



International Commission of Agricultural and Biosystems Engineering

Newsletter 115

December 2018

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"...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..."

Web: www.CIGR.org

Journal: www.CIGRjournal.org

Contact us: secretarygeneral@CIGR.org

President's Message



Prof. Cheng Zhi
President, CIGR

As the year of 2019 is around the corner, I would like to extend my sincere wish for a happy new year to all the scientists and engineers in Agricultural and Biological Systems Engineering.

The year 2018 was productive for CIGR. We saw the 19th World Congress of CIGR that was held in Turkey, and the smooth transition of the secretariat of CIGR from Japan to USA. The CIGR Technical sections conducted numerous activities, including specialty conferences and symposia.

Because of the Technical Sections and Work Groups performance in their areas, CIGR's influence around the world was widely expanded.

I would also like to thank members of the Presidium for their dedication and commitment to CIGR. Over 2018, the CIGR Presidium convened weekly video meetings to discuss important affairs.

Finally, I would like to express my heartiest appreciation for Prof. Fedro Zazueta, for his great work as the Secretary General of CIGR. Operations were improved because of the time and energy he devoted.

One of the most important ways to improve the quality of life of people is a result of the progress made in science and technology. All of us are engaged in providing people with an adequate supply of high-quality food.

I look forward to all of us strengthening the exchange and collaboration between regions, countries, and different industries. Let us work harder together to conserve resources, protect the environment, eradicate poverty and improve people's livelihood.

2019-2023 CIGR Workgroup Coordinator



Claus Grøn Sørensen
Head of Research Unit
Faculty of Science and
Technology
Dept. of Engineering
Aarhus University
Denmark

Claus Grøn Sørensen is Head of Research Unit in the Operations Management division and head of the Smart Farming Centre as part of the cross-cutting technology platforms at the Department of Engineering at Aarhus University. He holds a PhD in Production and Operations Management. A member of EurAgEng, ASABE, NJF and served as President of EurAgEng from 2016 to 2018 and is now a member of the EurAgEng

Executive Board as well as a member of the executive board of CIGR. Currently, he is the President of CIOSTA, CIGR Section V.

His research interests have focused on production and operations management, decision analysis, information modeling, system analysis, and simulation and modeling of technology application in agricultural production systems as well as in the upstream value chain. Research topics include resource analyses and optimizations, whole production system analyses and optimizations, the feasibility of introducing robotic systems and the development of management information systems and smart farming applications. Recent activities have moved towards integrating information technologies with the advancement of operation management and optimizations.

A key focus of his career has also been the international research outreach and relations

sustaining international cooperation and knowledge exchange through a comprehensive international network within the area of research and technology development. He has participated (as project coordinator, WP leader, and partner coordinator) in multiple international projects as well as serving as

supervisor and in committees for both national and international postgraduate students in the field of Biosystems Engineering. His research has led to extensive collaboration with national and international companies and industry.

CIGR Workgroup Summary

The CIGR Working Groups are important building blocks of the CIGR organization. Sponsored by the CIGR Technical Sections, workgroups focus on advancing research, education and outreach in current and emerging developments in science and technology and its applications. Workgroups serve the purpose of increasing the awareness and competence of CIGR stakeholders in agricultural and biosystems engineering. Work Groups are encouraged to:

- Identify emerging science, technology and engineering applications in agricultural and biosystems engineering,
- develop strategies and tactics to increase the awareness of stakeholders of these new developments,
- Sponsor or co-organize relevant CIGR Section Conferences and Symposia,
- Organize national or international workshops,
- Develop and publish CIGR Booklets/Handbook in areas of interest,

- Organize and publish special issue in the CIGR Journal, and
- Conduct other relevant activities.

Currently, 11 working groups are listed in CIGR:

- [Earth Observation for Land and Water Engineering](#)
- [Animal Housing in Hot Climate](#)
- [Rural Development and the Preservation of Cultural Heritages](#)
- [Cattle Housing](#)
- [Water Management & Information Systems](#)
- [Agricultural Engineering University Curricula Harmonization](#)
- [Rural Landscape Protection and Valorization](#)
- [Image Analysis for Agricultural Processes and Products](#)
- [Food Safety](#)
- [Logistics](#)
- [Precision Aerial Application](#)

An Invitation to Join or Create a CIGR Workgroup.

Interested in establishing a network promoting an emerging science or technology that advances the goals of the Agricultural and Biosystems Engineering profession, creating a network of engineering professionals with common interests, improving education and outreach, or augmenting the impact of the profession, joining an existing working group?

Please contact CIGR Work Group Coordinator Prof. Claus Grøn Sørensen at WGCoordinator@CIGR.org

Harmonization of Higher Education in Agricultural/Biosystems Engineering¹



Antonio Comparetti

Researcher
Department of Agricultural,
Food and Forest Sciences,
University of Palermo, Italy



Pierluigi Febo

Professor
Department of Agricultural,
Food and Forest Sciences,
University of Palermo, Italy

History of degree study programs

The international harmonization of the Higher Education Area (HEA) in Agricultural/Biosystems Engineering (ABE) was started by Prof. Giuseppe Pellizzi during the CIGR 1989 Conference.

This action was carried out in the EU by EurAgEng SIG RD12 - Education and Communication (Chairman Prof. Pierluigi Febo from 1994) and elsewhere by CIGR WG1 - Agricultural Engineering University Curricula Harmonization (Chairman Prof. Pierluigi Febo from 1994 and Secretary Dr. Antonio Comparetti from 2007).

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).

Thematic networks on degree study programs

Four thematic networks followed the earlier efforts:

- 1) the USAEE-TN (University Studies of Agricultural Engineering in Europe - A Thematic Network),

- 2) the Consortium POMSEBES (Policy Oriented Measures in Support of the Evolving Biosystems Engineering Studies in USA - EU).
- 3) the ERABEE-TN (Education and Research in Biosystems Engineering in Europe - A Thematic Network), and
- 4) the Consortium TABE.NET (Trans-Atlantic Biosystems Engineering Curriculum and Mobility).

USAEE-TN

The main objectives of USAEE-TN (University Studies of Agricultural Engineering in Europe - A Thematic Network), comprising 31 institutions from 27 Countries, from 2002 to 2006, were to:

- 1) Define and develop core curricula of 1st and 2nd cycles, to be used as benchmarks for Agricultural Engineering studies in Europe.
- 2) Determine a set of minimum criteria/requirements, against which any curriculum can be tested, in order to decide whether it meets these criteria/requisites and, therefore, can be recognized as a program in Agricultural Engineering.
- 3) Define common accreditation procedures, also in terms of European Credit Transfer System (ECTS) credits and establish the bodies/committees for carrying out these procedures.

In the first step of the development of Agricultural Engineering core curricula, the 1st study cycle was examined, and 2 different schemes were defined and focused in a draft report.

Scheme A, with academic orientation (Fig. 1), consists of:

- 1) a core curricula of integrated 5-year degree study programs (M.Sc.), and
- 2) a core curricula of “pivot-point” 1st cycle 3-year degree study programs (B.Sc.).

Scheme B, with an application-technological orientation, is represented by the core curricula of professional 1st cycle (mostly 3-year) degree study programs.

This report also includes 7 modules or specializations in Agricultural Engineering:

- 1) Water Resources Engineering,

¹ Presented at the EurAgEng Conference. July 2018, Wageningen, the Netherlands.

- 2) Mechanical Systems and Mechanisms used in Agricultural and Bioprocess Engineering,
- 3) Structural Systems and Materials in Agricultural and Bioprocess Engineering,
- 4) Waste Management in Agricultural and Bioprocess Engineering,
- 5) Bioprocessing,
- 6) Energy Supply and Management in Agricultural and Bioprocess Engineering, and
- 7) Information Technology and Automation in Agricultural and Bioprocess Engineering.

POMSEBES Consortium

The achieved objectives of POMSEBES Consortium (Policy Oriented Measures in Support of the Evolving Biosystems Engineering Studies in USA - EU), comprising 8 EU and 4 USA institutions, from 2006 to 2008, were to:

- 1) Provide a platform for a systematic exchange of experiences and ideas between the USA and the EU, in order to contribute to the enhancement of the quality and linkage of research and education and to establish appropriate policy oriented measures, i.e. the development of Biosystems Engineering study programs including strong basic Engineering courses/topics and disseminating these courses into other study programs in (Applied) Biological Sciences, in order to open Engineering concepts to the appropriate students.
- 2) Develop appropriate degree study programs in Biosystems Engineering, whereas the relationship between the quality of these curricula and the learning outcomes and core abilities of students can be established and encouraged by EUR-ACE (Accreditation of European Engineering Programs and Graduates) in the EU and ABET (Accreditation Board for Engineering and Technology) in the USA, respectively.;
- 3) Encourage compatible study programs, within the EU as well as between the EU and the USA, through a systematic comparison of curricula, aimed at a standard definition of basic courses, clarification of areas of application and a common definition of student course load.

ERABEE-TN

The main achieved objectives of ERABEE-TN (Education and Research in Biosystems Engineering in Europe - A Thematic Network),

comprising 35 institutions from 27 Countries, from 2007 to 2010, were to:

- 1) Define the emerging Biosystems Engineering discipline in Europe by describing the current situation.
- 2) Describe the current situation and perspectives of the development of Biosystems Engineering study programs towards the areas of bio-fuels, bio-materials and quality of products.
- 3) Describe the current schemes and the possible structured study programs of the 3rd cycle University studies in Agricultural Engineering and in the emerging discipline of Biosystems Engineering.
- 4) Describe the research activities in the first two cycles of Biosystems Engineering University studies.
- 5) Describe the infrastructures for the quality assessment and accreditation of Biosystems Engineering University studies.
- 6) Describe the tools for enhancing the attractiveness of European study programs in Biosystems Engineering.

TABE.NET Consortium

The objectives of TABE.NET Consortium (Trans-Atlantic Biosystems Engineering Curriculum and Mobility), comprising 4 EU and 2 USA institutions, from 2009 to 2013, were to:

- 1) Define the common threads within the discipline of Biosystems Engineering.;
- 2) Globalize core Biosystems Engineering courses by creating a database of multinational examples that can be drawn upon by instructors around the world.
- 3) Develop innovative courses to advance the continuing development of Biosystems Engineering programs in the US and EU (and globally).
- 4) Design student and staff/faculty mobility experiences that enhance the global perspectives of both.
- 5) Create a cohort of students aware of and able to work in a global employment market.

Major outcomes of the thematic networks on Agricultural/Biosystems Engineering degree study programs

The major thematic network outcomes 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 study programs, in order to facilitate recognition of the core curricula and, therefore, promote 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 traditional Agricultural Engineering to the broader Biosystems Engineering (ERABEE-TN).
- Establish the recognition procedures of new European 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 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).

What will the future be of Higher Education in Agricultural/Biosystems Engineering?

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.

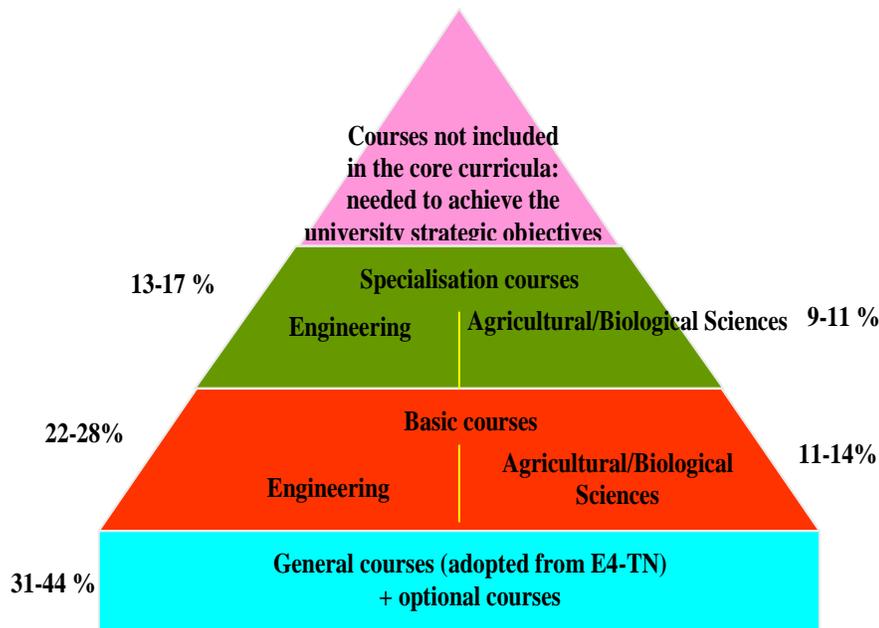


Fig. 1. Agricultural Engineering core curricula of 1st cycle “pivot point” integrated degree study programs (3 + 2) and 5-year degree study programs with academic orientation.

CIGR Journal: Special Issue on Animal Housing in Warm Climates



Prof. Yongqiang Cheng
Editor
Agricultural Engineering
International

Animal housing in warm climates presents unique problems that require the application of engineering science and technology to improve efficiency, quality production and improved animal welfare conditions. The collection of papers presented in this Special Issue is the outcome of the workshop organized by the Working group on Animal Housing in Hot Climates and celebrated

within the 8th European Conference on Precision Livestock Farming, 12-14 September 2017, in Nantes. The main subject of this special issue is to provide new knowledge on how is possible to reduce animal heat stress and therefore reduce production losses and maintain animal welfare, during hot weather and especially when the relative humidity is high. This special issue related to the subject brings together experts from different parts of the world to address these issues. This issue can be found at <http://www.cigrJournal.org>. Authors of the contributions in this collection welcome comments and invite experts in the area to collaborate with the [Animal Housing in Hot Climate](#) workgroup.

Deadlines for 2024 CIGR International Meeting Declaration of Intent

Submission of preproposals for member societies to organize the the 2024 CIGR International Conference are subject to the following deadlines:

- 1) Deadline to submit the intent form is February 15, 2019. Please contact the secretary general at cigrsecretarygeneral@cigr.org to obtain a copy of the submission form. The form will only be provided to member societies.
- 2) Reply to interested societies (Invitation to submit a prospectus): March 15, 2019.
- 3) Submission of full prospectus: May 1st 2019.
- 4) Notification of acceptance/denial of prospectus: June 1st 2019. (Award of the conference).

Note that for a member society to be considered:

- 1) The technical program is expected to be a high quality with the appropriate committees, acceptance and publication procedures (including proceedings and special issues). CIGR will provide no cost access to CIGRProceedings.org and the CIGRJournal.org for peer reviewed special issues).
- 2) CIGR dues must be current for the society to be considered.
- 3) Financial responsibility for the conference lies with the host society and only with the host society. Host societies are required to collect levies for CIGR as part of the registration fee that are not to be considered part of the finances of the conference and are due at the end of the conference.



This is the sixth of a series of highly successful international conferences organized by ASABE and VACI. Over the last decade there has been a maturing of watershed science with new research findings and modeling approaches. These new solutions have resolved many of the problems that first faced watershed managers in dealing with water quality and quantity issues, but there are also emerging impediments to watershed assessments and achieving water quality goals. This international conference 21st Century Watershed Technology: Improving Water Quality and Environment will look at emerging problems and new solutions to managing watersheds to meet water quality and quantity standards. Call for Papers

Please download and complete the Abstract submission form and submit your abstract (see Template) to: Saleh@tiaer.tarleton.edu.

The Conference will provide a forum for agriculture related professionals to exchange information on science, applications and developments in the use of watershed science and technology. It will cover a wide array of topics.

These include new applications of well established and understood technologies to innovative and entrepreneurial applications of emerging technologies, in addition to issues related to policy and knowledge dissemination. Topics include but are not limited to:

- Emerging Topics
- Emerging water quality/quantity case studies
- Monitoring Technologies/Issues
- Management
- Modeling
- Social Impacts/Studies
- Focus on Vietnam and the Pacific Rim

Abstracts are submitted via:

<http://viww.vaci.org.vn/2019/submit-for-vaci2019/>

If you experience problems with the on-line submission form please attach the abstract and email to Saleh@tarleton.edu. Please include full name, email, telephone and address.



6TH INTERNATIONAL SYMPOSIUM ON “*MODELING IN HORTICULTURAL SUPPLY CHAIN*” TO BE MOLFETTA, BARI, ITALY IN JUNE 9-12, 2019

This is the sixth of a series of highly Modern insights in the realm of system biology and biosystem engineering, new developments in ICT and DSS, and the high complexity of modern production systems have pushed forward the development of novel modeling tools and techniques (including advanced statistical data analysis) and their applications in production, storage and logistics of fruit and vegetables.

Model-It 2019, the 6th Intl. Symposium on “*Modeling in Horticultural Supply Chain*”, will cover model applications, from production (in greenhouses or open fields) to marketing and distribution, including postharvest handling and food processing, including environmental conditions, agrometeorology, ecology and biodiversity, plant physiology, plant disease and pest control, precision farming, water management, non-destructive evaluation of quality, process control, microbiology and food safety, logistics and traceability, econometrics, marketing and distribution, and decision support systems.

Scientists with different backgrounds will share ideas and solutions and take advantage of mutual contamination in order to increase knowledge and

possibly start new cooperation. The symposium will serve as a meeting place for research and industry, facilitating the application and dissemination of models while enhancing knowledge transfer within different application areas.

Model-It 2019 will be held on **June 9-12, 2019 in Molfetta**, a jewel medieval city on the Adriatic sea, 20 minutes from the International airport of Bari, in Puglia, the south-eastern tip of the Italian peninsula.

Model it 2019 is also sponsored by CIGR Section VII.

The Symposium will be convened by Giancarlo Colelli and Maria L. Amodio, professors at the University of Foggia, Italy and members of AIIA (the Italian Association of Agricultural Engineering) and of CIGR.

Registration and abstract submission is already possible at the event website: www.unifg.it/modelit2019; Submission deadline is January 8, 2019.

More info please write to giancarlo.colelli@unifg.it.



XXXVII CIOSTA & CIGR V International Conference

Rhodes, Greece | June 24-26, 2019

Sustainable Decisions in Bio-Economy



CIOSTA and CIGR V would like to invite you at XXXVIII CIOSTA & CIGR V International Conference, to be held in Rhodes Island, Greece, in 24-26 June, 2019. The conference aims at promoting the exchange of knowledge on research and innovation for the management of Agriculture and Forestry production and provision systems under the theme: Sustainable Decisions in Bio-economy.

For more information please visit: www.ciosta2019.com

Looking forward to welcoming you there...

The CIOSTA President, **Prof. Claus Grøn Sørensen**

The CIGR V (upcoming) Chair, **Prof. Dionysis Bochtis**

Important Dates

| | |
|------------|---------------------------------------|
| 01.11.2018 | Opening of online registration |
| 15.11.2018 | Opening of abstract submission |
| 10.01.2019 | Deadline for abstract submission |
| 15.01.2019 | Notification of abstracts' acceptance |
| 15.04.2019 | Deadline for full paper submission |
| 30.04.2019 | Deadline for Early bird Registration |
| 31.05.2019 | Deadline for Camera-Ready full papers |
| 05.06.2019 | Final Conference Programme available |

Thematic Areas



"Production"

Innovation and developments in agriculture and forestry, Precision agriculture, IT-based farm and forestry management, Food processing and storage, Organic farming



"Sustainability"

Environmental impact of agricultural production and processing, Sustainable small-scale agricultural production, Farm waste management



"Ergonomics"

Safety and ergonomics in agriculture, Machinery and robotics in agriculture



"Cross-Cutting Topics"

Decision support systems for farmers, Landscaping, Training and educational issues in agriculture and forestry, Open Topics



"Agri-Chains"

Farm and agro-food logistics, Agro-food traceability, Circular economy in the agri-business

Venue

Rodos Palace Hotel is exquisitely located near Rhodes town, with easy access to all major sights and attractions of the island. It is just a breath away from the beach and it allows you smooth transfer to the airport and port. The perfect retreat for those of you who wish to combine great accessibility and connectivity along with serenity and tranquility!

Address

[Iraklidon Avenue \(Trianton\) Ixia P.O.Box 121](http://Iraklidon Avenue (Trianton) Ixia P.O.Box 121)
85100 Rhodes, Greece
Tel: (+30) 22410 97222
Fax: (+30) 22410 25350
E-mail: info@rodos-palace.gr



The European Federation for Information Technology in Agriculture, Food and the Environment (EFITA) would like to invite you at the 12th EFITA International Conference, to be held in Rhodes island, Greece, on 27-29 June, 2019. EFITA is an International Conference dedicated to the state-of-the-art and future use of ICT in the agri-food sector and bio-resources sectors.

For more information please visit: www.efita2019.com

Looking forward to welcoming you there...

The Conference Chairman, **Prof. Dionysis Bochtis**

Thematic Areas



“Sensors”

Wireless sensor networks, Remote Sensing and GIS applications, Bio-sensors, Physical and Chemical sensors, Optical sensors



“Decision”

Modelling and Simulation, Prediction models, Multi-Agent systems, Planning tools, Environmental ICT management systems, Farm management systems (FMIS), Decision Support Systems



“Action”

On line farm services, Web applications, Cloud computing applications, Monitoring Robots, Action Robots, Machine embedded ICT tools



“Data”

Big data management, Data mining, Data visualization, Data and Knowledge Management, Metadata and data standards, Ontologies for agriculture, Knowledge bases and Knowledge repository services, Web of Data and Open Data, Image processing



“Cross-cutting Themes”

Social Networking in agriculture, e-agribusiness, ICT and business, Rural economies and ICT policies for rural development, Traceability tools, Human-Computer Interaction, Open topic

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Fax: (+30) 22410 25350
E-mail: info@rodos-palace.gr



The primary goal of this conference is to bring together the elite scientists from all over the world, and to provide a unique forum for exchange

on agricultural and biosystems challenges and opportunities. For information please see <http://www.cigr2020.ca/en/>



The theme of this CIGR World Congress "Sustainable Agricultural Production - Water, Land, Energy and Food" will underpin the need for collaboration and cooperation of individuals from a wide range of professional backgrounds. This congress will provide an excellent international

platform for academicians, researchers, engineers, industrial participants, and students from around the world to share their research findings with global experts in all areas related to agricultural engineering. For information please see <http://CIGR2022.org>.