

Report to CIGR: Working Groups

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SUMMARY OF CIGR WORKING GROUP ACTIVITIES:

The CIGR Working Groups are important building blocks of the CIGR organisation. 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-organise relevant CIGR Section Symposiums;
- Organise WG national or international workshops;
- Publish CIGR Booklets/Handbook on WG area of interests;
- Organise Special Issue in your WG area for CIGR E-Journal; and
- Conduct actively other relevant activities.

Currently, there are 11 Working Groups in CIGR (plus one waiting for approval) and their activities are summarised below.

1. EARTH OBSERVATION FOR LAND AND WATER ENGINEERING WORKING GROUP

The International Commission of Agricultural Engineering (CIGR) has decided to start the Working Group on “Earth Observation for Land and Water Engineering” during the XVI World Congress, held in Bonn, Germany, in September 2006. Guido D’Urso, University of Naples Federico II, Dept. Agriculture, was elected as Chairman. The activities of the WG are summarized below:

- Mailing list of potentially interested CIGR member and non-members, regularly updated
- Web site, available at link: http://digilander.libero.it/WG_CIGR_EO/index.htm
- Organisation of an Expert Workshop, Lima, March 13th 2008, with 11 invited presentations (http://digilander.libero.it/WG_CIGR_EO/index_file/page0003.htm)
- Solicitation of a dedicated session within the Remote Sensing and Hydrology 2010 Symposium, Jackson Hole (WY), in September 2010; but given the limited attendance the session was not organised
- Summer school organization: two different attempts have been made to organize a summer school on the topic of “Remote sensing for Evapotranspiration and Irrigation”, but the limited response from possible participants and the organization costs has determined the failure of the initiative
- Organization of local seminars at the Agriculture Faculty of Naples in 2011 and 2012
- The Working Group has not been active during the past two years not only for other Chair’s commitments, but also because of the limited response of CIGR members to the topic of this WG, which instead finds many interested people in different contexts (hydrological and “purely” remote sensing scientific communities). This point has been confirmed by the limited contributions on remote sensing presented at the recent EFITA

Conference (Sustainable Agriculture through ICT innovation) organized by CIGR in Turin in June 2013, to which the Chairman has also participated. A possible action to be taken for a revitalization of the WG could be found in establishing a small group of interested CIGR members to support the activities.

2. ANIMAL HOUSING IN HOT CLIMATE WORKING GROUP

Activities:

Different workshops have been conducted by the Hot Climate Working Group:

- Catania in Italy hosted by Giovanni Gascone, June 2005;
- Cairo in Egypt hosted by Mohammed Hatem, April 2007;
- Member meeting was conducted in Iguassu Brazil in 2008.
- Chongqing in China hosted by Boaming Li, 2009
- Member meeting was conducted in Valencia, Spain, July, 2012,

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.

Translation of glossary terms on animal housing to other languages.

English language is considered as the international language in science and the Hot Climate WG lead the initiative to develop a glossary of terms related to animal housing and management.

Future Objectives of the Hot Climate WG

The CIGR-Section II Hot Climate WG has lead and organised 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.

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3. RURAL DEVELOPMENT AND THE PRESERVATION OF CULTURAL HERITAGES WORKING GROUP

- During 2011, the WG made a test enquiry concept titled “Agricultural and bio-systems engineering as a factor of rural development and the preservation of cultural heritages”. Enquiry was planned to carry out with AgEng colleagues in Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Romania, Serbia and Turkey.
- Results were presented at 40th International symposium ”Actual tasks on Agricultural Engineering”, 21st – 24th of February 2012 and printed in Proceedings as a paper titled “Rural areas and agricultural engineering”
- Further activity is sending proposed Forms of this enquiry to Secretary General for approval and after suggestions and corrections initiate new enquiry with wider range of European countries.

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4. CATTLE HOUSING WORKING GROUP

In June 2012 the CIGR Section II, Working Group n 14 “Cattle Housing” has met at the University of Bologna (Italy) from 4 to 7 June. For 2 days the WG members had technical discussions and during 1 day a technical tour : visit of 3 commercial dairy farms and of the University of Bologna Research Centre for dairy cows. During the meeting it was decided that due to the retirement of Josi Flaba (who was the President of the group since 1999):

- Joop Lensink (France) will be the new President
- Heiko Georg (Germany) will act as Vice President
- Suzy Van Gansbeke (Belgium) will be the Belgian representative within the group
- Paolo Liberaty (Italy) will attend the next meetings and he will replace Paolo Zappavigna

- Bob Graves (USA) will leave the group in the near future and he will propose a new representative from USA

The next meeting will take place in Ireland in 2014, week 29, from 15 to 18 June

In 2015, the meeting will be organized in Sweden and Michael Ventorp is going to leave the group this year.

5. WATER MANAGEMENT & INFORMATION SYSTEMS WORKING GROUP

The WG met in Quebec, Canada, on the occasion of the 13th Inter-Regional Conference on Land, Water and Environment (EnviroWater 2010) in conjunction with the XVIIth World Congress of CIGR, on June 13, 2010. It was decided that the WG would be chaired from January 2011 by José Fernando Ortega Alvarez. Therefore, discussions on further activities and relationship with and Land Use and Landscape Planning WG (chaired by Hubert van Lier) should be postponed to the next meeting. The WG will focus on the following activities:

- To help and contribute to the EnviroWater Conferences sponsored by CIGR Section 1. It was stated that in this era of collaborative planning and design, the integrated topics of land and water use planning and supporting information systems should be a repeating theme in all future EnviroWater conferences.
- The WG members should use their networks to identify relevant scientists and practitioners working in these areas, and that should be invited to participate in the EnviroWater conferences.
- A general objective of the WG will be to identify knowledge gaps in these areas.
- Licensing was suggested as a potential tool to strengthen the position of the CIGR Section 1 board and the WG.
- To create an internet forum to discuss on these themes.
- The WG will discuss and evaluate its Mission Statement, Objectives and Scope during the next Meeting.
- The WG will organize an evaluation and discussion session at the end of each EnviroWater conference to identify interesting new research and conference themes.

Prof. Antonio Brasa Ramos has finished his 4 years term as the WG Chair and Dr. Jose Fernando Ortega Alvarez has replaced him to become the Chair from January 2011.

6. AGRICULTURAL ENGINEERING UNIVERSITY CURRICULA HARMONIZATION WORKING GROUP

In 2010 the activities of the WG were carried out through ERABEE (Education and Research in Biosystems Engineering in Europe) Thematic Network (<http://www.erabee.aua.gr>). This network was established in 2007 by the same partners of USAEE-TN (University Studies of Agricultural Engineering in Europe) and others, in order to develop the results achieved by this network. ERABEE-TN comprises 35 institutions of 27 Erasmus Countries, of which are 33 Higher Education Area institutions and 2 Student Associations, and is co-funded by the EU, under the umbrella of Lifelong Learning Programme. The main objectives of ERABEE-TN project are to:

- promote the critical and inevitable transition from the traditional Agricultural Engineering discipline to the emerging Biosystems Engineering one;

- enhance compatibility between the new European study programmes in Biosystems Engineering, in order to promote their recognition and accreditation at European and international level, in line with EUR-ACE;
- improve the image of the European study programmes in Biosystems Engineering;
- promote the mobility of skilled personnel, professors, researchers and students.

The main achievements in each partner Country during the ERABEE project are to:

- define the emerging Biosystems Engineering discipline in Europe and describe the related current situation (tasks of the 1st Workshop, held in Madrid, Spain, in April 2008);
- describe the current situation and perspectives of the development of Biosystems Engineering study programmes towards bio-fuels, bio-materials and quality of products (task of the 2nd Workshop, held in Dublin, Ireland, in October 2008);
- describe the current schemes and the possible future structured study programmes of the 3rd cycle University studies in Agricultural/Biosystems Engineering (task of the 3rd Workshop, held in Uppsala, Sweden, in May 2009);
- describe the research activities in the first two cycles of Biosystems Engineering University studies (task of the 4th Workshop, held in Valletta, Malta, in November 2009);
- describe the quality assurance and assessment frameworks of Biosystems Engineering studies (task of the 5th Workshop, held in Prague, Czech Republic, in April 2010);
- pinpoint ways of improving the image of European study programmes in Biosystems Engineering (task of the 6th Workshop, held in Clermont-Ferrand, France, in September 2010).

In order to achieve the above objectives, the Working Group 4 of ERABEE-TN also developed a web database of the European study programmes in Biosystems Engineering, established in the framework of USAEE-TN, so that it will be continuously updated (<http://sunfire.aua.gr:8080/ects/Welcome.do>). During the 3-year lifetime of the ERABEE project (01/10/2007-30/09/2010) some remarkable developments in the emerging field of Biosystems Engineering have taken place with the establishment of new study programmes in Biosystems Engineering in Europe. The contribution of ERABEE-TN was decisive in this. Most of the European study programmes were established by partner Universities of the network. At the beginning of ERABEE project (October 2007) only two institutions offered University study programmes in Biosystems Engineering:

- 1) University College Dublin (Ireland);
- 2) Catholic University of Leuven (Belgium).

By the end of the project (September 2010) there were ten European University study programmes in Biosystems Engineering, emerging from the evolution of previous Agricultural Engineering study programmes:

- 1) University College Dublin (Ireland);
- 2) University of Leon (Spain);
- 3) Polytechnic University of Catalonia (Spain);
- 4) University de Evora (Portugal);
- 5) University of Maribor (Slovenia),
- 6) Estonian University of Life Sciences (Estonia);
- 7) Technical University of Cluj-Napoca (Romania);
- 8) Aarhus University (Denmark);
- 9) Catholic University of Leuven (Belgium);

10) Uludag University (Turkey).

Based on the previous experience carried out within USAEE-TN, ERABEE-TN partners have developed accreditation criteria for the Bachelor's study programmes in Biosystems or Agricultural and Biological Engineering. This document was developed as a basis for the accreditation agencies and the quality assessment schemes of Universities and EUR-ACE (European Accreditation framework for Engineering study programmes). The core curriculum of Biosystems Engineering study programmes was based on that produced in the framework of USAEE-TN, enriched with new modules related to bio-energy and bio-based materials. This document includes a table showing the Core Curricula of Agricultural/Biosystems Engineering for the First Cycle Degrees of Integrated First and Second cycles (i.e. Pivot Point Degree) or for Long Cycle Academic Orientation Programmes of Studies. As far as the First Cycle B.S. Degrees Programmes of Studies the proposed Core Curricula of Agricultural/Biosystems Engineering allows for 18 ECTS (European Credit Transfer and Accumulation System) units to be devoted to Applied Agricultural Engineering subjects, while most of the Agricultural Engineering specialisation subjects will be offered during the second cycle study programmes. ECTS credits are based on the workload students need in order to achieve expected learning outcomes. In this way one academic year corresponds to 60 ECTS credits, which are equivalent to 1500-1800 hours of study.

During the ERABEE project EurAgEng (European Association of Agricultural Engineers) has included, within its objectives, the promotion of the profession of "Biosystems Engineering" at the same level as that of "Agricultural Engineering", so that now it includes the following areas in the professional activity of Agricultural/Biosystems Engineers: Power Systems and Machinery; Information and Electronics; Safety and Ergonomics; Energy; Natural Resources; Greenhouse and Nursery; Structures and Physical Environment.

On the other side of the Atlantic, in the US, ASABE (American Society of Agricultural and Biological Engineers) includes the following areas: Biological Engineering; Natural Resources; Power Systems and Machinery Design; Structures and Environment; Food and Bioprocess; Information and Electrical Technologies; Forest Engineering; Energy; Aquaculture Engineering; Nursery & Greenhouse Engineering; Safety and Health. However, although the concepts of Biosystems or Agricultural/Biological disciplines are very similar in Europe and US, significant differences remain. Therefore co-ordinated networking activities such as those carried out by ERABEE-TN are very important, in order to harmonise criteria and to promote the international recognition of the study programmes in Agricultural/Biosystems Engineering and the mobility of skilled personnel, professors, researchers and students. Currently the activities of ERABEE-TN are continuing through the ERABEE Network, established by the partner institutions of this TN.

7. RURAL LANDSCAPE PROTECTION AND VALORISATION WORKING GROUP

Chair : Dr. Ken Ohno, Department of Bioresources, Mie University, Japan

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Landscape is about the relationship between people and land. Human impact on the land has changed the landscape. In the past, the rural landscape has been mostly influenced by farmers and landowners. In these days, the landscape has more urban influences. The rural cultural

landscape which is a product of environmental conditions and land use is vanishing. Rural landscape protection and valorization are needed. The Rural landscape protection and valorization should integrate natural conservation, farmland retention, historic preservation and so on. The Rural landscape protection and valorization should be linked to the social and economic needs of the people on the land. The Rural landscape protection and valorization should be sustainable. The mission of this working group is having intensive discussions on the question how research might support rural landscape protection and valorization. The common understanding that can be shared and generalize the issue of the development of future rural landscapes is expected.

Objectives

The objectives of this working group are to promote rural landscape protection, to lead the cultural diversity in rural landscape and to valorize rural landscape. To organize international co-operation on rural landscape issues is also envisaged.

Scope

This working group concerns ordinary rural landscapes as well as outstanding rural landscapes.

8. IMAGE ANALYSIS FOR AGRICULTURAL PROCESSES AND PRODUCTS WORKING GROUP

Chair: Dr. Jose Blasco, Agricultural Engineering Centre, Instituto Valenciano de Investigaciones Agrarias (IVIA), Spain

Vice Chairs: Dr. Manuela Zude, Leibniz Institute for Agricultural Engineering Potsdam-Bornim (ATB), Germany. Dr. Enrique Moltó, Agricultural Engineering Centre, Instituto Valenciano de Investigaciones Agrarias (IVIA), Spain

Boarding Panel: Dr. Victor Alchanatis, ARO, Israel; Dr. Thomas Banhazi, USQ-NCEA, Australia; Dr. Laszlo Baranyai, Corvinus University, Hungary; Dr. Scott Noble, University of Saskatchewan, Canada; Dr. Bosoon Park, USDA, ARS, USA; Martin Weiss, University of Hohenheim, Germany

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.

Expected outcomes

- Capture the state-of-the-art of image analyses applications in agronomy
- Enhance collaboration between industry and academia
- Publication of an outline of recent trends and future needs of industry, including the proceedings of the workshops on the internet
- Promote a list of useful references and links (with key words) for WG members
- Propose gold standards and methods for imaging and spectral calibration

The 1st International Workshop of the Working Group was organized 27-28 August, 2009 in Potsdam, Germany hosted by the Leibniz Institute for Agricultural Engineering Potsdam-Bornim (ATB). The following 2nd International Workshop on Computer Image Analysis in Agriculture was held in Budapest, Hungary on 26-27 August, 2010. It was hosted by the

Corvinus University of Budapest, Faculty of Food Science, and co-organized by the Committee on Agricultural Engineering of the Hungarian Academy of Sciences. The events were an opportunity to share knowledge with scientist from all around the world, to start new projects or to have a precise idea of the current state of the art in Image Analysis in Agriculture.

After the 2nd workshop in Budapest, authors of two presentations were invited by the editorial board of "Progress in Agricultural Engineering Sciences" (Akademiai Kiado, 1786-335X / 1787-0321). The complete papers were published, their references are:

- S. Cubero, E. Moltó, A. Gutiérrez, N. Aleixos, O. L. García-Navarrete, F. Juste and J. Blasco: Real-time inspection of fruit by computer vision on a mobile harvesting platform under field conditions. Progress in Agricultural Engineering Sciences, 2010, Vol.6, 1-16, DOI: 10.1556/Progress.6.2010.1
- Brázio, A. M. Cavaco and R. Guerra: A simplified two layer model for light diffuse reflectance in thin skin fruits. Progress in Agricultural Engineering Sciences, 2010, Vol.6, 35-72, DOI: 10.1556/Progress. 6.2010.3

The major event organized by the WG in 2012 was the 4th International Workshop on Computer Image Analysis in Agriculture. The workshop was held in Valencia, Spain, in July 9th -11th 2012 sponsored by CIGR, EurAgEng, ASABE, SEA, Instituto Valenciano de Investigaciones Agrarias (IVIA, Spain), Leibniz-Institut für Agrartechnik Potsdam Bornim (ATB, Germany) and South Australian Research and Development Institute (SARDI, Australia).

A total of 85 contributions plus one invited conference were submitted from 29 countries, 54 of them being oral presentations while other 31 were presented as posters. The Workshop was a great opportunity to join new members to the WG. A significant number of communications were related to post-harvest analysis. The individual inspection of the quality of each product can deflect or reject those that do not meet quality standards, avoiding the expense and ecological cost further processing and handling, facilitating diversion to appropriate markets with its quality, and optimizing this so the overall profit. The gradual incorporation of hyperspectral imaging emerged as a new technology to detect components, contaminants or damage not visible in meat, fish, fruit or vegetables, and discard those that are damaged or do not meet the standards required by businesses and consumers. Additionally, there were presented a number of communications relating to the inspection of plants in the field, either for the detection and removal of weeds, either to identify growth factors and needs of plants. This represents a challenge due to working conditions, where the light is not controlled environmental conditions change from one moment to another, making difficult the development of automated systems

Communications are available through the WG homepage (<http://www.atb-potsdam.de/CIGR-ImageAnalysis>). During the assembly and conclusions of the workshop it was reported that the WG has around 150 registered members from 12 countries and 4 continents, and the participation in CIGR Congress in Quebec was encouraged. Dr. Jose Blasco of Spain was elected coordinator of CIGR Working Group on Image Analysis for Agricultural Products and Processes, provides a new governance committee including Bosoon Park, who was invited to host the next Workshop, this being in Montreal (Canada), together with the conference of the ASABE. This has been recently approved by the Meeting Council of ASABE and therefore the V Workshop will be held in Montreal during July 12-13 2014 (<http://www2.atb-potsdam.de/cigr-imageanalysis/workshop14.htm>).

As a result of the 4th workshop in Valencia, selected contributions were invited to expand their work and to present them to a Special Issue of Biosystems Engineering on Image processing in Agriculture. This issue is currently under edition and it expected to be published in 2013 with about 11 to 13 articles authored by members of the WG.

9. FOOD SAFETY WORKING GROUP

FSWG was formally launched during the CIGR World Congress in June 2010 in Quebec City, Canada. CIGR Working Groups are appointed by the Executive Board to carry out studies on specific subjects of international importance and interest.

Food safety is a major public health and economic issue both for foods consumed within a country and those that are exported. The total costs attributable to failures in food safety are notoriously difficult to estimate and include costs associated with the consequence of the diseases themselves as well as losses of product and consumer confidence.

The consumer's response to food safety issues is of paramount importance to the competitiveness of international industry. Any evidence, or indeed belief, of a potential risk from food has the potential to result in severe health outbreaks and marketing disruption as well as loss of sales. High standards of food safety will, therefore, remain important and determinant for the consuming and producer countries. Technologies and processes that enable the production of high safety products as well as appropriate management and analytical procedures are essential to meet the demands in a globalised and competitive world market.

Mission Statements

- Improve understanding of hazards and their risks at different steps in the food chain, i.e. creating the knowledge base needed to support the rational application of control measures and the development of new methods, monitoring and management systems related to the incidence and prevention of risk and hazards in foods;
- Improve the knowledge to strengthen the food chain, e.g. the development and improvement of systems and technologies (emerging preservation technologies and optimization of traditional ones) for continuously improving the safe production and supply of foods;.
- Understand the human factor, i.e. consumer perception of risks and the need for communication between industry, government and academic organizations.

Aims and Objectives

The general objective of FSWG is to identify researchers specialized in all the fields related to Food Safety, aiming at presenting new achievements and trends in the Area, as well as identifying necessities and opportunities of joint research for providing scientific information and technical advances in order to satisfy the demands and necessities of consumers and manufactures' along the food chains worldwide.

1. Gathering, generating and disseminating information on predicting and monitoring the behaviour and fate of emerging biological and chemical hazard;

2. Divulging advances on risk assessment and risk-benefit evaluation;
3. Disseminating information on tools, preservation practices and processes to ensure safety along the food chain;
4. Understanding and addressing consumer concerns with food safety issues.

Expected outcomes

- Description of the microorganisms responsible to the various environmental stimuli and stresses in food matrices; prediction of the effects and eventual consequences that the microorganisms might have on resistance and persistence;.
- Description of the behaviour and virulence traits of food-borne pathogens and the mechanisms of emergence;
- Description of chemical contaminants in foods and identification of strategies for their reduction; generating and interpreting data on the fate of chemicals in the food chain and improving exposure assessments for key potential hazards, including the migration of chemicals from packaging materials into food;.
- Description of measures to avoid biological and chemical contamination in agricultural production and to reduce formation of heat-induced contaminants by application of novel food preservation technologies;
- Identification of the needs for development and validation of quantitative risk assessment tools and models based on the generated data for those areas with the biggest impacts on reducing food-borne illnesses; refinement of data required for risk assessment of food allergens and tools to analyze such data;
- Information on processing technologies for reduction or elimination of hazards at the level of primary production, novel and traditional technologies for reduction or removal of chemical and biological hazards during processing;.
- Knowledge of methodologies for tracking and tracing of microbes, contaminants and allergens;
- Logistic approaches for strengthening safe distribution of foods, including abuse detection and approaches for the prevention of food adulteration and bioterrorism;
- Identification and quantification of determinants of consumer trust and confidence in the food provision system for an understanding of consumer confidence and its changes over time (monitoring);.
- Understanding consumers' perception of risk issues, particularly in the context of risk benefit trade-offs and the amplification of risk perceptions beyond the available scientific evidence;.
- State of the art on information for an effective consumer communication strategies and messages on risk-related issues.

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Working-Areas

- Biological Hazards
- Abiotic Hazards
- Developing and Technological Innovation
- Food Preservation
- Food Biotechnology
- Predictive Microbiology
- Risk Assessment
- Novel Foods and Risk Assessment

2011 activities

The WG, linked to the Section VI (Post-Harvest Technology and Process Engineering) was formally launched in June 2010 during the CIRG Word Conference held in Quebec. Organization of Workshops is part of the activities planned for the WG. During 2010 and part of 2011 the WG has worked in the organization of the Workshop Food Safety: Advances and Trends, which will be held in Dijon, France on the 14th and 15th April 2011.

2012 activities

Organized by:

CIGR Food Safety Working Group (FSWGR), International Commission of Agricultural and Biosystems Engineering (CIGR), And Red Española de Seguridad Alimentaria (SICURA)

The Institute of Agrochemistry and Food Technology (Spanish Council of Scientific Research) hosted the second edition of Food Safety Workshop providing attendees with A wide range of subjects relevant on current and emerging food safety issues, innovative solutions to new and recurring problems, latest technology and research as well as a wide range of products and services applied to food safety as well as it could provide the opportunity to network with professionals around the world. Held in Valencia at 5-6th July and it joined nearly 90 participants with around of 60 scientific publications. The event was organized by Food Safety Working Group of the CIGR in partnership with the Spanish Network for Food Security (SICURA).

The meeting was attended by Industry (FIAB and other companies), government (AESAN), Institutions of Science, Education and Research from Europe (Germany, Spain, Italy), Oceania (Australia, New Zealand, Indonesia), Africa (Zimbabwe) and the Americas (Canada, Brazil and Chile) that could share experiences, discuss proposals to ensure safety of food produced in the world and planning work together.

The main thematic of this event was focus on innovations in industry and the use of new technologies applied to food safety. In programming, 31 national and international speakers discussed relevant topics related to new technologies and innovations applied to food safety. Among the most prominent issues discussed were the management of food safety, safe food production, the certification process and assessment of novel foods. The workshop aimed to discuss the various aspects surrounding the importance of food safety as an important factor for human health.

Other joint ACTIVITY carried out during 2012 was related with a seminar on antibiotics in the food chain and resistances. This seminar was held in Zaragoza, Spain and was expensored by SICURA network.

2013 activities

This Year ACTIVITIES have been focused on the development of two joint seminars (SICURA and CIRG-FSWG). The first was an international seminar on quantitative microbiological risk assessment held in Cordoba, Spain and the second seminar dealt with the Lsteria in meats and meats products. This last seminar was held in Girona, Spain.

Additionally the working group met regularly by video conferences in order to organize the third workshop on food safety and proceed to the preparation of his own web site.

10. LOGISTICS WORKING GROUP

Chair: Prof. Remigio Berruto, DEIAFA – Dept. of Agricultural, Forestry and Environmental Economics and Engineering, University of Turin, Italy

Vice Chair: Dr. Patrizia Busato, DEIAFA – Dept. of Agricultural, Forestry and Environmental Economics and Engineering, University of Turin, Italy

Secretary: Dr. Elisabeth Quendler, University of Natural Resources and Applied Life Sciences (Universität für Bodenkultur), Wien, Austria

Logistic plays an important role in today agriculture, facing new challenges (GMO crops, Globalisation, Traceability, Local produce distribution, High capacity harvesting equipments, Increase in food quality concerns, Environmental impact, etc.) and new opportunities (biomass and bioenergy supply-chains, GPS technologies on tractors and trucks, e-commerce, new methods from operation research and industry, information technology, etc.). Some logistic techniques are available from industry domain, however there is a need for adaptation (handling and storage of perishable produce, seasonal production and demand, timeliness constraints, food safety constraints on transportation) and some methodologies should be implemented ex-novo.

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.

Expected outcomes

- 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
- To 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 organizations

11. PRECISION AERIAL APPLICATION WORKING GROUP

Chair: Dr. Yubin Lan, Agricultural Engineer, USDA ARS, Aerial Application Technology Group, Areawide Pest Management Research Unit, 2771 F&B Road, College Station, TX 77845, USA

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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.

Expected Outcome

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.

The first major event organized by the WG in Nov. 2011 was the 3rd International Workshop on Modern Agricultural Aviation. The workshop was held in Nanjing, China on 10-11 November 2011. It was hosted by the Nanjing Research Institute for Agricultural Mechanization, Ministry of Agriculture, China, and co-organized by the Aerial Application Technology Group, Areawide Pest Management Research Unit, USDA ARS, College Station, TX. The sponsors were CIGR, Chinese Society for Agricultural Mechanization, China Agricultural University and Chinese Academy of Agricultural Sciences. Dr. Yubin Lan (WG Chair) and W. Clint Hoffmann (WG Secretary) were invited to give a presentation. The local Organizing Committee Chair, also WG vice Chair Prof. Xinyu Xue, made an important effort to organize and make it fruitful. The event was an opportunity to share knowledge with scientist from all around the world. There were 152 participants in this workshop. A “Sino-US Pesticide Application Center” was established.

The second major event organized by the WG was “The 3rd International Symposium on Precision Aerial Application” which was held in College Station, Texas from August 1 to 3, 2012, which was jointly sponsored by USDA-ARS, Texas A&M University, Chinese Society of Agricultural Engineering (CSAE), China National Engineering Center for Information Technology in Agriculture (NERCITA) and China National Research Center of Intelligent Equipment for Agriculture (NRCIEA). The co-sponsors included Association of Overseas Chinese Agricultural Biological Food Engineers (AOC), China Agricultural University, and CIGR Precision Aerial Application Working Group. Dr. Yubin Lan (WG Chair) and Dr. W. Clint Hoffmann (WG Secretary), USDA-ARS, and Chunjiang Zhao of NERCITA acted as chairman of the conference. Dr. Steven Thomson (WG vice Chair) was invited to give a presentation. The workshop addressed three main themes related to precision aerial application, remote sensing technology and agriculture automation. During the conference, a

field demonstration of unmanned ground vehicle, and site visit of precision aerial application laboratory and facilities such as aircraft, wind tunnel, spray testing instrumentations were also arranged. More than 90 scientists and engineers from USA, China, German and other countries attended the conference and 24 presentations were conducted. This workshop provided a good platform for experts to exchange the experiences and progress in the development of Precision Aerial Application and Agricultural Automation technology.

12. AGRICULTURAL AUTOMATION WORKING GROUP-CIGR (TO BE APPROVED BY THE CIGR MANAGEMENT COMMITTEE)

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Missions

The mission of the Agricultural Automation Working Group (AAWG) is to develop and implement new and improved intelligent equipment for efficient, sustainable and safe agricultural production.

Objectives

The overall objective of this WG is to provide automatic solutions for agricultural production management using cutting edge technologies. Agricultural Automation is the application of electronic control and information technologies in agriculture to make agricultural production and management more efficient.

Modern agriculture is a resource-saving and sustainable green industry assisted by information technology. Agricultural Automation is an information technology related application with sensing, networking, decision making, and electronic control technologies applied to further promote agricultural modernization. With the process of traditional agriculture transforming to modern agriculture, agricultural production transfers gradually from experience-based to knowledge-based, from qualitative to quantitative and from extensive to automatic management. Therefore, agricultural automation has provided important support for modern agricultural development. It has been profoundly changing the whole process of agricultural production, so as to achieve the purposes of reducing cost and increasing benefit, improving environmental outcomes, and promoting yields and quality of agricultural products.

Action Plan

This new WG will focus on serving as an organizer and coordinator of research activities involved in Agricultural Automation applications and related extension. This WG via the Officers will organize sessions during the CIGR Conferences and International Meetings/Symposiums/Workshops. If it is approved, the first Agricultural Automation Workshop will be held on September 18, 2013 in Beijing, China. AAWG is going to organize a workshop during the CIGR Congress Meeting in Beijing from September 16-19, 2014. An International Workshop on Agricultural Automation will also be held from Nov. 28-30, 2014 at USDA ARS and Texas A&M University, College Station, TX, USA. Besides serving as a coordinator to report current research projects, each of meetings will have a session focused on the identification of future research needs and the identification of institutions that have the capability to do the research. This will eliminate a repeat of research effort and enhance international collaborations and sharing of experiences. Essentially the WG is hoping to operate as a consortium and will focus on the development and execution of large international projects.

Expected Outcome

This new CIGR WG will serve as a valuable resource to the agricultural engineering community. By coordinating research projects and researchers across multiple institutions, breaking the boundaries of disciplines and departments, promoting the multi-disciplines cooperation, the role and impact of agricultural engineering fraternity will increase in

agricultural automation. The potential members who are interested in Agricultural Automation WG