. *Food Chemistry* 128317, <https://doi.org/10.1016/j.foodchem.2020.128317>. (impact factor: 6.306)
- J Lin, D Sun-Waterhouse, R Tang, C Cui, W Wang, J Xiong. 2020. The effect of γ -[Glu](1≤n≤5)-Gln on the physicochemical characteristics of frozen dough and the quality of baked bread. 128406, <https://doi.org/10.1016/j.foodchem.2020.128406> (impact factor: 6.306)
- C Chen, D Sun-Waterhouse, Y Zhang, M Zhao, W Sun. 2020. The Chemistry behind the Antioxidant Actions of Soy Protein Isolate Hydrolysates in a Liposomal System: Their Performance in Aqueous Solutions and Liposomes. *Food Chemistry*, <https://doi.org/10.1016/j.foodchem.2020.126789>. (impact factor: 6.306)
- R Tang, D Sun-Waterhouse, J Xiong, C Cui, W Wang. 2020. Feasibility of synthesizing γ -[Glu](n≥1)-Gln using high solid concentrations and glutaminase from *Bacillus amyloliquefaciens* as the catalyst. *Food Chemistry*, 316, <https://doi.org/10.1016/j.foodchem.2019.125920> (impact factor: 6.306)
- Y Hu, D Sun-Waterhouse, L Liu, W He, M Zhao, G Su. 2019. Modification of peanut protein isolate in glucose-containing solutions during simulated industrial thermal processes and gastric-duodenal sequential digestion. *Food Chemistry*, 295, 120-128. (impact factor: 6.306)
- J Lin, D Sun-Waterhouse, C Cui, H Lu. 2020. Increasing antioxidant activities of the glutamine-cysteine mixture by the glutaminase from *Bacillus amyloliquefaciens*. *Food Chemistry*, 308, (impact factor: 6.306), <https://doi.org/10.1016/j.foodchem.2019.125701>.
- Y Jiang, Y Zhu, F Li, J Du, Q Huang, D Sun-Waterhouse, D Li 2020. Antioxidative pectin from hawthorn wine pomace stabilizes and protects Pickering emulsions via forming zein-pectin gel-like shell structure. *International Journal of Biological Macromolecules*, 151, 193-203. (impact factor: 5.162)
- R Hao, J Ge, Y Ren, X Song, Y Jiang, D Sun-Waterhouse, F Li, D Li. 2020. 2021. Caffeic acid phenethyl ester mitigates cadmium-induced

hepatotoxicity in mice: Role of miR-182-5p/TLR4 axis. *Ecotoxicology and Environmental Safety*, 207, 111578.

<https://doi.org/10.1016/j.ecoenv.2020.111578> (impact factor 4.872)

- R Hao, F Li, X Song, X Tan, D Sun-Waterhouse, D Li. 2020. Caffeic acid phenethyl ester against cadmium induced toxicity mediated by CircRNA modulates autophagy in HepG2 cells. *Ecotoxicology and Environmental Safety* 197, 110610. DOI: 10.1016/j.ecoenv.2020.110610. (impact factor 4.872)
- R Hao, X Song, F Li, X Tan, D Sun-Waterhouse, D Li. 2020. Caffeic acid phenethyl ester reversed cadmium-induced cell death in hippocampus and cortex and subsequent cognitive disorders in mice: Involvements of AMPK/SIRT1 pathway and amyloid-tau-neuroinflammation axis. *Food and Chemical Toxicology* 144, 111636, DOI: 10.1016/j.fct.2020.111636. (impact factor 4.679)
- X Zhu, D Sun-Waterhouse, Q Tao, W Li, D Shu, C Cui. 2020. The enhanced serotonin (5-HT) synthesis and anti-oxidative roles of Trp oligopeptide in combating anxious depression C57BL/6 mice. *Journal of Functional Foods* 67, 103859. <https://doi.org/10.1016/j.jff.2020.103859> (impact factor: 3.701)
- X Zhu, Q Tao, D Sun-Waterhouse, W Li, S Liu, C Cui. 2019. γ -[Glu]n-Trp ameliorates anxiety/depression-like behaviors and its anti-inflammatory effect in an animal model of anxiety/depression. *Food & Function* 10(9): 5544-5554. (Impact factor: 4.171)
- L Fang, H Xiang, D Sun-Waterhouse, C Cui, J Lin. 2020. Enhancing the usability of pea protein isolate in food applications through modifying its structural and sensory properties via deamidation by glutaminase. *Journal of Agricultural and Food Chemistry* 68, 6, 1691–1697. (impact factor: 4.192)
- Y Liu, D Sun-Waterhouse, C Cui, Y Hu, W Wang. 2020. Dealing with soy sauce precipitation at submicron-/nano-scale: An industrially feasible approach involving enzymolysis with protease and alkaline conditions. *Food Research International* 137, 109670, <https://doi.org/10.1016/j.foodres.2020.109670>. (impact factor: 4.972)
- H Xiang, D Sun-Waterhouse, P Liu, GIN Waterhouse, J Li, C Cui. 2020. Pancreatic lipase-inhibiting protein hydrolysate and peptides from seabuckthorn seed meal: Preparation optimization and inhibitory mechanism. *LWT - Food Science and Technology* DOI: 10.1016/j.lwt.2020.109870. (impact factor: 4.006)
- Y Sun, D Sun-Waterhouse, C Cui, Y Feng, W Wang. 2020. Utilization of undesirable heat-induced precipitates/sediments in soy sauce production to fabricate nanoparticles for curcumin delivery. *LWT - Food Science and Technology* <https://doi.org/10.1016/j.lwt.2020.109551>. (impact factor: 4.006)
- C Chen D Sun-Waterhouse, M Zhao, W Sun. 2020. Beyond antioxidant actions: Insights into the antioxidant activities of tyr-containing dipeptides in aqueous solution systems and liposomal systems. *International Journal of Food Science & Technology* <https://doi.org/10.1111/ijfs.14585>. (impact factor: 2.773)
- X Zhu, D Sun-Waterhouse, J Chen, C Cui, W Wang. 2020. Comparative study on the novel umami-active peptides of the whole soybeans and the defatted soybeans fermented soy sauce. *Journal of the Science of Food and Agriculture*, <https://doi.org/10.1002/jsfa.10626>. (impact factor: 2.614)
- J Wang, H Zhang, H Wang, J Wang, D Sun-Waterhouse, GIN Waterhouse, C Ma, W Kang. An immunomodulatory polysaccharide from blackberry seeds and its action on RAW 264.7 cells via activation of NF- κ B/MAPK pathways. *Food and Agricultural Immunology* 31(1), 575-586. (impact factor: 2.150)
- H Xiang, D Sun-Waterhouse, C Cui. 2020. Hypoglycemic polysaccharides from *Auricularia auricula* and *Auricularia polytricha* inhibit oxidative stress, NF- κ B signaling and proinflammatory cytokine production in streptozotocin-induced diabetic mice. *Food Science and Human Wellness*, 2020, <https://doi.org/10.1016/j.fshw.2020.06.001>. (impact factor: 2.455)
- H Xiang, D Sun-Waterhouse, G I.N. Waterhouse, C Cui, Z Ruan. 2019. Fermentation-enabled wellness foods: A fresh perspective. *Food Science and Human Wellness*, 8 (3), 203-243. (impact factor: 2.455)
- J Grochowicz. (2019). Chemical threats in thermally processed traditional food and possibilities of their reduction. *Agricultural Engineering*. Vol.23, 1(169) pp. 39-47. DOI: 10.1515/agriceng-2019-0004.
- A Dowgiałło, M Stachnik, J Grochowicz, M Jakubowski. (2019) : Modeling of compression pressure of heated raw fish during pressing liquid. *Journal of Food Engineering* 276 (2020) 109888 ,

Available online 23 December 2019, <https://doi.org/10.1016/j.jfoodeng.2019.109898>. (140 pkt, impact factor: 3.625)

- M Lima, M de Alcantara, A Rosenthal, R Deliza. 2019. Effectiveness of traffic light system on Brazilian consumers perception of food healthfulness. *Food Science and Human Wellness*, 8 (4), 368-374. (impact factor: 2.455)
- R Deliza, M de Alcantara, R Pereira, G Ares. 2020. How do different warning signs compare with the guideline daily amount and traffic-light system? *Food Quality and Preference*, 80, p.103821. (Impact Factor: 4.842)
- Y Cai, W Qin, S Ketnawa, Y Ogawa. 2020. Impact of particle size of pulverized citrus peel tissue on changes in antioxidant properties of digested fluids during simulated in vitro digestion. *Food Science and Human Wellness*, 9 (1), 58-63. (impact factor: 2.455)
- Reginio, S Ketnawa, Y Ogawa. In vitro examination of starch digestibility of Saba banana [*Musa 'saba'*(*Musa acuminata* × *Musa balbisiana*)]: impact of maturity and physical properties of digesta. *Scientific Reports* 10, 1811 (2020). <https://doi.org/10.1038/s41598-020-58611-5> (impact factor: 4.120)
- S Ketnawa, Y Ogawa. 2019. Evaluation of protein digestibility of fermented soybeans and changes in biochemical characteristics of digested fractions. *Journal of Functional Foods* (impact factor: 3.701)

4. Other publications (including books and book chapters):

- Grochowicz J., Midura F., Chmiel A. (2018): *Dziedzictwo kulturowo - kulinarne Kurpi Zielonych* ,(Cultural and Culinary Heritage of Green Kurp's Region), Edit. Vistula University, pp. 148, ISBN 978-83-64614-46-0 AFIBV.
- Polish *Przetwórstwo Rolno - Spożywcze i Biogospodarka* ("Agri - Food Processing and Bioeconomy") which is just in publication , Editors: Wojdalski J and Drożdż B., SGGW Warsaw, 2020 pp 346, ISBN 978-83-7583-981-4.

WG 11: Rural Development and the Preservation of Cultural Heritages

Mission

Mission of the WG_RDPCH will be to consolidate, increase and exploit the role that Agricultural Engineering may play for the development of rural Society and its activities, in the framework of an enhanced preservation of cultural heritage and its related landscape in rural environment. Rural communities everywhere are indeed often susceptible to long slow declines, if agriculture is no longer economically viable and younger generations move to cities in search of better opportunities. Preserving a way of life and the identity of a community is more important than preserving only its physical form. Living, vibrant communities give meaning to their surroundings and create a sustainable environment for preserving culture. In this scenario, the role that would be played by Agricultural Engineers may reveal decisive for supporting the strategic technical and socio-economic development of rural areas, by proposing, testing and implementing new ways for the preservation and valorisation of their cultural heritage.

Objectives

The goal-oriented and measurable objectives for advancing the specific scientific area dealing with Rural Development and Preservation of Cultural Heritage (RDPCH) will be:

- an improvement in the number of academic courses dealing with RDPCH, targeted to University students, practitioners and other stakeholders;
- an increase in the number of scientific/technical publications produced by scientists working in the field of agricultural engineering, on topics relevant to RDPCH. A special attention will be focused on new opportunities, mostly based on the use of cutting-edge tools (ICT; IoT; etc.), for supporting the preservation and valorisation of cultural heritage in rural areas;
- the creation in each one of the participating Countries of a national cluster - leaded by the CIGR National representative of the Working Group RDPCH - belonging to the CIGR WG_RDPCH network. This cluster would be participated by every kind of interested relevant stakeholder belonging to the "Quadruple Helix", i.e.: a) Public Institutions (Ministries; Regional/local Authorities; Relevant Agencies; etc.); b) RTD performers (Universities; Public/private research centers;

Technological Parks; etc.); c) Private companies (Industries; SMEs; farmers; relevant associations; etc.); d) Civil society (NGOs; Citizen associations; etc.).

Scope

The main scope of the WG_RDPCH activities will be an improved contribution to the creation of outputs, outcomes and benefits aimed to an integrated management approach to Rural Development and Preservation of Cultural Heritage. The boundaries of these scientific areas and application domains would be efficiently addressed by Agricultural Engineers, thanks to their aptitude to a multi-disciplinary approach to plan, organize and implement activities aimed to:

- Identify existing problems as well as assets.
- Discover innovative solutions and approaches from good practice examples.
- Uncover the elements and take the best from them.
- Adjust, combine, and compile the good practice in a new scientific approach.
- Create a new good practice for regionally specific cases.

Activities

The activities will be planned according to the following Workplan, divided into five tasks:
Task 1) Identify issues through strategic problem statements

This activity would be planned in preparation for the next CIGR Conference in Canada, June 2020, when the general meeting of the WG will establish the detailed activities. During this Conference, the WG will schedule/organize regular telematic (e.g.: Skype/WebEx) and/or physical meetings as well.

Task 2) Define good practice and asset identification in the region of each participant to the WG
This activity will be performed by each one of the CIGR participants at national level - with support from the Steering Committee of the WG (Chair, Vice-chair, Secretary) - by implementing a national cluster, in which other relevant interested partners belonging to the Quadruple Helix in its own Country will be involved.

Task 3) Link the issues identified in one region to good practice from other regions
To this aim, each one of the participants will plan suitable actions aimed to exchange the results of the activities achieved at national level, through the use of a specific platform (e.g., LinkedIn) implemented by the

WG.

Task 4) Draft Pilot Action implementation plans
Each one of the national clusters will prepare a Local Action Plan for its Country, clearly specifying the role of national stakeholders interested to participate, in order to:

- Identify good practice examples to adopt;
- Outline specific actions to adopt / adapt good practice;
- Present possible Pilot Actions to colleagues, partners and communities.

Task 5) Disseminate and exploit the results of the WG at International level

- The results of this WG will be disseminated to every stakeholder in the World. A special attention will be devoted to International Organizations involved in RDPCH, e.g.: ONU; FAO; UNESCO; IUCN; UNWTO; ICOMOS-IFLA; EU Landscape Convention; Getty Conservation Institute; etc.
- The results of the WG will be exploited by organizing - under the CIGR coordination and with the envisaged patronage/financial support of some of the relevant above-mentioned International organizations - targeted events (workshops, seminars, Conferences, etc.), ICT/social media (Website, Facebook, etc.) and/or pilot actions aimed to capitalize and showcase the tangible results of the WG activities.

Expected outcome: (planned outcomes from group activities, dissemination, increase awareness of work group and CIGR in general, etc.)
The planned outcomes from the WG activities for a successful heritage and landscape rural development will be a significant increase in the awareness of every kind of stakeholder about the role that Agricultural Engineering may play for RDPCH. Such an outcome will contribute to bridge the gaps between:

- National and local government policy;
- People and institutions;
- Academic sphere and local stakeholders;
- Different disciplines (Agriculture; Engineering; Architecture; Economics; Archaeology; etc.);
- Policies of regional development (environmental, rural, cultural, housing, educational);
- Different technical/cultural approaches to address the most relevant issues identified (e.g. re-use of historic buildings; elaboration of new innovative financing models; systems of regular maintenance; new/integrated solutions for rural tourism; etc.).

The situation about the current status/activities of WG 11 - *Rural Development and Preservation of Cultural Heritage* (RDPCH) – is as follows:

- after the re-activation of this WG on last Autumn 2019, a first event has been programmed, aimed to assess the main features of this WG, *e.g.*: participants and affiliated institutions; relevant specific scientific/technical/cultural interests; availability to co-operate; *etc.* This event has been organized as a discussion panel (<https://www.cigr2020.ca/en/program/discussion-panels/62-rural-development-and-the-preservation-of-cultural-heritages-cigr-working-group-11>) to be held on June 2020, during the 5th CIGR International Conference 2020 in Québec (Canada). Unfortunately, due to the Covid-19 pandemic, this Conference has been postponed to May 2021. Hence, the activities of this WG could be relaunched according to the evolution of the pandemic and relevant participation to this new date.
- The last meeting of the CIGR Working Group WG11 - *Rural Development and Preservation of Cultural Heritage*, during the 5th CIGR2020 International Conference in Quebec (Canada) – has been participated by very few people, probably due to persisting difficulties connected to the Covid-19 Pandemic. Furthermore, it has unfortunately not been followed by any relevant activity.
- Anyway, it is the hope that in the near future, suitable conditions for prosecution and improvement of the activities of this WG would arise, so as to continue and valorize the knowledge we have acquired so far.

Status: Active

Chair: Prof. Pietro Picuno

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WG 12: Artificial Intelligence and Data Science Working Group

Target Group

A&BE professionals and professionals in closely related fields working on AI or having an interest in AI and Data Science. Students in A&BE education programs. Industry that is or may become end users of AI and Data Science in agriculture and natural resources.

Goal

The main goal is to Create an environment for ABE professionals and related disciplines to collaborate in the development and disseminate useful applications of AI and Data Science in agriculture and natural resources that improve the quality of life of all in a sustainable and socially responsible manner.

Objectives

1. Identify CIGR professionals working in the field of AI applied to A&BE and create a network for collaboration.
2. Create a dynamic online platform for exchange of ideas and information.
3. Organize a specialty session on AI during the International Meetings and World Congresses.
4. Promote the organization of hands-on workshops by experienced individuals for individuals new to the field (including virtual).
5. Collaborate with INFITA to create special activities during WCCA.
6. Collaborate with the Intelligent Agricultural Equipment Student Competition (IAESC).
7. Write a primer on AI in A&BE (Along the lines of a CIGR Handbook).
8. Develop curriculum and educational materials for inclusion in ABE programs.

Ongoing Activities

1. Special collection for publication in CIGR Journal. Lead: Prof. Hossein Bonakdari.
2. Technical Session during 2021 CIGR World Congress in Kyoto. Lead: Dr. Luis Carlos Miranda.
3. Symposium conducted by videoconference sponsored by NVIDIA and the University of Florida.
4. Educational materials: Currently being organized.

NOTE: Any member of CIGR is welcome to participate in this workgroup. If you have a specific interest, contact the lead person for each project or send an email to secretarygeneral@cigr.org

Chair: Prof. Luis Miranda

Table 1. Work group status

CIGR Working Groups	Active	Not active	Comments
1: Animal Housing in Hot Climate	x		No update
2: Cattle Housing	x		Changed responsibilities in WG, Dr. Heiko Georg, <u>Thuenen-Institute of Organic</u> will be chairperson, supported by e. g. Tomas Norton.
3: Agricultural Engineering University Curricula Harmonization	x		Update of ERABEE Network, in 2022, 37 partners and 2 stakeholders. Writing book chapter "Curricula design and reform". Survey on ABE study programs in progress.
4: Rural Landscape, structures and infrastructure Planning and Valorization	x		1st meeting of the restarted WG, collaborative Webinar "Rural green energy", collaborative PhD event, CIGR WG Webinar "Regenerative approaches for wastes capes in peri-urban areas", <u>WG Webinar</u> "Benefits and shortcomings of tourism as a sustainable development solution for landscapes", relaunch of WG website.
5: Image Analysis for Agricultural Processes and Products	x		No update
6: Food Safety	x		No update
7: Logistics	x		No update
8: Precision Aerial Application	x		No update
9: Plant Factory and Intelligent Greenhouse (PFIG)	x		No update
10: Functional/Wellness Foods and Nutrition (FWFN)	x		Activities and achievements in 2020-2022 for key members of the WG, 5 event participation, 5 project participation.
11: Rural Development and the Preservation of Cultural Heritages	x		WG meeting at the 5th CIGR2020 in Quebec (Canada).
12: Artificial Intelligence and Data Science	x		Establishment of WG. Activities include special collection for CIGR Journal, Symposium, training, and educational material on AI being planned.

CIGR Journal Report



Zhao Fengmin
Senior Editor, CIGR Journal
CSAM
China

From the January 1st, 2022, to November 30th, 2022, the Editorial Office of CIGR Journal has continually been working hard and achieved progresses under the guidance of CIGR Presidium, with strong support of Prof. Fedro Zazueta, the active volunteering work of all the Associate Editors, the enthusiastic support and efforts of the reviewers and the authors. The numbers of manuscript submissions and registered users continue to grow steadily. The table 1 shows the statistics of the CIGR Journal from the January 1st, 2022, to November 30th, 2022, using Open Journal System (OJS). Improving both the technical level and paper quality has been the primary task of the Editorial Office of CIGR Journal. Authors, reviewers, Associate Editors, Editors-in-Chief and CIGR Presidium members are the keys to ensure upgrading the quality of CIGR Journal. Here I want to particularly express my sincere thanks to the Associate Editors. With the help of CIGR Presidium, the total number of Section Editors of CIGR Journal is 20 at present. They are from 11 countries of the Spain, Egypt, Turkey, China, the United States, Italy, Portugal, New Zealand, India, Iran and Saudi Arabia. The number of totals submitted papers from the May January 1st, 2022, to November 30th, 2022 is 167, 15 submissions per month on average. The average time to complete the review process, editorial process to publish a manuscript is near eight months. Among the 167 submitted manuscripts, 35 are unassigned. During the 132 assigned manuscripts, it is also notable that 30 (22.7%) of newly submitted manuscripts were archived by the Editor-in-Chief before assigning to the Associate Editors because of their incompatibility with the author's guideline, not in scope of the CIGR Journal,

poor English level or uploading the wrong version. It is the responsibility of Editor-in-Chief to filter unqualified manuscripts, sustain and improve the quality of our Journal. 18 (17.6%) have finished peer reviewing and are in editing, the other 82 are in the review process. The other 2 manuscripts were not held by Associate Editors. During the 82 manuscripts, 18 manuscripts were not gotten any responds. So, some Associate Editors need to assign the manuscripts to more reviewers in order to speed up the review process since the selected reviewers did not accept the reviewing invitation or didn't send back comments timely. In 2022, three issues of CIGR Journal, Vol. 24, No. 1 to No. 3 with 71 manuscripts and total pages of 841 were published on time. By November 30th, 2022, the total number of registered users in CIGR Journal through OJS reached 29263 with 267 new users compared to the statistics accounted last time on December 31st, 2021. The number of registered readers is 26555 with 76 new compared to the database of December 31st, 2021. In summary, our work is going well. The quality of articles has been improved significantly, we could find more and more articles add more scientific and in-depth discussions. But at the same time, there are some problems we should discuss. 1. Compare with 2021, the number of manuscripts submitted and accepted, registered authors and registered readers decreased, there are two main reasons. First, we have improved the requirements for article quality, so some low-quality articles haven't been submitted. Second, because the slow speed of the progress, some authors give up. 2. Thanks for the section editors' generous supporting. Without their help, we could not push this work smoothly. Some section editors work very actively, but some have not worked for a long time. Because the low work efficiency, there are fewer and fewer articles could be published. So, we communicated with Associate Editors, hope they speed up the progress. At the same time, hope we could attract more excellent SE into our team to push CIGR Journal become better and better.

Section	No.1	No.2	No.3	Total
1. LWE: Land and Water Engineering	4	2	4	10
2. FBC: Farm Buildings, Equipment, Structures and Environment	1	1	0	2
3. EEPP: Equipment Engineering for Plant Production	4	4	5	13
4. EA: Energy in Agriculture	4	2	1	7
5. MESE: Development Strategy, Ergonomics and System management	2	1	1	4
6. PTPE: Postharvest Technology and Process Engineering	10	6	9	25
Total	25	26	20	71

4. Author group distribution

There is a total of 71 manuscripts published in Vol. 24, No. 1 to No. 3 in 2022. In order to understand which countries our manuscripts mainly come from. We analysed the distribution of the first authors. They come from 31 countries. We found it was Nigeria occupied the first place. A total of 24 manuscripts published in CIGR came from Iran. The second is Nigeria with 14 manuscripts. The third is India with 9. The specific information is shown in the table below. Compared with 2021, the countries with more published articles have not changed much. Compared with articles

published before, the quality of the articles has been improved. Hope in the future, it can attract more excellent authors to submit their research results to CIGR Journal.

Author group distribution Vol. 24, No.1~No.3, 2022

Manuscript majors are concentrated in 6, 1, and 3, and the number of manuscripts in columns 2, 5, and 7 is relatively small. Professional manuscript focuses on 6,1,3, 2,5,7 column of a relatively small amount of manuscript

No.	Countries of authors	Number of published manuscripts
1	Iran	24
2	Nigeria	14
3	India	9
4	Egypt	3
5	Thailand	2
6	Algeria	2
7	Brazil	1
8	Bangladesh	1
9	Bangladesh	1
10	Brunei Darussalam	1
11	Cameroon	1
12	China	1
13	Ghana	1
14	Indonesia	1
15	Iraq	1
16	Malaysia	1
17	Morocco	1

18	Morocco	1
19	Philippines	1
20	Romanian	1
21	Russian Federation	1
22	USA	1
23	Vietnam	1
24	Germany/The first author comes from Egypt	1
25	Italy/The first author comes from Iran	1
Total		71

Table 1 Statistics for the CIGR Journal (May 1st, 2021, to December 31st, 2021)

Issues	Published 3 (Vol.24, No.1-3)
Items (Research papers)	25 in No.1; 26 in No.2; and 20 in No.3
Total new submissions	167
Assigned submissions	132
Archived submissions	30(22.7%)
Peer reviewed	82
In review with some review comments	64
In review without review comments	18
Papers were not held by Associate Editors	2(2.0%)
Accepted as assigned, including published and in editing	18(17.6%)
Total manuscript in handling(including the ones submitted before)	336
Days from submission to complete review	Over 60
Days from submission to publication	near eight months

ASABE Revises Braking Series Standards

ST JOSEPH, MICHIGAN— The American Society of Agricultural and Biological Engineers (ASABE) has revised two parts of the ANSI/ASABE S648, Agricultural Field Equipment Braking, series of machinery standards. Part 3, ANSI/ASABE S648-3.1, Requirements for Self-Propelled and Special Self-Propelled Machines, was revised to align the self-propelled machine specifications with those for the special self-propelled machines (integral power unit with front drive axle and major mass on front axle). Additional changes were made to match the original requirements of the now-withdrawn ASABE standard S365.

Part 5, ANSI/ASABE S648-5.2, Requirements for the Interface between Towing Vehicle and Towed Vehicles, was revised to correct a unit conversion error.

ASABE members with standards access and those with site-license privileges can access the full-text via electronic download on the ASABE online Technical Library at elibrary.asabe.org/. Others can obtain a download for a fee directly from the library or by contacting ASABE headquarters at OrderStandard@asabe.org.

ASABE is recognized worldwide as a standard developing organization for food, agricultural, and

biological systems, with more than 280 standards currently in publication. Conformance to ASABE standards is voluntary, except where required by state, provincial, or other governmental requirements, and the documents are developed by consensus in accordance with procedures approved by the American National Standards Institute. For information on this or any other ASABE standard, contact Scott Cedarquist at 269-932-7031, cedarq@asabe.org. A current listing of all ASABE standards projects can be found on the ASABE web site at www.asabe.org/projects.

ASABE is an international scientific and educational organization dedicated to the advancement of engineering applicable to agricultural, food, and biological systems. Further information on the Society can be obtained by contacting ASABE at (269) 429-0300, emailing hq@asabe.org or visiting www.asabe.org/.

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Upcoming Conferences

Erosion Research Symposium. January 8-13, 2023 Aguadilla, Puerto Rico



**Soil Erosion Research under a
Changing Climate**

A decadal ASABE Soil Erosion Research Symposium

January 8-13, 2023

Punta Borinquen Resort, Aguadilla - Puerto Rico



with

AGRO ENVIRON
2020 IN 2023

**Soil Erosion Research under a Changing Climate Symposium
with AgroEnviron 2020 in 2023
Punta Borinquen Aguadilla, Puerto Rico
January 8–13, 2023**

Registration is now open for presenters and all attendees. Reminder that presenting authors must be registered by October 1 to confirm your talk or poster in the program. Register before December 14 to save over \$100!

The registration link, program details, and other information is available on the event [website](#). The program spans a full week beginning January 8.

Program

Sunday—Welcome reception at 5:30 pm local time

Monday—Technical programming and lunch at the Punta Borinquen Resort. Keynote speaker: Jane Willenbring, Stanford University

Tuesday—All-day field trip to key erosion sites in western Puerto Rico

Wednesday—Technical programming and lunch at the University of Puerto Rico, Mayaguez. Keynote speaker: Rafael Bras, Georgia Institute of Technology

Thursday—Technical programming, lunch, and dinner at the Punta Borinquen Resort. Keynote speaker: Robert Stallard, Smithsonian Tropical Research Institute

Friday—Technical programming and lunch at the Punta Borinquen Resort, closing the symposium by 2 pm local time. Keynote speaker: Grizelle Gonzalez, USDA-Forest Service

AETC, February 12-14, 2022, Fresno, USA



2023 AETC • February 12–14
Fresno Convention Center
Fresno, California

Early bird rates available until January 3!

[Register](#)

See the draft agenda, student opportunities, sponsorship options, and more at www.asabe.org/aetc2023. Sunday through Tuesday, the AETC schedule is full of informative, educational, and interesting technical content.

Student Activities

ASABE student members have a great opportunity to be involved at AETC. Free registration is available to student members; a student only poster session and competition is scheduled on Tuesday, and our Student/Industry Social on Sunday. Find out all the details [online](#).

Committee Meetings

Committee meetings during AETC are all in the Machine Systems technical category. The meetings are open to all, and your participation is encouraged. Listen in on what happens during a meeting or two to weigh your interest in being more active in creating and modifying standards for future education and publication.

Network and Socialize

Join the fun on Sunday afternoon for our Student/Industry Social and Super Bowl watch party. Starting at 3 pm, there will be a speed-networking session, available for all registered guests of AETC. Have your future career planning questions answered by industry and academia professionals that are happy to share their knowledge. Immediately following the networking session, relax and catch up with friends and colleagues while we stream the Super Bowl on a huge LED wall. There will be food, a cash bar, and games! Registration is required.

Sponsor and Exhibit

Sponsoring is a perfect way to encourage and promote more engagement and student participation at AETC. There are many options to consider. Being an exhibitor at AETC gives your company a way to interact with a diverse group of participants at a personal level.

World Ag Expo

Taking AETC to California allows us to precede a different machinery show. On Wednesday, buses will leave the DoubleTree at 8 am to drop off at the World Ag Expo. Reserve your seat in your meeting registration. Don't forget to purchase your Expo admission ticket: www.worldagexpo.com.

Reserve Your Room

A block of rooms is held at the [DoubleTree by Hilton, Fresno](#). Reservations are available until January 27 or until the room block is sold out.

14th European Conference on Precision Agriculture, 3-6 July, 2023, Bologna, Italy



BOLOGNA - ITALY, 3 - 6 JULY 2023

VII International Conference RAGUSA SHWA, 6-9 September, 2023, Ragusa (Sicily, Italy)

UNLEASHING THE POTENTIAL OF PRECISION AGRICULTURE

The 14th European Conference on Precision Agriculture will showcase the results of ongoing research and applications in precision agriculture. Organized under the auspices of the International Society of Precision Agriculture (ISPA), by the Department of Agricultural and Food Sciences of the University of Bologna, the ECPA sessions will present Precision Agriculture from the viewpoint of scientists, crop consultants, advisors, extension personnel, agronomists, producers, and other practitioners

VII International Conference RAGUSA SHWA 6 - 9 September 2023

The VII International Conference on Safety, Health and Welfare in Agriculture and Agro - food Systems - RAGUSA SHWA 2023 will be held on **6-9 September 2023** in Ragusa (Sicily, Italy), in the gorgeous UNESCO district of Ragusa Ibla.

On the Conference website the attractive program, Lectio Magistralis, Main Communications, Parallel Sessions and exciting side events, according to the usual RAGUSA SHWA format.

The communications to the Conference will be published by Springer and indexed in Scopus. Abstracts on Book and E book (ISBN – ISSN – CAB ABI).

Keep in touch visiting periodically
[Conference website](#), [Facebook](#), [Twitter](#), [Researchgate](#), [Linkedin](#)

Save the date and spread the news to your colleagues!