

XVIIth World Congress of the International Commission of Agricultural and Biosystems Engineering

Convention Centre
Québec City, Canada
June 13-17, 2010

Book of Abstracts

"Sustainable Biosystems Through Engineering"



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GENERAL INFORMATION

The Book of Abstracts contains a summary provided by authors of presentations made during the XVIIth World Congress of the International Commission of Agriculture and Biosystems Engineering (CIGR). The Congress was held under the general theme of “Sustainable Biosystems through Engineering”. Several specialized symposia were organized by participating groups listed in the Table of Contents. The Canadian Society for Bioengineering (CSBE/SCGAB) is publisher of the Book of Abstracts.

EDITORS

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The Editors acknowledge the assistance of several contributors to the revision and editing of abstracts and full length papers : Nathalie Guesneau, Héloïse Bastien, Pierre-Luc Lizotte, Pierre Luc Hébert and François-Simon Robert. The Editors received useful advice from the CIGR Section Chairs and the participating group coordinators whose names are on the next page. Several other people acted as reviewers of abstracts and papers to improve the quality of presentations; their work is appreciated.

ABSTRACTS AND FULL PAPERS

To find an abstract, first identify its CSBE number (10XXXX). Papers can be found by technical themes in the List of Abstracts by Participating Group on pages 4 to 26. Abstracts are published in numerical order in the subsequent pages. Some abstracts have been shortened for reasons of space. Complete abstracts and full papers that were submitted will be available on the CSBE/SCGAB web site after the Congress. For updates on paper availability and downloading, visit: www.bioeng.ca

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HOSTS AND ORGANIZING COMMITTEE

CIGR

CIGR was founded in 1930 in Belgium as a non-governmental, non-profit professional organization. The International Commission of Agricultural and Biosystems Engineering (CIGR) is a world-wide federation regrouping - in form of a networking system - national, regional and multinational associations, societies, corporations and individuals working in science and technology applied to the different fields of agricultural engineering.

www.cigr.org

CSBE/SCGAB

The Canadian Society for Bioengineering / Société canadienne de génie agroalimentaire et de bioingénierie (CSBE/SCGAB) is an educational and scientific organization dedicated to the advancement of engineering applicable to agricultural, food, and biological systems. The Society was founded in 1958 in Wolfville, Nova Scotia.

www.bioeng.ca

Organizing Committee



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CIGR Section Chairs and Scientific Committee Coordinators

CIGR Section I: Land and Water Engineering (Chair: **Jose M. Tarjuelo** [Spain]); Coordinator: **Guanhua Huang** (China)

CIGR Section II: Farm Buildings, Equipment, Structures and Environment (Chair: **Daniel Berckmans** [Belgium]); Coordinators: **Hisamitsu Takai** (Denmark) and **Stéphane P. Lemay** (Canada)

CIGR Section II-B: Aquacultural Engineering; Coordinators: **Eiko Thiessen** (Germany) and **Ed Aneshansley** (USA)

CIGR Section III: Equipment Engineering for Plants (Chair: **John K. Schueller** [USA]); Coordinator: **Bernard Panneton** (Canada)

CIGR Section IV: Energy in Agriculture (Chair: **Mikio Umeda** [Japan]); Coordinator: **Philippe Savoie** (Canada)

CIGR Section V: Management, Ergonomics and Systems Engineering (Chair: **Pietro Piccarolo** [Italy]); Coordinator: **Remigio Berruto** (Italy)

CIGR Section VI: Postharvest Technology and Process Engineering (Chair: **Jozef Grochowicz** [Poland]); Coordinator: **Cristina Ratti** (Canada)

CIGR Section VII: Information Systems (Chair and Coordinator: **Antonio Saraiva** [Brazil])

INFITA and 8th World Congress on Computers in Agriculture jointly organized with CIGR Section VII; Coordinator **Fedro Zazueta** (USA)

ASABE's 9th International Drainage Symposium; Coordinators: **Ali Madani** (Canada), **Chip Chescheir** (USA) and **Gary Sands** (USA)

American Ecological Engineering Society 10th Annual Meeting (President: **Cully Hession** [USA]); Coordinator: **Stacy Hutchinson** (USA)

Symposium on Nanotechnologies Applied to Biosystems Engineering and the Environment; Coordinator: **Khaled Belkacemi** (Canada)

LIST OF ABSTRACTS BY PARTICIPATING GROUP

American Ecological Engineering Society 10th Annual Meeting

Monday, June 14 – 10:15 to 12:00

1	AEES	Stream Water and Wetland Interactions (I)
Time	Paper #	Moderator: Greg Jennings (USA) Room: 206A
10:15		Session Opening
10:20	100255	Purlear Creek habitat restoration case study G. Jennings, M. Shaffer, K. Hall et al. (United States)
10:40	101195	Riparian constructed wetlands for improving water quality in a polluted river in southeastern Mexico M.E. Hernández, P. Ruiz-Enzástiga (Mexico)
11:00	101493	Predicting dynamic equilibrium in streams in the Olentangy River Watershed, Ohio, USA J. Witter, A. Ward, J.L. D'Ambrosio (United States)
11:20	101526	Flume analysis of in-channel restoration structures and impacts to secondary circulation flows T. Zhou, T. Endreny (United States)
11:40	101532	Characterizing surface-ground water exchange rates and hydraulic transport processes in a cascading stream T. Endreny, M. Fabian (United States)

Monday, June 14 – 13:35 to 15:20

16	AEES	Stream Water and Wetland Interactions (II)
Time	Paper #	Moderator: Cully Hession (USA) Room: 206A
13:35		Session Opening
13:40	101604	Patterns in groundwater hydrology of a small constructed floodplain wetland A.L. Ludwig, W.C. Hession (United States)
14:00	101585	Quantifying and utilizing uncertainty in stream restoration design J.P. Resop, W.C. Hession, T.M. Wynn (United States)
14:20	101528	Meander bend regulation of surface-ground water exchange and impacts for restoration design B. Han, T. Endreny (United States)
14:40	101519	Aquatic macroinvertebrate diversity in constructed stormwater wetlands T. L. Moore, W.F. Hunt III (United States)

Monday, June 14 – 15:35 to 17:00

31	AEES	Climate and Watershed Ecology
Time	Paper #	Moderator: Dan Hitchcock (USA) Room: 206A
15:35		Session Opening
15:40	101590	Climate change, energy scarcity, and Mississippi Delta restoration J.W. Day, P. Kemp (United States)
16:00	101620	Defining sustainable development targets for coastal hydrology, water quality, and ecology in South Carolina, USA D.R. Hitchcock, A.D. Jayakaran, D.M. Rogers et al. (USA)
16:20	101595	Design and implementation of a forebay-pond-wetland system for urban stormwater treatment in south Texas X. Pan, K.D. Jones, S. Wang et al. (United States)
16:40	100450	Update on setting the global temperature using ecological engineering A. J. Horne (United States)

Tuesday, June 15 – 10:15 to 12:00

46	AEES	Water Management and Crop Production
Time	Paper #	Moderator: Stacy Hutchinson (USA) Room: 206A
10:15		Session Opening
10:20	101591	Water use and sustainability in global corn production J.P. Resop, M.D. Matlock, W.C. Hession et al. (USA)
10:40	101593	Greywater irrigation: Antibacterial agents as barriers to greywater reuse D.I. Harrow, R.J. Currer, R.E. Templin et al. (USA)

11:00	101608	Rain garden networks: Impacts on water quality C.G. Eger, D.A. Schlea, J.F. Martin (USA)
11:20	101612	Using USGS NAWQA and EPA WSA data to assess the impact of agricultural practices on aquatic biodiversity, in-stream water quality, and habitat parameters affecting benthic macroinvertebrates E. Cummings, M. Matlock, R.Z. Johnston (USA)
11:40	101384	Spatial and temporal variation in the biodegradation of organophosphate pesticides in agricultural drains and riparian wetlands M.E. Karpuzcu, J. Hanlon, D. Sedlak et al. (USA)

Tuesday, June 15 – 14:00 to 15:20

61	AEES	Ecological Engineering – POSTERS
Poster #	Paper #	Moderator: Grant Clark (Canada) Room: 2000D
22	101082	Maximizing the hydrological impact of street trees through sidewalk design S. Lingwood, O.G. Clark, P. Jutras et al. (Canada)
23	101600	The landscape dynamics in Pirai da Serra, Brazil C.H. Rocha, D. Almeida, P.H.W. Neto et al. (Brazil)
24	100455	Emission of CH₄, CO and NH₃ during composting of synthetic food waste in a controlled pilot-scale compost reactor E. Phillip, G. Clark (Canada)
25	100652	Harvesting from our food waste - Ecological treatment system for anaerobic digested food waste slurry H. Lin, S. A.W. Diemont, D. L. Johnson (United States)
26	101609	Biomass production, green house gas abatement and inter-row cropping in a constructed wetland M. Duteau (Canada)
27	101529	SAD-RH: a generic decision support system for water resource management M.D.A.G.M. da Hora, E. Marques, A.F. da Hora (Brazil)
28	101589	Reducing environmental vulnerability and enhancing community resiliency along the Louisiana coast through the coastal sustainability studio J. W. Day, R. Twilley, L. Carter et al. (United States)
29	101472	A methodology to manage environmental effects of crop-shelter coverage C. Arcidiacono, S.M.C. Porto (Italy)
30	101603	Load estimations using LOADEST within agriculturally dominated watersheds across the continental United States R.Z. Johnston, E. Cummings, M. Matlock (United States)
31	101617	Evaluation of attached periphytic algal communities for biofuel feedstock generation H. N. Sandefur, M. D. Matlock, T. A. Costello (United States)
32	100379	Comparison of different plantation modes in ecological restoration in Antaibao opencast mining sites in Shanxi Province, North China J.-T. Zhang, M. Li (China)

Tuesday, June 15 – 15:35 to 17:20

75	AEES	Ecological Engineering Principles and Practices
Time	Paper #	Moderator: Stephanie Lansing (USA) Room: 206A
15:35		Session Opening
15:40	100711	Investigating case-based reasoning for ecosystem design T. R. Lanphere, O. G. Clark (United States)
16:00	101225	Design challenges to the integration of ecosystem services into agricultural landscapes in arid ecosystems W.T. Stringfellow (United States)
16:20	101192	Creating renewable energy using ecological engineering principles S. Lansing (United States)
16:40	100339	Development of a framework for sustainable remediation decision making (SRDSS) I. S. Dunmade (Canada)

17:00 101613 **Engineering autonomy in an algal turf scrubber techno-ecosystem.**
D. M. Bliersch, P. Kangas (United States)

Wednesday, June 16 – 8:15 to 10:00

90 AEES Trees and Crops for Sustainability (I)

Time Paper # Moderator: Stewart Diemont (USA)
Room: 205C

8:15 **Session Opening**

8:20 101550 **Modeling city tree growth with artificial intelligence and multivariate statistics for sustainable urban ecosystems**

P. Jutras, S.O. Prasher (Canada)

8:40 101087 **Biodiversity of managed forests surrounding the Calakmul Biosphere Reserve in Mexico**

J. Bohn, S.A.W. Diemont, J. Mendoza (USA / Mexico)

9:00 101040 **Short rotation woody biomass production as option for the restoration of post-mining areas in Lower Lusatia**

C. Böhm, A. Quinkenstein, D. Freese et al. (Germany)

9:20 101480 **How to manage legume-rhizobia N₂-fixing symbioses as ecological engineers?**

J.-J. Drevon, H. Hamza, B. Jaillard et al. (France/Egypt/Spain)

9:40 101602 **Role of tao (Belotia mexicana) in the traditional Lacandon Maya shifting cultivation ecosystem**

K. Cheng, S. Diemont, A. Drew (United States)

Wednesday, June 16 – 10:15 to 12:00

104 AEES Trees and Crops for Sustainability (II)

Time Paper # Moderator: Dave Tilley (USA)
Room: 204B

10:15 **Session Opening**

10:20 100800 **Mopan and Que'chi Maya ecological engineering: Design strategies for sustainable ecosystem restoration and human subsistence**

D. D. Rayome, S. A.W. Diemont (United States)

10:40 100788 **Linking traditional agroforestry practices of the Tsotsil Maya in Santo Domingo Las Palmas, Chiapas, Mexico to ecosystem biodiversity, land management sustainability, and community well-being**

S. J. Kelsen, S. A. W. Diemont, B. G. Ferguson (Mexico/United States)

11:00 101326 **Short rotation coppice with Robinia pseudoacacia L. -A land use option for carbon sequestration on reclaimed mine sites**

A. Quinkenstein, C. Böhm, D. Freese et al. (Germany)

11:20 101565 **The contribution of agroforestry systems to ecosystem services**

D. Freese, C. Böhm, A. Quinkenstein et al. (Germany)

11:40 100792 **Emergy synthesis for valuing the ecosystem services of green walls and other vegetated building envelope technologies**

D. R. Tilley, J. Price, E. Campbell (United States)

Wednesday, June 16 – 13:35 to 15:20

119 AEES Treatment Wetlands and Lagoon Management

Time Paper # Moderator: Christina Toms (USA) Room: 204B

13:35 **Session Opening**

13:40 101176 **Influence of hummocks and emergent vegetation on hydraulic performance in a surface-flow wastewater-treatment wetland**

J.S. Daniels, S.H. Keefe, L.B. Barber (United States)

14:00 101518 **Green manure production as a value-added component of treatment wetlands for livestock wastewater**

S.D. McLennan, D. Reinhold (United States)

14:20 101569 **An interdisciplinary ecological engineering approach to the assessment and enhancement of lagoons in California's central coast**

C. Toms (United States)

14:40 101575 **In-lake algal bloom removal and ecological restoration using modified local soil technology**

G. Pan (China)

15:00 101610 **Evaluation of toxicity metrics and the toxicity of different production methods in the US**
Z. Clayton-Niederman, L.L. Nalley, M.D. Matlock (USA)

Abstract only 101529 **Sad-rh: a generic decision support system for water resource management**
M.De A.G.M. Da Hora, E. Marques, A.F. Da Hora

ASABE's 9th International Drainage Symposium

Monday, June 14 – 10:15 to 12:00

2 IDS Drainage and Water Quality

Time Paper # Moderator: Ali Madani (Canada)
Room: 205C

10:15 **Session Opening**

10:20 100082 **Nitrogen and phosphorus losses in surface runoff water from various cash cropping systems**

P. Jiao, T. Zhang, D. Xu et al. (China/Canada)

10:40 100130 **Drainage on the Delmarva Peninsula: past history and future challenges**

W. F. Ritter (United States)

11:00 100157 **Nitrate-N loads to subsurface drains as affected by drainage intensity and agronomic management practices**

E. J. Kladviko, L.C. Bowling, V. Poole (United States)

11:20 100224 **Effects of drain depth on nitrate-N and phosphorus losses from drained agricultural lands receiving nitrogen and phosphorus from organic sources**

C.A. Poole, R.W. Skaggs, G.M. Chescheir et al. (USA)

Monday, June 14 – 10:15 to 12:00

3 IDS Evaluating Drainage Models and Drainpipe Envelopes

Time Paper # Moderator: Mohamed Youssef (USA)
Room: 204B

10:15 **Session Opening**

10:20 100175 **Measured effect of agricultural drainage water management on hydrology, water quality, and crop yield**

M. Sunohara, M. A. Youssef, E. Topp, D.R. Lapen (United States/Canada)

10:40 100170 **Assessing the feasibility of DRAINMOD application using soil hydraulic properties estimated by pedotransfer functions**

A. M. Abdelbaki, M. A. Youssef (United States)

11:00 100217 **Mathematical modelling on the operation of water control structures in a secondary block**

F. X. Suryadi, P. H. J. Hollanders, R. H. Susanto (Netherlands/Indonesia)

11:20 100177 **Laboratory study of the soil clay percent influence on the need for subsurface drainage system envelopes**

T. Sohrabi, H. Ojaghloo, H. Rahimi et al. (Iran)

11:40 101667 **Machines for wrapping drainage pipes with a defined voluminous synthetic fiber filter**

W. Hevert (Germany)

Monday, June 14 – 13:35 to 15:20

17 IDS Drainage Modeling in Saline Conditions

Time Paper # Moderator: Matt Helmers (USA)
Room: 205C

13:35 **Session Opening**

13:40 100199 **Evaluation of DRAINMOD in predicting water table fluctuations and yield of canola in paddy fields (case study: Rasht, Iran)**

M. Parsinejad, B. Hassanpour, M.R. Yazdani et al. (Iran)

14:00 100055 **Determining optimized distance and depth of subsurface drains under unsteady flow conditions at multiple cropping pattern**

F. Vahdat, A. Sarraf, E. Pazira et al. (Iran)

LIST OF ABSTRACTS BY PARTICIPATING GROUP

14:20 100027 **Evaluation of two drainage models in south-west Iran**
F. Samipour, M. Rabie, K. Mohammadi et al. (Iran)

14:40 100103 **Drainage in heavy clay soil and sugar beet yield in eastern North Delta**
M. M. Moukhtar, A. I.N. Abdel-Aal And, M.A. B. El-Shewikh (Egypt)

Monday, June 14 – 13:35 to 15:20

18 IDS Impact of Organic Fertilizers on Drained Land
Moderator: Larry Geohring (USA)
Room: 204B

13:35 **Session Opening**

13:40 100139 **Occurrence of tylosin-resistant enterococci in swine manure and tile drainage stems under no-till management**
T.T. Hoang, M. L. Soupir (United States)

14:00 100149 **Phosphorus losses through subsurface drainage in a loamy soil of Iowa: effects of rates, timing and method of swine manure and fertilizer application**
C. Hoang, R. Kanwar, C. Pederson (United States)

14:20 100201 **Subsurface drainage nitrogen discharges following manure application: measurements and model analyses**
J. Melkonian, L.D. Geohring, H.M. V. Es et al. (United States)

14:40 100096 **The effects of treated wastewater on soil nitrogen dynamics and winter wheat growth under different groundwater depth**
X. Qi, Z. Huang, P. Li et al. (China)

Monday, June 14 – 15:35 to 17:00

32 IDS Drainage and Salinity
Moderator: Gary Sands (USA)
Room: 205C

15:35 **Session Opening**

15:40 100109 **Salt leaching efficiency of subsurface drainage systems at presence of diffusing saline water table boundary: A case study in Khuzestan Plains, Iran**
E. Pazira, M. Homae (Iran)

16:00 100133 **Estimating reclamation water requirement and predicting final soil salinity for soil desalination**
A. Sarraf, F. Vahdat, E. Pazira et al. (Iran)

16:20 100164 **Soil salinity change detection in irrigated area under Qazvin Plain irrigation network using satellite imagery**
P. D. Arasteh (Iran)

Monday, June 14 – 15:35 to 17:00

33 IDS Water Treatment with Wetland and Drainage Systems
Moderator: Shiv Prasher (Canada)
Room: 204B

15:35 **Session Opening**

15:40 100232 **Establishing a relationship between hydraulic efficiency and treatment performance in constructed wetlands**
M. Wahl, L. C. Brown, A. O. Soboyejo et al. (USA/China)

16:00 101626 **Understanding the removal mechanisms of pharmaceutical compounds in a constructed wetland setup**
S.A. Hussain, S. Prasher (Canada)

16:20 100169 **Temperature effects on shallow water infiltration rates in an underground rock bed BMP**
M. Horst (United States)

16:40 100231 **Lessons gained from French R&D programs for pesticides dissipation by use of constructed wetlands**
J. Tournebize, B. Vincent, C. Chaumont et al. (France)

Tuesday, June 15 – 10:15 to 12:00

47 IDS Performance of Drainage Water Management Systems
Moderator: Larry Brown (USA)
Room: 205C

10:15 **Session Opening**

10:20 100206 **DRAINMOD-simulated performance of drainage water management across the U.S. Midwest**
M. A. Youssef, R. W. Skaggs, K.R. Thorp et al. (USA/Egypt)

10:40 100084 **Potential water quality impact of drainage water management in the Midwest USA**
D. B. Jaynes, K. R. Thorp, D. E. James (USA)

11:00 100138 **Water table response to drainage water management in southeast Iowa**
M. Helmers, R. Christianson, G. Brenneman et al. (USA)

11:20 100154 **Controlled drainage to improve edge-of-field water quality in southwest Minnesota, USA**
S.E. Feser, J.S. Strock, G.R. Sands et al. (USA)

11:40 100222 **Methods to estimate effects of drainage water management on annual N losses to surface waters**
R. W. Skaggs, M. A. Youssef, G.M. Chescheir (USA)

Tuesday, June 15 – 13:35 to 15:20

62 IDS Application of Drainage Models
Moderator: Ali Madani (Canada)
Room: 205C

13:35 **Session Opening**

13:40 100137 **Potential watershed nitrate load reduction with drainage water management under varied implementation options**
S. Ale, L. Bowling, M. Youssef et al. (United States)

14:00 100214 **Modeling runoff from a small artificially drained agricultural catchment in Norway, using the DRAINMOD model.**
J. Deelstra, C. Farkas, M. Youssef (Norway/United States)

14:20 100143 **Impact of climate change on drainage outflow and water quality in eastern Canada**
S. Dayyani, S. Prasher, A. Madani et al. (Canada)

14:40 100205 **Predicted impacts of climate change on crop production on drained lands in Sweden**
M. A. Youssef, I. Westrom (United States/Sweden)

15:00 100218 **Application of SWAP to assess performance of subsurface drainage system under semi-arid monsoon climate**
A. K. Verma, S. K. Gupta, R. K. Isaac (India)

Tuesday, June 15 – 15:35 to 17:20

76 IDS Modeling Drainage Systems
Moderator: Ramesh Rudra (Canada)
Room: 205C

15:35 **Session Opening**

15:40 100241 **The relationship between watershed physiography, tile flow, and streamflow characteristics**
R. P. Rudra, S. I. Ahmed, M. Khayer et al. (Canada)

16:00 100258 **Hydrologic modelling of an agricultural drained micro-watershed: Performance analysis of coupled surface water/groundwater models**
M. Muma, A.N. Rousseau, C. Paniconi et al. (Canada/France)

16:20 101372 **Empty drain and the water level at midway between the drains. Aspects regarding management**
P. Castanheira (Portugal)

16:40 101429 **New software for the optimal design of drainage network in steady-state sub-irrigation case study: Greoni-Ticvanu Mare drainage arrangement**
M.T. Eugen, B. Marinela, C. Laura et al. (Romania)

17:00 100147 **Surface runoff and soil physical properties as affected by subsurface drainage improvement of a heavy clay soil**
L. Alakukku, E. Turtola et al. (Finland)

Tuesday, June 15 – 15:35 to 17:20

Poster #	Paper #	IDS	Drainage Topics – POSTERS
50	100071		A comparison of DRAINMOD and SWAT for surface runoff and subsurface drainage flow prediction at the field scale for a cold climate M. Chikhaoui, C. Madramootoo, A. Gollamudi (Canada)
51	100086		Performance of DRAINWAT model in assessing the drainage discharge from a small watershed in the Po valley (Northern Italy) M. Borin, T. Bisol, D. M. Amaty (Italy)
52	100072		Assessment of climate change impact on the subsurface drainage flow in the Pike River watershed using the SWAT model M. Chikhaoui, C. Gombault, C. Madramootoo et al. (Canada)
53	100116		Performance of biodrainage systems in arid and semiarid areas with salt accumulation in soils S. Akram, H. Liaghat (Iran)
54	100155		Nutrient load from two drainage systems on clay soil P. Vakkilainen, L. Alakukku, M. Mylly et al. (Finland)
55	100161		The role of curli and cellulose in the transport and survival of Escherichia coli on a central New York dairy farm A. E. Salvucci, M. Elton, J. D. Siler et al. (United States)
56	100204		Mapping soil moisture content variability using electromagnetic induction method A.A.Farooque, Q. Zaman, A. Schumann et al. (Canada/USA)
57	101484		Impact of shallow water table depths on surface irrigation requirements and crop performance Z. Ulhaque (Pakistan)
58	100129		Sustainability of biodrainage systems considering declining of evapotranspiration rate of trees due to soil salinization H. Liaghat, M. Mashal (Iran)
59	100219		Impact on drainage water quality from amending agricultural soils in Nova Scotia with an alkaline stabilized biosolid G.W.Price, A. Madani, J.D. Gillis (Canada)
60	100095		Water balance and corn yield under different water table management scenarios in southern Québec A. Singh, C. A. Madramootoo, D. L. Smith (Canada)
61	100192		An initial assessment of a wetland-reservoir wastewater treatment and reuse system receiving agricultural drainage water in Nova Scotia M. Haverstock, A. Madani, R. Gordon et al. (Canada)
62	100145		Suitable buffer strip width along rivers for nitrate N removal from paddy field drainage Z. Zhan-Yu 1, C. Yi-Xia, Z. Cheng-Li et al. (China)
63	100253		Implications of agricultural drainage water reuse: I. crop yield and water productivity A. A.-A. Aboukeira, A. El-Shafie, M. H. Rady et al. (United States/Egypt)
64	100191		Implications of agricultural drainage water reuse: II. soil properties A. A.-A. Aboukeira, A. El-Shafie, M. H. Rady (USA/Egypt)
65	101668		Drainage control system (DCS) V. Machabee (Canada)

Wednesday, June 16 – 10:15 to 12:00

Time	Paper #	IDS	Drainage From Forested Lands and other Land Uses
10:15			Session Opening
10:20	100261		A comparison of mike she and DRAINMOD for modeling forested wetland hydrology in coastal south Carolina, USA Z. Dai, D. M. Amaty, G. Sun et al. (United States)
10:40	100185		Field evaluations of a forestry version of DRAINMOD-N II model S. Tian, M. A. Youssef, R.W. Skaggs et al. (USA)

11:00	100188		Streamflow characteristics of a naturally drained forested watershed in southeast Atlantic coastal plain D. M. Amaty, C. C. Trettin (United States)
11:20	100215		The effect of sampling frequency on the accuracy of nitrogen load estimates from drained loblolly pine plantations in eastern North Carolina G. M. Chescheir, F. Brigand, S. Tian et al. (USA)
11:40	100162		Advances in sportsturf drainage D. B Shelton (United Kingdom)

Wednesday, June 16 – 10:15 to 12:00

Time	Paper #	IDS	Maps and Tools for Decision Makers
10:15			Session Opening
10:20	100078		National inventory of artificially drained lands in Germany B. Tetzlaff, P. Kuhr, F. Wendland (Germany)
10:40	100271		Using earth observation data for soil drainage classification and mapping M.A Niang, M.C. Nolin, S. Perrault et al. (Canada)
11:00	100301		Certification of drainage contractor enterprises - experience in Québec R. Lagacé, D. Laberge, F. Lambert (Canada)
11:20	100243		Preliminary study of the WRSIS concept at the paddy-upland crops rotation area in southern China S. Xiaohou J. Qiu H. Xiujun et al. (China)
11:40	100093		Impacts of the Chashma Right Bank Canal on land use and cropping pattern in D.I.Khan district (Pakistan) A.-U. Rahman, A. N. Khan (Pakistan)

Wednesday, June 16 – 13:35 to 15:20

Time	Paper #	IDS	Treatment of Drainage Water
13:35			Session Opening
13:40	100073		Bioreactor design geometry effects on nitrate removal L. Christianson, A. Bhandari, M. Helmers (United States)
14:00	100171		Nitrate removal of drainage water with barley straw as a bioreactor filter S. E. Hashemi, M. Heidarpour, B. Mostafazadeh-Fard et al. (Iran)
14:20	100207		Beyond the field: A look at agricultural ditch floodplains as a water quality BMP S. Kallio, A. Ward, J. L. D'Ambrosio et al. (United States)
14:40	100209		A decade later: the establishment, channel evolution, and stability of innovative two-stage agricultural ditches in the Midwest region of the United States R. Kallio, A. Ward, J. L. D'Ambrosio et al. (United States)
15:00	100229		Minnesota agricultural ditch reach assessment for stability (MADRAS): A decision support tool J. Magner, B. Hansen, C. Anderson et al. (United States)

Wednesday, June 16 – 13:35 to 15:20

Time	Paper #	IDS	Drainage of Irrigated Lands
13:35			Session Opening
13:40	100037		Drainage of irrigated lands C. B. Dandekar, B. A. Chougule (India)
14:00	100104		Environmental and economic multi-objective model for managing irrigation and drain water H. Noory, A.-M. Liaghat, M. Parsinejad et al. (Iran)
14:20	100225		Water redistribution within the potato root zone following irrigation S. Satchithanatham, M.R.C. Cordeiro et al. (Canada)
14:40	100227		Assessment of rootzone water redistribution in corn following irrigation M. R. C. Cordeiro, S. Satchithanatham et al. (Canada)
15:00	100228		Drainage design practices in irrigated agriculture; new concepts gained from recent experiences in three countries of Maghreb, North Africa B. Vincent, I. B. Aissa, A. Belouazni et al. (France/Tunisia/Algeria/Morocco)

LIST OF ABSTRACTS BY PARTICIPATING GROUP

Abstract only	100087	Comparison of drainmod and artificial neural network for predicting water table depth and drain discharge in a subsurface drainage system H. Ebrahimiyan, H. Ojaghlo, A. Liaghat, M. Parsinejad, B. Nazari, H. Noory (Iran)
Abstract only	100106	Application of drainmod-n model for predicting nitrate-n in paddy rice fields under controlled drainage in a coastal region of Iran H. Noory, H.Z. Abyaneh, H. Noory, A.-M. Liaghat (Iran)

Symposium on Nanotechnologies Applied to Biosystems Engineering and the Environment

Wednesday, June 16 – 8:15 to 10:00

91	Nano	Nanotechnologies for Food Treatments
Time	Paper #	Moderator: Suresh Neethirajan (Canada) Room: 205A
8:15		Session Opening
8:20	100287	Conjugated linoleic acid formation by hydrogenation/isomerization of safflower oil over bifunctional novel structured catalyst N. Chorfa, S. Hamoudi, J. Arul et al. (Canada)
8:40	100304	Convergence – big potential: Microfluidics for food, agriculture and biosystems industries S. Neethirajan, F. Lin (Canada)
9:00	100661	Separation of benzoic acid from cranberry juice by use of nanofiltration membranes D. Q. Lai, N. Tagashira, S. Hagiwara et al. (Japan)
9:20	101402	Improvement of nutritional benefits in foods by incorporation of starch-antioxidant assemblies P. Le Bail (France)
9:40	101357	Stability of nano-emulsified lycopene under thermal processing J. Shi, S.J. Xue (Canada)

Wednesday, June 16 – 10:15 to 12:00

108	Nano	Nanotechnologies for Environment and Seeds
Time	Paper #	Moderator: Safia Hamoudi (Canada) Room: 205A
10:15		Session Opening
10:20	100850	Alkanolamine/ionic liquid microemulsions: Enhanced CO₂ capture ability with curbed corrosion behaviour M. Hasib-Ur-Rahman, M. Sijaj, F. Larachi (Canada)
10:40	101305	Adsorptive removal of phosphate anions from aqueous solutions using functionalized SBA-15: Effects of the organic functional group S. Hamoudi, A. El-Nemr, K. Belkacemi (Canada)
11:00	100368	Development of carbon dioxide (CO₂) sensor using polymer nanoparticles for grain quality monitoring S. Neethirajan, M. Freund, D. Jayas et al. (Canada)
11:20	101351	Effect of silver nanoparticles for protection of seeds in different soils N. Karimi, S. Minaei, A.R. Shahverdi et al. (Iran)
11:40	101456	A variable rate grain drill for planting seeds treated with silver nanoparticles N. Karimi, S. Minaei, M. Almasi et al. (Iran)

Wednesday, June 16 – 13:35 to 15:20

122	Nano	Production and Application of Nanoparticles – POSTERS
Poster #	Paper #	Moderators: Khaled Belkacemi and Joseph Arul (Canada) Room: 2000D
57	100213	Synthesis of CaCO₃ nanoparticles by controlled precipitation from saturated sodium carbonate and calcium nitrate aqueous solutions R. B. Babou-Kammoe, S. Hamoudi, K. Belkacemi (Canada)

58	100559	Determination of the optimum combination of processes in nano-sizing flax fibres for use as sustainable reinforcement in bionanocomposites B.A.C. Siao tong, S. Panigrahi, L. Tabil (Canada)
59	101201	Effect of addition of different types of modified clays in the properties of opacity and solubility of zein biofilm J.F. Lopes-Filho, L.L. Tavares, C.B. Almeida et al. (Brazil)
60	101360	A facile solvothermal route to shape-controlled titania nanocrystals C.-T. Dinh, T.-D. Nguyen, F. Kleitz et al. (Canada)

Special Interdisciplinary Session on Education

Wednesday, June 16 – 10:15 to 12:00

105	Edu	Engineering Education for Agriculture, Food Systems, Ecology and Biosystems
Time	Paper #	Moderator: Omar Ulloa (Costa Rica) Room: 2102B
10:15		Session Opening
10:20	100058	A dean's perspective on the future of agricultural engineering education in Canada Claude Laguë (Canada)
10:40	101663	Biosystems engineering curricula in Europe P. Febo, A. Comparetti (Italy)
11:00	-	Engineering Education in Latin America Irenilza Alencar Naas (Brazil)

SECTION I Land and Water Engineering (including EnviroWater 2010)

Monday, June 14 – 10:15 to 12:00

4	Section I	Irrigation and Crop Response
Time	Paper #	Moderator: Shaoyuan Feng (China) Room: 207
10:15		Session Opening
10:20	100883	Response of spring-maize and soil to saline irrigation in northwest China J. Jiang, S. Feng, Y. Wang (China)
10:40	100561	Investigating the potential for rice production with sprinkler irrigation E. Vories, W. Stevens, P. Tacker et al. (United States)
11:00	101118	Searching for improved irrigation scheduling alternatives for horticultural crops in the humid tropics Y. Chaterlán, M. León, C. Duarte et al. (Cuba/Portugal)
11:20	100292	Safflower (carthamus tinctorius L.) water use from shallow good quality and saline water tables in lysimeteric experiment in a semiarid region of Iran H. Ghamarnia, M. Golamian, S. Sepelri (Iran)
11:40	100254	Deficit irrigation as an agricultural water management system for corn: a review A. A. – A. Aboukeira (United States)

Monday, June 14 – 10:15 to 12:00

5	Section I	Water Management and Soil Properties – POSTERS
Poster #	Paper #	Moderator: Jose Fernando Ortega Alvarez (Spain) Room: 2000D
1	100552	Confined and semi-confined compression curves of highly calcareous soil amended with organic manures N. Aghilinategh, A. Hemmat, M. Sadeghi (Iran)
2	100556	Stress relaxation behaviour of a highly calcareous soil amended with long-term application of three organic manures A. Hemmat, N. Aghilinategh, M. Sadeghi (Iran)

3	100809	Environmental assessment for defining new management strategies for the conservation of soil and water resources R. F. B. Silva, P. I. R. De Morais, A. A. Da Conceição Sartori et al. (Brazil)
4	100968	Effects of the crop root on the soil physyc properties and soil water transport environment K. Yuge, M. Anan (Japan)
5	101085	Effects of mechanical aeration on the compaction and permeability of a grassy sward S. Chehaibi, M. Khelifi, K. Abrougui (Tunisia/Canada)
6	101639	Wastewater reclamation and reuse practices for agriculture in Korea E.J. Lee, S.W. Park, C.H. Seong et al. (Republic Of Korea)
7	100759	Farmers mitigation and adaptation options to salinity in Sicily N. Colonna, D. Rapti– Caputo, F. Lupia et al. (Italy)
8	100256	The potential of using a new agricultural system for improving water productivity of wheat A. A.– A. Aboukeira (United States)

Monday, June 14 – 13:35 to 15:20

19	Section I	Irrigation System Design
Time	Paper #	Moderator: Peilin Yang (China) Room: 207
13:35		Session Opening
13:40	100986	Use of two drippers spacing in the same lateral line and theirs effects on the wetted bulb formation, yield and quality of radish (<i>Raphanus sativus</i> L.) L. P. De Azevedo , J. C. C. Saad (Brazil)
14:00	101153	Improving the performance of landscape sprinkler irrigation through field evaluations and modelling G.C. Rodrigues, P. Paredes, M.I. Valin et al. (Portugal)
14:20	100509	Characterization of energy requirements in pressurized irrigation networks and evaluation of potential energy saving meassures in southern Spain J.A. R. Diaz, E. C. Poyato, T. C. Cobo (Spain)
14:40	101047	Optimal hydraulic and energy design of pivots directly fed with groundwater M. A. Moreno, J.F.Ortega, D. Medina et al. (Spain)
15:00	101042	Design and evaluation of an automated short furrow irrigation system N. Lecler, D. Mills, J. Smithers (South Africa)

Monday, June 14 – 15:35 to 17:00

34	Section I	Equipment for Irrigation and Soil Monitoring
Time	Paper #	Moderator: Luis Santos Pereira (Portugal) Room: 207
15:35		Session Opening
15:40	101545	Sensors for effective irrigation scheduling and improved water use efficiency of cotton cultivars C. Bellamy, A. Khalilian, H. Farahani et al. (United States)
16:00	101017	Effect of the type of sprinkler and height above the soil on onion (<i>Allium cepa</i> L.) crop J.A. De Juan Valero, A. Domínguez, J.M. Tarjuelo et al. (Spain)
16:20	101170	Advanced technologies applied to hose reel rain-gun machines: New perspectives towards sustainable sprinkler irrigation G. Ghinassi (Italy)
16:40	101339	A triple-sensor horizontal penetrometer for on-the-go measuring soil moisture content, electrical conductivity and mechanical resistance Q. Zeng, Y. Sun, P.S. Lammers (China/Germany)

Tuesday, June 15 – 10:15 to 12:00

48	Section I	Impact of Climate Change on Watersheds
Time	Paper #	Moderator: Juan Antonio Rodríguez Díaz (Spain) Room: 207
10:15		Session Opening
10:20	101332	Impact assessment of climate change on irrigation by a distributed water circulation model T. Masumoto, R. Kudo, T. Yoshida et al. (Japan)

10:40	100790	Climate change impact assessment for a small river basin using a process-based numerical model of coupled surface water/groundwater flow M. Sulis, C. Paniconi, C. Rivard et al. (Canada)
11:00	100979	Sustainable planning of land use changes in farming areas under ecological protection F.Montero-García, F.Montero-Riquelme, A. Brasa-Ramos et al. (Spain/Netherlands)
11:20	101184	Forecasting hydrological time series in the face of climate change J. Adamowski (Canada)

Tuesday, June 15 – 13:35 to 15:20

63	Section I	Irrigation and Development
Time	Paper #	Moderator: Antonio Brasa Ramos (Spain) Room: 207
13:35		Session Opening
13:40	101003	Evaluation of irrigation systems by using benchmarking techniques J.I.Córcoles, J.M. Tarjuelo, M.A.Moreno et al. (Spain)
14:00	100670	Revitalizing smallholder irrigation schemes in Limpopo Province of South Africa P. G. De Witt (Africa)
14:20	100176	Use of agricultural census data for the estimation of irrigation water consumption at farm level F. Lupia, I. Namdarian, F. D. Santis (Italy)
14:40	100901	Fostering irrigation practices in the humid tropics of (southwestern) Nigeria to sustain life and development M.O. Alatise (Nigeria)
15:00	101288	Overcoming food shortage through improved irrigation strategy Z. Ul-Haque (Pakistan)

Tuesday, June 15 – 13:35 to 15:20

64	Section I	Water and Crop Response – POSTERS
Poster #	Paper #	Moderator: Jose Manuel Monteiro Gonçalves (Portugal) Room: 2000D
33	100210	Effect of water stress on yield and yield components of two wheat cultivars M. Najmaei, A. Soleymani, A. R. Golparvar (Iran)
34	100294	Effect of water stress on water use efficiency and yield of nigella sativa in Kermanshah Province in the west of Iran H. Ghamarnia (Iran)
35	100376	Crop coefficient of cowpea bean in Piauí State, Brazil E. A. Bastos, A. S. A. Júnior, V. M. Ferreira et al. (Brazil)
36	100567	Method to supress or remove blue-green algae in the pond of large area by micro bubbles T. Nakashima, Y. Hirata (Japan)
37	101126	Irrigation system management assisted by thermal imagery and spatial statistics S.J. Thomson, C.M. Ouellet-Plamondon, S.L. Defauw et al. (United States/United Kingdom)
38	101127	Cut chrysanthemum (<i>Chrysanthemum morifolium</i> Ramat.) irrigation schudeling under greenhouse conditions M.F. De Farias, J.C.C. Saad (Brazil)
39	100715	Irrigation management in real time for arugula crop in Sergipe A. N. Do Vasco, A. De O. A. Netto, R. Silva-Mann et al. (Brazil)
40	101637	Several groundwater levels affecting sorghum plants in protected environment A.E. Klar, A.A. Tanaka (Brazil)
41	100562	Effects of super absorbent polymers application methods on carrot germination and growth J. Yu, H. Liu, J. Shi et al. (China/Israel)

LIST OF ABSTRACTS BY PARTICIPATING GROUP

Tuesday, June 15 – 15:35 to 17:20

78	Section I	Modeling Water Use for Crop Production
Time	Paper #	Moderator: Mario Falciari (Italy) Room: 207
15:35		Session Opening
15:40	101193	Application of mathematic models of water in irrigated bean crop under no-tillage system D.R. Bizari, E.E. Matsura, M. Mesquita (Brazil)
16:00	101050	Development of reference evapotranspiration models with limited data by using artificial neural networks structures A. Martinez, M.A. Moreno, J.F. Ortega et al. (Spain)
16:20	101164	The dual crop coefficient approach: Application of the SimDualKc model to winter wheat in North China Plain Z. Nana, L. Yu, C. Jiabing et al. (China/Portugal)
16:40	100501	Simulation of site-specific irrigation control strategies with sparse input data A. C. Mccarthy, N. H. Hancock, S. R. Raine (Australia)
17:00	100362	The relation between non-irrigated planting at sandy land and micrometeorological alleviation in Ningxia, China T. Maki (Japan)

Wednesday, June 16 – 8:15 to 10:00

92	Section I	Management of Flood, Drainage and Ground Water (joint with IDS*)
Time	Paper #	Moderator: Mauro Greppi (Italy) Room: 206A
8:15		Session Opening
8:20	100549	Mathematical models for flood management: Efficiency and reliability D. Dewrachen, V. Garattini, S. Mambretti (Italy)
8:40	100627	Soil bioengineering techniques in flood risk mitigation in Friuli Venezia Region S. Sanna (Italy)
9:00	100159*	Storage and reuse of drainage water I. Wesström, A. Joel (Sweden)
9:20	100684	Modelling the groundwater dynamics as influenced by water management in Hetao irrigation district, Upper Yellow River basin, and predicting impacts of foreseen water use and savings Xu Xu, G. Huang, Z. Qu et al. (China)

Wednesday, June 16 – 8:15 to 10:00

93	Section I	Modeling Water in Soils and Crops – POSTERS
Poster #	Paper #	Moderator: Robert Broughton (Canada) Room: 2000D
1	100622	Assessing different leaching models in SE Iran F. A. Pour (Iran)
2	100654	Prediction of the max flow for the model SASIS: Sensibility to the empirical parameters of the form of the furrow R. V. Pordeus, C. A. V. De Azevedo et al. (Brazil)
3	100666	Studying different type of leaching models in two pilots located at South East of Khoozestan Province F. Allahyari, K. Mohsenifar, S. Haghighat et al. (Iran)
4	100695	Simulation of the irrigation for furrow for the model SASIS: Sensibility to the factors of space consideration and storm R. V. Pordeus, C. A. V. De Azevedo et al. (Brazil)
5	100746	A meta-analysis of weather effects on corn nitrogen fertilization requirements Min Xie, Nicolas Tremblay, Zhanmin Wei (Canada/China)
6	100890	Monitoring of dust emission and development of a CFD model to predict the dispersion of fugitive dust at a reclaimed land H.-S. Hwang, I.-B. Lee, I.-H. Seo et al. (Korea)
7	101378	Affect of drought on pollution of Lenj station of Zayandehrood River by artificial neural network (ANN) K. Mohsenifar, E. Pazira, N. Mohsenifar et al. (Iran)
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Wednesday, June 16 – 10:15 to 12:00

109	Section I	Changes in Water and Land Uses
Time	Paper #	Moderator: Guanhua Huang (China) Room: 207
10:15		Session Opening
10:20	100363	Geographical shift in livestock production: Consequences for land use planning and policy making G. J. Carsjens, P. Gerber (Netherlands/Italy)
10:40	100466	Agriculture, population and their impact on the global environment P. Roy, T. Orikasa, N. Nakamura et al. (Japan)
11:00	100546	Grid based rainfall-runoff GIS modelling to study the anthropogenic effect on the hydrology of a small watershed M. Greppi, G. Senes (Italy)
11:20	100331	Development of a model for estimating current and future irrigation water demand in Canada O. Aladenola, C. Madramootoo (Canada)
11:40	101228	Technical, economic and legal aspects of management of transboundary water resources - A case study of Indus Waters Treaty 1960 S.J.A. Shah (Pakistan)

Wednesday, June 16 – 13:35 to 15:20

123	Section I	Assessment of Water Pollution and Salinity
Time	Paper #	Moderator: Gerrit-Jan Carsjens (Netherlands) Room: 207
13:35		Session Opening
13:40	100081	Modelling phosphorus inputs from diffuse and point sources with MEPHos in Germany - a contribution to the implementation of the EU water legislation B. Tetzlaff (Germany)
14:00	101220	Effect of nonionic surfactant Brij 35 on the fate of metribuzin in a sandy soil E. Elsayed, S.O. Prasher, R.M. Patel (Canada)
14:20	101468	Phosphorus removal and recovery from high calcium hog lagoon supernatant using a gravity settled struvite reactor J.N. Ackerman, N. Cicek (Canada)
14:40	100739	Mapping of soil salinity and clay content based on electromagnetic induction measurements by EM38 S. Zia, D. Wenyong, W. Spreer et al. (Germany/China)
15:00	100127	Studies on appropriate depth of leaching water along with reclamation-rotation program (a case study in mid-part of Khuzestan, Iran) F. Rajabzadeh, E. Pazira, M. H. Mahdian (Iran)

Abstract only	100152	Ground water recharge in wagarwadi watershed through recharge process and ground water flow models K.P. Gore, V.V.S. Gurunadharao, B.S. Naik, D. Barman (India)
Abstract only	100520	Integrated water supply management at watershed scale for agricultural purposes in a perspective of adaptation to climate change Jean-François Cyr, Richard Turcotte, Charles Poirier, Diane Chaumont (Canada)

SECTION II Farm Buildings, Equipment, Structures and Environment

Monday, June 14 – 10:15 to 12:00

6	Section II	Field Measurements, CFD and Abatement Techniques (I)
Time	Paper #	Moderator: Eileen Fabian Wheeler (USA) Room: 204A
10:15		Session Opening

10:20	100696	Numerical simulation of a pit exhausts system for reduction of ammonia emission from a naturally ventilated cattle building B. Bjerg, M. Andersen (Denmark)
10:40	100762	Measurements of air ventilation rates in naturally ventilated dairy cattle buildings W. Berg, M. Fiedler, A. Kiwan et al. (Germany)
11:00	101059	Gas emission rate from different Japanese open type pig houses with natural ventilation A. Ikeguchi (Japan)
11:20	101131	Measuring concept for determining ammonia emissions from naturally ventilated dairy housing with an outdoor exercise area S. Schrader, M. Keck, K. Zeyer et al. (Switzerland/Germany)
11:40	101117	Comparison of ammonia emissions from a naturally ventilated dairy loose housing with solid floor surfaces over two seasons S. Schrader, M. Keck, K. Zeyer et al. (Switzerland/Germany)

Monday, June 14 – 10:15 to 12:00

7 Section II Poultry

Time	Paper #	Moderator: Qiang Zhang (Canada) Room: 205B
10:15		Session Opening
10:20	100320	Application of slightly acidic electrolyzed water for disinfection in a broiler farm X. Hao, B. Li, Y. Ji et al. (China)
10:40	100361	Activity analysis in broiler chickens with different gait scores A. Aydin, O. Cangar, S. E. Ozcan et al. (Belgium)
11:00	101114	Radiant heat distribution in broiler housing using infrared thermometry M.S. Baracho, G.R. Nascimento, I.A. Nääs et al. (Brazil)
11:20	100841	Thermal environment inside broiler housing using distinct lateral membrane structure G. R. Nascimento, M.S. Baracho, I.A. Nääs (Brazil)

Monday, June 14 – 13:35 to 15:20

20 Section II Field Measurements, CFD and Abatement Techniques (II)

Time	Paper #	Moderator: Werner Berg (Denmark) Room: 204A
13:35		Session Opening
13:40	101254	Preliminary study of ammonia emissions from naturally ventilated fattening pig houses in the South-East China K. Wang, Z. Ye, H. Li (China)
14:00	101322	Measurement of ammonia emissions from three ammonia emission reduction systems for dairy cattle using a dynamic flux chamber H.J.C. Van Dooren, J. Mosquera (Netherlands)
14:20	101366	Air pollution and livestock production A.C. Watt, S.M. Aziz, T.M. Banhazi (Australia)
14:40	101392	Reduction of gas and odour emissions from a swine building using a biotrickling filter M. Belzile, S.P. Lemay, D. Zegan et al. (Canada)
15:00	101478	Evaluation of the effectiveness of an antimicrobial air filter to avoid porcine reproductive and respiratory syndrome virus (PRRSv) aerosol transmission, after 16 months of exposure to a commercial swine environmental conditions L. Batista, F. Pouliot, L. Urizar (United States/Canada)

Monday, June 14 – 13:35 to 15:20

21 Section II Swine (I)

Time	Paper #	Moderator: John Feddes (Canada) Room: 205B
13:35		Session Opening
13:40	100300	Maintaining the pre-slaughter enthalpy chain improves animal welfare in pigs M. Villarroel, P. Barreiro, P. Kettlewell et al. (Spain/UK)
14:00	100921	Effect of a water-cooled cover on the thermal comfort of pregnant sows in hot and humid climate Z. Pang, B. Li, H. Xin et al. (China/Korea/United States)

14:20	101074	Modelling the stress responses of livestock to the thermal loads experienced on transcontinental, export journeys M.A. Mitchell, P.J. Kettlewell, M. Villarroel et al. (United Kingdom/Spain)
14:40	101119	Pathogen removal from pig manure by full-scale psychrophilic anaerobic digestion in sequencing batch reactors Y. Gilbert, D. Massé, E. Topp (Canada)
15:00	101391	Impact of temperature control strategies on animal performance, gas emissions and energy requirements for grower-finisher pigs S.P. Lemay, J. Feddes, F. Pouliot et al. (Canada)

Monday, June 14 – 15:35 to 17:00

35 Section II Swine (II)

Time	Paper #	Moderator: Stéphane Godbout (Canada) Room: 205B
15:35		Session Opening
15:40	101415	New building concepts for sustainable swine production in Québec: A systematic review S. Godbout, N. Turgeon, S.P. Lemay et al. (Canada)
16:00	100445	Influence of water sprinkling on the amount of dust particles in a house for fattening pigs S. Nimmermark (Sweden)
16:20	100478	Heating and cooling performance of an under floor earth tube air tempering system in a mechanical ventilated farrowing house E. F. Hessel, C. Zurhake, H. F. A. V. D. Weghe (Germany)
16:40	100425	Gait and force analysis of provoked pig gait on clean and fouled rubber mat surface H. V. Wachenfelt, C. Nilsson, S. Pinzke (Sweden)

Monday, June 14 – 15:35 to 17:00

36 Section II Greenhouses and Horticulture

Time	Paper #	Moderator: Daniel Massé (Canada) Room: 204A
15:35		Session Opening
15:40	101221	Development of bioengineering processes to transform greenhouse waste into energy, fertilizer and tomato D. Brisson, D.I. Massé, P. Juteau et al. (Canada)
16:00	101277	Influence of insect nets and thermal screens on climate conditions of commercial scale greenhouses: A CFD approach A.A. Sapounas, S. Hemming, H.F. de Zwart et al. (Netherlands)
16:20	100407	Energy consumption and commercial applications of liquid foam insulation technology for greenhouses J. Villeneuve, D. De Halleux, K. Aberkani et al. (Canada)
16:40	101227	Generating usable and safe CO2 for enrichment of greenhouses from the exhaust gas of a biomass heating system L.-M. Dion, M. Lefsrud (Canada)

Tuesday, June 15 – 10:15 to 12:00

50 Section II Cattle (I)

Time	Paper #	Moderator: Joahnn Palacios (Canada) Room: 205B
10:15		Session Opening
10:20	100252	An expert system for planning and designing milking parlour constructions M. Hatem, M. Samer, H. Grimm et al. (Egypt/Germany)
10:40	100276	How to rectify design flaws of dairy housing in hot climates? M. Samer (Egypt)
11:00	100370	Housing for replacement heifers and dairy cows J. Flaba, H. Georg, R.E. Graves et al. (Belgium/Germany/USA)
11:20	100645	Effect of temperature and physico-chemical characteristics on the efficiency of coagulation flocculation pretreatment of water on dairy farms L. Masse, D. I. Massé, É. Pariseau et al. (Canada/USA)

LIST OF ABSTRACTS BY PARTICIPATING GROUP

11:40 100690 **Effects of different cluster types on teat condition and milk release parameters**
S. Sagkob, H.-J. Rudovsky, S. Pache et al. (Germany)

Tuesday, June 15 – 10:15 to 12:00

51 Section II Energy, Greenhouses and Materials–POSTERS

Poster # Paper # Moderator: Heiko Georg (Germany) Room: 2000D
1 100754 **Simulation models to optimize input energy in Mediterranean greenhouse production**
A. Marucci, A. Gusman, B. Pagnello et al. (Italy)
2 101226 **Effects of photoselective shade nets on the meteorological elements, growth and radiation use efficiency of cucumber**
R. de C. Ferreira, N. F. Da Silva, R. de S. Bezerra (Brazil)
3 101502 **A model for the evaluation of building sustainability in agri-food industry**
F. Barreca, G. Cardinali, S. Di Fazio (Italy)
4 101507 **The natural material in bioconstruction between tradition and innovation: The use of giant reed Arundo donax L. in the rural constructions**
F. Barreca (Italy)
5 101021 **Bedding materials for cattle barns and their thermo-technical properties in different climatic conditions**
J. Lendelova, Š. Mihina, Š. Pogran (Slovakia)
6 101662 **Countermeasure of energy conservation of farm buildings in rural areas of cold region in China**
L. Mao, G. Li, D. Tian et al. (China)
7 100884 **Development of a solar thermal storage system suitable for the farmhouse heating in northeast China**
M.-K. Jang (China)

Tuesday, June 15 – 13:35 to 15:20

65 Section II Methods to Quantify Emissions in Naturally Ventilated Buildings (II)

Time Paper # Moderator: Daniel Berckmans (Belgium) Room: 204A
13:35 **Session Opening**
13:40 100773 **Intermittent measurement technique to estimate ammonia emission from manure storage**
A. Youssef, S. E. Özcan, F. Guiziou et al. (Belgium/France)
14:00 100974 **Tracer gas technique in comparison with other techniques for ventilation rate measurements through naturally ventilated barns**
A. Kiwan, R. Brunsch, S. E. Özcan et al. (Germany/Belgium)
14:20 101061 **Measurement method of ventilation rate with tracer gas method in open type livestock houses**
A. Ikeguchi, H. Moriyama (Japan)
14:40 100624 **Development and testing of technical measures for the abatement of PM10 emissions from poultry housing**
N. Ogink, A. Aarmink, J. Mosquera et al. (Netherlands)
15:00 – **Open discussion – Emissions from natural ventilated buildings**
Atsuo Ikeguchi (Japan)

Tuesday, June 15 – 13:35 to 15:20

66 Section II Cattle (II)

Time Paper # Moderator: Alfred Marquis (Canada) Room: 205B
13:35 **Session Opening**
13:40 100764 **Potential soil contamination under free stall dairy barn using earthen base stalls with sand bedding**
Y. Choinière (Canada)
14:00 101055 **A farm system approach to analyze greenhouse gas (GHG) mitigation strategies for ruminant production systems**
A. Meyer-Aurich, W.K. Berg, S. Schattauer et al. (Germany)
14:20 101187 **Evaluation of injection sites of thermal sensing transponders in cattle for automatic body core temperature recording**
H. Georg, A. Schwalm, G. Ude (Germany)

14:40 101506 **Automatic and frequency-programmable systems for feeding TMR: State of the art and available technologies**

C. Bisaglia, F. Nydegger, A. Grothmann et al. (Italy/Switzerland/Netherlands)

15:00 100963 **Milking technology on modern dairy farms -assessment from the user's perspective**
M. Kauke, F. Korth, P. Savary et al. (Switzerland)

Tuesday, June 15 – 15:35 to 17:20

79 Section II Reduction of Ammonia and Odour Emissions (I)

Time Paper # Moderator: Theo Demmers (UK) Room: 204A
15:35 **Session Opening**
15:40 100443 **Reducing ammonia release in a floor housing system for laying hens by daily removal of manure below a perforated floor**
G. Gustafsson (Sweden)
16:00 100616 **Impact of the manure removal from slatted floor in a dairy barn on the ammonia emission**
S.K. Retz, H. Georg, S. Godbout et al. (Germany/Canada)
16:20 100644 **Dairy manure amendment effects on odor and gas emissions**
E.F. Wheeler, M.A.A. Adviento-Borbe, R.C. Brandt et al. (USA)
16:40 100747 **Odour control on pig farms by biofiltration**
G. Buelna, N. Turgeon, R. Dubé (Canada)
17:00 101025 **A new design for highly efficient partial pit ventilation**
P. Pedersen, T. L. Jensen (Denmark)

Tuesday, June 15 – 15:35 to 17:20

80 Section II Manure Handling

Time Paper # Moderator: Frederic Pelletier (Canada) Room: 205B
15:35 **Session Opening**
15:40 100442 **Flush systems for dairy manure removal: the Alley roughness value**
E. Bresci, P. Ferrari, A. Giacomini, M. Barbari (Italy)
16:00 100528 **Managing residual phosphorus and nitrogen from treated swine slurry using a disposal field: Behaviour over four years of on-site operation**
R. Dubé, G. Bellemare, G. Buelna et al. (Canada)
16:20 100547 **Electro-separation process for treating liquid animal manures**
S.-P. Guertin, D. Massé, F. Lamarche (Canada)
16:40 101517 **Environmental impacts of manure management strategies in pig production**
F. Pelletier, S. Godbout, S.P. Lemay et al. (Canada)
17:00 101057 **Evaluating the performance of vegetative treatment systems on open beef feedlots in the Midwestern United States**
B. J. Bond, R. T. Burns, C. Henry et al. (United States)

Wednesday, June 16 – 8:15 to 10:00

94 Section II Simulation of Aerosol, Gas and Emission

Time Paper # Moderator: Bjarne Bjerg (Denmark) Room: 204A
8:15 **Session Opening**
8:20 100430 **Performance simulation of high volume low speed fans in a free stall barn**
W. Yan, D. Barker, Y. Sun, Y. Zhang et al. (United States)
8:40 100548 **A simulation model to predict the internal climatic conditions in livestock houses as a tool for improving the building design and management**
P. Liberati, P. Zappavigna (Italy)
9:00 100870 **CFD modeling of livestock odor dispersion on complex topography**
S.-H. Kwon, S.-W. Hong, I.-B. Lee et al. (Korea)
9:20 100888 **Aerodynamic analysis of air pollutants in pig farms using CFD technology**
J.-S. Choi, I.-B. Lee, S.-W. Hong et al. (Korea)
9:40 100908 **Methodology of analyzing ventilation efficiencies based on "age of air" theory using CFD technology**
K.-S. Kwon, I.-B. Lee, H.-S. Hwang et al. (Korea/Philippines)

Wednesday, June 16 – 8:15 to 10:00

95	Section II	Reduction of Ammonia and Odour Emission (II)
Time	Paper #	Moderator: Larry Dean Jacobson (USA) Room: 205B
8:15		Session Opening
8:20	101163	Ammonia reduction and maintenance costs for old air cleaning systems and slurry acidification systems M. Lyngbye (Denmark)
8:40	101260	Biofilter combined with a biotrickling filter and a chemical air scrubber A.L. Riis (Denmark)
9:00	101262	Reducing odour and ammonia emission by cooling inlet air in a farrowing facility A.L. Riis, T.L. Jensen, P. Pedersen (Denmark)
9:20	101416	Reduction of odour emissions from swine buildings: Comparison of three reduction techniques S. Godbout, L. Hamelin, S.P. Lemay et al. (Canada/Denmark)
9:40	101640	A sequential wet scrubber using re-circulated and biological processed water for purification of discharge air from pig houses P. Kai, H. Takai, P.J. Dahl et al. (Denmark/Japan)

Wednesday, June 16 – 10:15 to 12:00

110	Section II	Field Measurements for Aerosol and Gas
Time	Paper #	Moderator: Sven Nimmermark (Sweden) Room: 204A
10:15		Session Opening
10:20	100659	Broiler gas spatial variability on different minimum ventilation systems D.J. Moura, T.M.R. Carvalho, Z.M. Souza et al. (Brazil)
10:40	100942	Dust and ammonia emissions from UK poultry houses T. Demmers, A. Saponja, R. Thomas et al. (UK)
11:00	101015	Ammonia emissions from broiler housing facility: Influence of litter properties and ventilation M. Knížatová, Š. Mihina, J. Brouček et al. (Slovakia)
11:20	101211	Measuring emissions from a naturally ventilated turkey grow-out building L.D. Jacobson, B.P. Hetchler, S.L. Noll (United States)
11:40	101135	Assessing odour plumes surrounding swine operations Q. Zhang, X. Zhang (Canada)

Wednesday, June 16 – 10:15 to 12:00

111	Section II	Building Design and Materials
Time	Paper #	Moderator: Yves Choinière (Canada) Room: 205B
10:15		Session Opening
10:20	100462	Minimum distance separation (MDS) formulae: 40 years (1970-2010) - Successes and lessons learned H. W. Fraser, J. Turvey (Canada)
10:40	100615	Sustainable building with concrete: how long do containers last? J.-G. Krentler (Germany)
11:00	100628	Usage of concrete for farm buildings and manure storages; specifications, durability and practical considerations Y. Choinière (Canada)
11:20	100936	An instrument for measuring the skid resistance of floors in livestock housing P. Liberati, P. Zappavigna (Italy)
11:40	101469	Treatment of dairy soiled water using a woodchip filter E. Ruane, P.N.C. Murphy, E. Clifford et al. (Ireland)

Wednesday, June 16 – 13:35 to 15:20

124	Section II	Methods to Quantify Aerosol, Gas and Emissions
Time	Paper #	Moderator: Anders Feilberg (Denmark) Room: 204A
13:35		Session Opening
13:40	100401	The influence of animal activity and litter on carbon dioxide balances to determine ventilation flow in broiler production S. Calvet, M. Cambra-López, F. Estellés et al. (Spain/Germ.)

14:00	101079	Effects of air exchange, temperature and slurry management on odorant emissions from pig production units and slurry tanks studied by proton-transfer-reaction mass spectrometry (PTR-MS) A. Feilberg, A.P.S. Adamsen, D. Liu et al. (Denmark)
14:20	101523	Identification of key odour components from pig buildings for modelling purposes M. Martel, S.P. Lemay, M. Belzile et al. (Canada)
14:40	100932	Use of carbon dioxide balances to determine ventilation rates from fattening rabbits farms F. Estellés, O. Blumetto, S. Calvet et al. (Spain/Uruguay)
15:00	-	Open discussion - Aerosol, gas and odor emission Larry Dean Jacobson (USA)

Wednesday, June 16 – 13:35 to 15:20

125	Section II	Grain Storage Issues
Time	Paper #	Moderator: Thomas Banhazi (Australia) Room: 205B
13:35		Session Opening
13:40	100685	Rough rice storage below freezing point by using renewable energy from fresh chilly air in winter S. Kawamura, K. Takekura (Japan)
14:00	100864	Low-temperature brown rice storage by using renewable energy from snow S. Fujikawa, S. Kawamura, H. Fujita et al. (Japan)
14:20	100899	Equipment for dust reduction in grain handling: evaluation of dust and chaff extractor and aspirator Q. Geng, G. Lundin (Sweden)

Abstract only	101373	Anaerobic co-fermentation process using the swine manure with organic byproduct In Hwan Oh, W.G. Kim (Korea)
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SECTION II-B Aquacultural Engineering

Tuesday, June 15 – 10:15 to 12:00

52	Section II-B	Aquaculture Systems
Time	Paper #	Moderator: Ed Aneshansley (USA) Room: 205A
10:15		Session Opening
10:20	101364	Wolffishes, ideal species for intensive aquaculture: Rearing density and welfare assessment N.R. Le François, S. Tremblay-Bourgeois, T. Benfey et al. (Canada/Iceland)
10:40	101356	A fully integrated marine environmental aquaculture recirculation system (MEARS™) in conjunction with the environmental recirculation of waste R.J. Bishop (United States)
11:00	100995	Modelling baffles in water aquaculture ponds E. Bresci, A. Giacomini, M. Falciari et al. (Italy)
11:20	100662	Intensive culture of Amur sturgeon (Acipenser schrenckii) fingerlings in a recirculating aquaculture system C. Guangbin, H. Shicheng, J. Shuyi et al. (China)
11:40	101477	Inshore recirculating system for the production of marine finfish Z.T.J. Pfeiffer, P.S. Wills (United States)

Tuesday, June 15 – 13:35 to 15:20

67	Section II-B	Monitoring and Technology for Aquaculture
Time	Paper #	Moderator: Ed Aneshansley (USA) Room: 205A
13:35		Session Opening
13:40	100303	The importance of fish neurohormonal response reared under recirculating water systems: a review S. E. Papoutsoglou (Greece)

LIST OF ABSTRACTS BY PARTICIPATING GROUP

14:00	101460	The "virtual-cage culture": Controlling and harvesting fish using behavioural conditioning B. Zion, A. Barki, Y. Grinshpon et al. (Israel)
14:20	101551	In vivo flatfish size and weight monitoring by image analysis E. Thiessen, E. Hartung (Germany)
14:40	101615	Effects of ozone and water exchange rates on water quality and rainbow trout, <i>Oncorhynchus mykiss</i>, performance in replicated water reuse aquaculture systems J. Davidson, S. Summerfelt, C. Good et al. (United States)
15:00	101056	Sustainable environmental management for tropical floating net cage mariculture, a modelling approach S. A. Van Der Wulp, K. R. Niederndorfer, K-J Hesse et al. (Germany/Indonesia)

Tuesday, June 15 – 15:35 to 17:20

81 Section II-B Aquaculture – POSTERS

Poster #	Paper #	Moderator: Eiko Thiessen (Germany) Room: 2000D
66	100955	Aquaculture in greenhouse M.C.G. Quiles, G. L. Diaz, M.C.M. Rodriguez (Spain)
67	101054	An innovative colorimetric calibration method used to quantify differences among wild and reared gilthead seabream (<i>Sparus Aurata</i>, Linnaeus 1758) C. Costa, F. Antonucci, F. Pallottino et al. (Italy)
68	101592	Québec driven pilot-scale cultivation of spotted wolffish (<i>Anarhichas minor</i>) N.R. Le François, F. Dufresne, D. Chabot et al. (Canada)
69	101657	Monitoring and modeling phosphorus contributions in a freshwater lake with cage-aquaculture J.E. Milne, R.D. Moccia (Canada)

SECTION III Equipment Engineering for Plants

Monday, June 14 – 10:15 to 12:00

8	Section III Soil Tillage Equipment and Analysis (I)	
Time	Paper #	Moderator: Carol Plouffe (USA) Room: 203
10:15		Session Opening
10:20	100536	Soil failure mode in front of a multiple– tip horizontally-operated penetrometer affected by depth/width ratio of its tip and shank A. Hemmat, A. Khorsandi, V. Shafaie (Iran)
10:40	100613	Soil bin investigations of the effects of tillage tool width on draught and soil disturbance parameters in sandy clay loam soil S.I. Manuwa, O. C. Ademosu, L.A.S. Agbetoye et al. (Nigeria)
11:00	100791	Comparison of cleaning performance for row cleaners on a strip tillage implement R.C. Roberge, T.G. Crowe, M. Roberge (Canada)
11:20	100975	Reducing friction by ultrasonic vibration exemplified by tillage R. Kattenstroth, H.– H. Harms, W. Wurpts et al. (Germany)
11:40	101409	Effect of long term crop rotation and fertilization on moldboard plow draft in a clay– loam soil N.B. McLaughlin, C.F. Drury, W.D. Reynolds et al. (Canada)

Monday, June 14 – 10:15 to 12:00

9	Section III Precision Agriculture and Monitoring	
Time	Paper #	Moderator: Qamar Zaman (Canada) Room: 205A
10:15		Session Opening
10:20	101306	How to integrate multi– sensor data for precision agriculture A. Castrignanò, M.T.F. Wong, D. de Benedetto et al. (Italy/Australia)

10:40	100378	Evaluation of a variable rate liquid fertilizer for site specific application A. Javadi, B. B. Mackvandi (Iran)
11:00	101105	Assessment of real time variable application of nitrogen using remote sensing sensors: perspectives in Slovakia V. Rataj, J. Galambošová, M. Ingeli et al. (Slovakia)
11:20	101007	Comparison of tractor-rotary tiller combination and power tiller in terms of energy expenditure of operators B. Eminoglu, A. Beyaz, O. Orel et al. (Turkey)
11:40	100500	Measurement of dilation of root crops M. Shimazu, Y. Shibata, H. Araki et al. (Japan)

Monday, June 14 – 13:35 to 15:20

22	Section III Soil Tillage Equipment and Analysis (II)	
Time	Paper #	Moderator: Carol Plouffe (USA) Room: 203
13:35		Session Opening
13:40	101350	Application of discrete element method (DEM) simulations as a tool for predicting tillage tool wear L. Graff, M. Roberge, T. Crowe (Canada)
14:00	101375	DEM analysis of the soil-tool (sweep) interaction K. Tamás, I.J. Jóri (Hungary)
14:20	101414	Tillage and planting energies for corn production under three tillage systems on a clay-loam soil N.B. McLaughlin, C.F. Drury, W.D. Reynolds et al. (Canada)
14:40	101143	Development of below-floor level soil bin system for soil tillage dynamics research at the Federal University of Technology Akure, Nigeria L.A.S. Agbetoye, S.I. Manuwa et al. (Nigeria)
15:00	100514	Tillage effects on soil and production management for winter wheat in southwest Turkey Z. B. Barut, S. Aykanat, M. M. Turgut (Turkey)

Monday, June 14 – 13:35 to 15:20

23	Section III Cutting and Threshing Mechanisms	
Time	Paper #	Moderator: Martin Roberge (Canada) Room: 205A
13:35		Session Opening
13:40	100897	Development of a water catcher for high pressure water jet cutting of agricultural goods D. Juenemann, H.-H. Harms (Germany)
14:00	101031	Qualitative and quantitative aspects on field drying of sorghum and evaluating the mower conditioner prototype devised by Cra-Ing - Cressoni L. Pari, A. Assirelli, A. Suardi (Italy)
14:20	100851	Effect of various operational and design parameters on the performance of a rotary feeding and cutting system E. Veikle, M. Roberge, V. Meda (Canada)
14:40	101122	Effects of some cutting blade and plant factors on specific cutting energy of sugarcane stalk J. Razavi, M. Kardany, A. Masoumi (Iran)
15:00	100316	Comparative analysis of the threshing cylinders performance on sorghum K. J. Simonyan, I. S. Dunmade (Nigeria/Canada)

Monday, June 14 – 13:35 to 15:20

24	Section III Field Equipment – POSTERS	
Poster #	Paper #	Moderator: Roger Thériault (Canada) Room: 2000D
23	101428	Velocity of conveyed seeds in an inclined transition tube P. Binsirawanich, S. Noble (Canada)
24	101349	Modeling of soil flow for tillage tools, seeders and planters M. Roberge (Canada)
25	101355	Modeling of crop flow in combine chopper and spreader M. Roberge, J. Benes, H. Isaac (Canada/United States)
26	100239	Influential parameters for designing and power consumption calculating of cumin mower E. Mahmoodi, A. Jafari, S. Rafiee (Iran)

27	101362	Mechanically-aided harvesting of artichoke with an electrically propelled prototype R. Tomasone, M. Pagano, C. Cedrola et al. (Italy)
28	100999	An innovative apparatus provided with a cutting auger for producing short logs for biomass energy from fast-growing tree species G. Colorio, R. Tomasone, C. Cedrola et al. (Italy)
29	100240	Design and manufacturing of a new and simple mechanism for transmission of power between crossover shafts up to 135 degrees M. Yaghoubi, S. Saeid Mohtasebi, A. Jafari et al. (Iran)
30	100034	The design and experimental study of a testing stand for pneumatic seed metering device Z. Manquan, L. Wenzhong, W. Wenming et al. (China)
31	100796	Design and development of a cutter and feeder mechanism for a chick pea harvester H. Mostafavand, S. Kamgar (Iran)

Monday, June 14 – 15:35 to 17:00

38	Section III	Crop Management
Time	Paper #	Moderator: Hubert Landry (Canada) Room: 203
15:35		Session Opening
15:40	100476	Best management practices for operating wind machines for minimizing cold injury in Ontario H. W. Fraser, K. Slingerland, K. Ker (Canada)
16:00	100891	Review of technological advances and technological needs in ecological agriculture (organic farming) H. Chaoui, C. G. Sørensen (Canada/Denmark)
16:20	101106	Controlled traffic farming and minimum tillage: Results of initial experiments and a layout of a long term experiment J. Galambošová, V. Rataj, M. Macák et al. (Slovakia)
16:40	101284	Harvesting canbus data to improve soil compaction management N. Dubuc, V. Raghavan, R. Recker (Canada/USA)

Monday, June 14 – 15:35 to 17:00

39	Section III	Sensors and Measurement
Time	Paper #	Moderator: Noboru Noguchi (Japan) Room: 205A
15:35		Session Opening
15:40	100043	Monitoring of grain quality and segregation of grain according to protein concentration threshold level on an operating combine harvester H. Risius, J. Hahn, H. Korte (Germany)
16:00	100344	Field evaluation and comparison of two silage corn mass flow rate sensors developed for yield monitoring M. Loghavi, M. M. Maharlouie, S. Kamgar (Iran)
16:20	101188	The development of a standard test method for measuring the evenness of flow off meter rollers J. Gervais, S. Noble (Canada)
16:40	101060	A device for extracting 3D information of fertilizer trajectories B. Hijazi, J. Baert, F. Cointault et al. (France)

Tuesday, June 15 – 10:15 to 12:00

53	Section III	Crop Protection and Weed Control (I)
Time	Paper #	Moderator: Bernard Panneton (Canada) Room: 203
10:15		Session Opening
10:20	100076	Liquid distribution of air induction and off-center spray nozzle used to apply agrochemicals in special condition R. G. Viana, J. R. Rosell, L. R. Ferreira et al. (Brazil/Spain)
10:40	101144	Characterizing ambient and spray mixture effects on droplet size represented by water sensitive paper (WSP) S.J. Thomson, M.E. Lyn (United States)
11:00	100931	Development of on-site emulsifying device for production of cooking-oil-based pesticides G.-M. Samuel, M. Amos, E. Yigal et al. (Israel)

11:20	100755	Electronic canopy characterization and real-time variable rate dosing for crop protection in precision fructiculture: Efficiency increase and drift reduction A. Escolà, R. Sanz, J.R. Rosell et al. (Spain)
11:40	100673	The effect of fan frequency on the droplet spraying swath of air blast sprayer S. Song (China)

Tuesday, June 15 – 13:35 to 15:20

68	Section III	Crop Protection and Weed Control (II)
Time	Paper #	Moderator: Cristiano Baldoin (Italy) Room: 203
13:35		Session Opening
13:40	100785	UV-induced fluorescence for discriminating weeds from maize B. Panneton, S. Guillaume, G. Samson et al. (Canada/France)
14:00	100473	Technical approach for row crop seeding in square to improve mechanical weed control efficiency P. S. Lammers, H. Kam, O. Schmittmann (Germany)
14:20	100794	Development of a machine vision system for weed mapping M. C. Da Silva Júnior, F. D. A. De Carvalho Pinto, G. R. Ruiz et al. (Brazil/Spain)
14:40	101091	Innovative strategies for physical weed control on hard surfaces in Central Italy: Results achieved in two different cities A. Peruzzi, L. Lulli, M. Fontanelli et al. (Italy)
15:00	100427	Weed control by water steam using a self-propelled machine equipped with a condensation chamber C. Baldoin, I. Sartorato, D. Friso et al. (Italy)

Tuesday, June 15 – 13:35 to 15:20

69	Section III	Sensors and Precision Agriculture – POSTERS
Poster #	Paper #	Moderator: Noboru Noguchi (Japan) Room: 2000D
42	100428	Mapping of soil variability for increasing precision with managed drought stress phenotyping G. Romano, W. Spreer, J. Cairns et al. (Germany/Mexico)
43	101136	Management zone definition for coffee production system by using soil apparent electrical conductivity D.S.M. Valente, D.M. de Queiroz et al. (Brazil)
44	101419	Remote sensor networks for protected chrysanthemum production H.K. Noh, S.O. Chung (Republic Of Korea)
45	101147	Development of a new system for measuring the coefficient of dynamic friction of agricultural crops J. Razavi, E. Bagvand, A. Hemmat (Iran)
46	101150	Coefficient of restitution of sugarcane billets measurement using an instrumented pendulum system J. Razavi, E. Bagvand, A. Hemmat (Iran)
47	101397	Nitrogen estimation of oilseed rape using spad and Vis/NIR spectroscopy Y. Shao, Y. He (China)
48	100504	Effects of different tillage systems on some soil properties, crop yield and time/fuel consumption for sesame Z. B. Barut, M. M. Turgut, A. Özmerzi (Turkey)
49	101261	High voltage electric field effects on structure and biological characteristics of barley seeds J. Khazaei, E. Aliabadi, A.A. Shayegani (Iran)

Tuesday, June 15 – 15:35 to 17:20

82	Section III	Planting, Seeding and Crop Quality
Time	Paper #	Moderator: Neil McLaughlin (Canada) Room: 205A
15:35		Session Opening
15:40	101037	Design and evaluation of a jab planter J. Smithers, L. Lagrange, B. Fraser et al. (South Africa)
16:00	101142	Determination of forward speed effect on planting uniformity in a sugarcane billet planter J. Razavi, M. Namjoo (Iran)

LIST OF ABSTRACTS BY PARTICIPATING GROUP

- 16:20 101280 **Reducing the dispersion of seed coating particles containing neonicotinoids in maize seeding**
D. Pessina, D. Facchinetti (Italy)
- 16:40 100422 **The design and experimental study of a testing stand for pneumatic seed metering device**
W. Z. Liu (China)
- 17:00 101043 **Determination of crop quality with different types of sugar beet harvesters**
A. Beyaz, A. Colak, B. Eminoglu et al. (Turkey)

Tuesday, June 15 – 15:35 to 17:20

83 Section III Crop Protection and Weed Control (III)

- Time Paper # Moderator: Bernard Panneton (Canada)
Room: 203
Session Opening
- 15:35 100458 **Variable rate technology for herbicide application on railways**
U. R. Antuniassi, E. D. Velini, H. C. Nogueira et al. (Brazil)
- 16:00 100947 **An approach for pesticide loss estimation adapted to field crops in Mediterranean conditions**
H. Bahrouni, C. Sinfrot, E. Hamza (Tunisia/France)
- 16:20 100295 **Spot-application of pesticide using variable rate sprayer in wild blueberry**
Q. U. Zaman, A. W. Schumann et al. (Canada/USA)
- 16:40 100077 **Evaluation of backpack sprayers in the herbicide application in a Brazilian forest**
R. G. Viana, M. S. Machado, L. R. Ferreira et al. (Brazil)
- 17:00 100789 **Weed cover on and between corn rows implications for real-time weed detection**
L. Longchamps, B. Panneton, M.-J. Simard et al. (Canada)

Wednesday, June 16 – 8:15 to 10:00

97 Section III Harvest of Fruits and Seeds

- Time Paper # Moderator: Roger Chagnon (Canada)
Room: 203
Session Opening
- 8:15 100348 **The effects of shaking frequency and amplitude on detachment of Estahban dried fig (Ficus carica cv. Sabz)**
M. Loghavi, F. Khorsandi, S. Kamgar et al. (Iran)
- 8:40 100465 **Efficient harvesting of haskap berries in Japan**
L. Fu, H. Okamoto, Y. Hoshino et al. (Japan)
- 9:00 100714 **Determination of the damping coefficient of coffee branches using image processing techniques**
D. M. De Queiroz, G. P. Villibor, F. De A. C. Pinto et al. (Brazil)
- 9:20 101499 **Red apple juice – development of a new, innovative product**
R.H.P. Scheyer, H.-P. Schwarz, P. Braun (Germany)

Wednesday, June 16 – 10:15 to 12:00

112 Section III Harvest of Biomass (I)

- Time Paper # Moderator: Mark Lefsrud (Canada)
Room: 203
Session Opening
- 10:15 101026 **Quality of wooden chips produced by Claas Jaguar fitted with experimental CRA-ING rotor**
L. Pari, V. Civitarese, A. Del Giudice (Italy)
- 10:40 101656 **Anderson introduces a new biomass baler**
L. D'Amour, F. Lavoie (Canada)
- 11:00 100100 **Spring harvest of corn stover**
P.-L. Lizotte, P. Savoie (Canada)
- 11:20 100515 **Machinery management data for willow harvest with a Bio-baler**
P. Savoie, P. L. Hébert, F.-S. Robert (Canada)
- 11:40 100516 **Harvest of woody crops with a bio-baler in eight different environments in Minnesota**
D. Current, P. Savoie, P.L. Hébert et al. (United States/Canada)

Wednesday, June 16 – 10:15 to 12:00

113 Section III Crop Management and Protection – POSTERS

- Poster # Paper # Moderator: John K. Schueller (USA)
Room: 2000D
- 30 100799 **Comparison of energy requirements of traditional and conservative soil tillage for maize cultivation in central Italy**
R. Fanigliulo, C. Cervellini, G. Brannetti et al. (Italy)
- 31 100577 **Development of peach harvesting end-effector with function for estimation of degree of ripeness**
K. Kito, W.X. Lun, H. Goto (Japan)
- 32 100620 **Using artificial neural networks for discrimination the corn plants from the weeds**
S. Kiani, A. Jafari, Z. Azimifar (Iran)
- 33 100650 **Design of a mechanical release system of *Perillus bioculatus* to control the Colorado potato beetle, *Leptinotarsa decemlineata* (SAY)**
S. De Laurantaye, M. Khelifi (Canada)
- 34 100726 **Thermal control of hazelnut suckers**
R. Tomasone, G. Colorio, C. Cedrola et al. (Italy)
- 35 101089 **Mechanical control of quackgrass in grassland**
R. Khorchani, M. Khelifi, M. Bournival (Canada)
- 36 101390 **Test bench for mechanical distribution of predators to control insect pests**
M. Khelifi, F. Paré, Y. De Laurantaye (Canada)
- 37 100535 **Automatic weed control system for processing tomatoes**
D.C. Slaughter, M. Pérez, C. Gliever et al. (USA/Spain)
- 38 101083 **Innovative strategies and machines for physical weed control in vegetable crops in central and southern Italy**
A. Peruzzi, M. Fontanelli, C. Frascioni et al. (Italy)
- 39 101088 **Innovative strategies for physical weed control on hard surfaces in urban area in central Italy: Development of new flaming operative machines**
A. Peruzzi, L. Lulli, M. Fontanelli et al. (Italy)
- 40 100944 **Effects of the machine wheel load on grass yield**
O. Green, R. N. Jørgensen, K. Kristensen et al. (Denmark)
- 41 100961 **Development of a distribution system for measuring nozzle integrative parameter**
X. Xue, J. Liang, P. Liu et al. (China/United States)
- 42 101336 **The effect of fan frequency on the droplet spraying swath of air-aided sprayer**
S. Song, T. Hong, D. Sun et al. (China)

Wednesday, June 16 – 13:35 to 15:20

126 Section III Harvest of Biomass (II)

- Time Paper # Moderator: Mark Lefsrud (Canada)
Room: 203
Session Opening
- 13:35 100098 **Corn stover fractions as a function of hybrid, maturity, site and year**
P.-L. Lizotte, P. Savoie, M. Lefsrud (Canada)
- 14:00 101005 **Simultaneous harvesting of straw and chaff for energy purposes - influence on bale density, yield, field drying process and combustion characteristics**
G. Lundin, M. Rönnbäck (Sweden)
- 14:20 101024 **Evaluation of chips quality by the analysis of two different harvesting methodologies**
L. Pari, V. Civitarese, A. Del Giudice (Italy)
- 14:40 100767 **Simulation of hemp fibre bundle and cores using discrete element method**
M. A.-A. Sadek, Y. Chen, C. Laguë et al. (Canada)
- 15:00 100981 **Economic production and processing of agricultural fibre plants for high quality applications in automotive, building and furniture industry**
R. Pecenka, C. Füll, H.-J. Gusovius (Germany)

Wednesday, June 16 – 13:35 to 15:20

127	Section III	Design and Modeling
Time	Paper #	Moderator: Claude Laguë (Canada) Room: 205A
13:35		Session Opening
13:40	100238	Dynamic analysis of a tractor engine crankshaft in knocking phenomenon E. Mahmoodi, A. Jafari, S. Rafiee (Iran)
14:00	100768	Decortication of hemp (<i>Cannabis sativa</i>) fibers using drop weight impact: Fiber yield and properties Md. M. R. Khan, Y. Chen, C. Laguë et al. (Canada)
14:20	100769	Theoretical analysis of energy requirement for hemp decorticators J. Xu, Y. Chen, C. Laguë et al. (Canada)
14:40	101065	Aerodynamic properties of hemp fibre and core S. Parvin, Y. Chen, C. Laguë et al. (Canada)
15:00	100266	Development of a system for pattern operations M. Gebben, G. Kormann (Germany)

Abstract only	100240	Design and manufacture of a new and simple mechanism for transmission of power between crossover shafts up to 135 degrees for farm machinery M. Yaghoubi, S.S. Mohtasebi, A. Jafari, H. Khaleghi (Iran)
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SECTION IV Energy in Agriculture

Monday, June 14 – 10:15 to 12:00

10	Section IV	Analysis of Biogas Production
Time	Paper #	Moderator: Jay Martin (USA) Room: 2102B
10:15		Session Opening
10:20	100688	Life cycle assessment of agricultural biogas production systems J. Lansche, J. Müller (Germany)
10:40	101095	Anaerobic digestion and related best management practices: Utilizing life cycle assessment M.Z. Venczel, S.E. Powers (United States)
11:00	101515	Positioning anaerobic digestion systems in the swine sector in Québec: A technical and economic study M.-A. Ricard, C.B. Laflamme, C. Charest et al. (Canada/France)
11:20	101132	Biogas production from separated slurry as a slurry management strategy: A consequential life cycle assessment L. Hamelin, M. Wesnæs, H. Wenzel et al. (Denmark)
11:40	101633	Techno-economic assessment of anaerobic digestion systems for agri-food wastes A. Lau, S. Baldwin, M. Wang (Canada)

Monday, June 14 – 13:35 to 15:20

25	Section IV	Design Issues for Biogas Production
Time	Paper #	Moderator: Zoltán Sibalszky (Hungary) Room: 2102B
13:35		Session Opening
13:40	100658	Optimization and control of a novel upflow anaerobic solid-state (UASS) reactor J. Mumme, B. Linke, R. Tölle (Germany)
14:00	100724	Drying characteristics and nitrogen loss of biogas digestate during drying process C. Maurer, J. Müller (Germany)
14:20	101041	Biodrying of animal slaughterhouse residues and heat production Yves Bernard (Canada)
14:40	101578	Transforming anaerobic digestion with the 'Model T' of digesters J.F. Martin, R. Ciotola, J. Castano et al. (United States)
15:00	101311	Bioreactors E. Jamaledine (Canada)

Monday, June 14 – 15:35 to 17:00

40	Section IV	Management and Biogas Production (joint with AEES*)
Time	Paper #	Moderator: Frédéric Pelletier (Canada) Room: 2102B
15:35		Session Opening
15:40	101387*	Microbial community analysis of ambient temperature anaerobic digesters R. Ciotola (United States)
16:00	101597*	Gas production analysis of a fixed-dome digester operated under temperate climates in central Ohio J. Castano, J. Martin, R. Ciotola et al. (United States)
16:20	101113	Impact of harvesting time on ultimate methane yield of switchgrass grown in Eastern Canada Y. Gilbert, D. Massé, P. Savoie et al. (Canada)
16:40	101052	Farm-scale anaerobic digestion of beef and dairy cattle manure for energy cogeneration at two farms in Canada N. Patni, C. Monreal, X. Li et al. (Canada)

Tuesday, June 15 – 10:15 to 12:00

54	Section IV	Biofuels
Time	Paper #	Moderator: Guillaume Pilon (Canada) Room: 2102B
10:15		Session Opening
10:20	100337	Potentials of biofuels A. Munack, J. Krahl, O. Schröder et al. (Germany)
10:40	100880	Numerical investigation of a bubble-column photo-bioreactor design for biodiesel production from microalgae I.-H. Seo, I.-B. Lee, H.-S. Hwang et al. (Korea)
11:00	101073	Energy and CO₂ eq analysis of the agricultural phase in the sunflower biodiesel chain P. Pugnolo, R. Dainelli, L. D'Avino et al. (Italy)
11:20	101214	Energy analysis of biochemical conversion processes of biomass to bioethanol M.D. Bakari, M. Ngadi, T. Berghthorson (Canada)
11:40	101283	Cultivation and utilization of specific wood biomass for synthesis of cellulose based bioethanol L. Fara, C. Cincu, G. Hubca et al. (Romania)

Tuesday, June 15 – 13:35 to 15:20

70	Section IV	Combustion and GHG
Time	Paper #	Moderator: Amit Kumar (Canada) Room: 2102B
13:35		Session Opening
13:40	100457	A review of standards related to biomass combustion J. Villeneuve, P. Savoie (Canada)
14:00	100459	Handling of corn stover bales for combustion in small and large furnaces R. Morissette, P. Savoie, J. Villeneuve (Canada)
14:20	100804	Power from triticale straw M. Dassanayake, A. Kumar (Canada)
14:40	100941	Greenhouse gas mitigation potential of short-rotation-coppice based generation of electricity in Germany A. Hansen, A. M.-A., J. Kern et al. (Germany)
15:00	100434	Energy and greenhouse gas emissions of Australian cotton: from field to fabric B. G. Khabbaz, G. Chen, C. Baillie (Australia)

Tuesday, June 15 – 15:35 to 17:20

84	Section IV	Biochar and Energy
Time	Paper #	Moderator: Axel Munack (Germany) Room: 2102B
15:35		Session Opening
15:40	100296	Utilization of residual biochar produced from the pyrolysis of energy crops for soil enrichment G. Pilon, J.-M. Lavoie (Canada)
16:00	100429	Material and operating variables affecting the physical quality of biomass briquettes Y. Song, J. S. Tumuluru, K. L. Iroba et al. (China/Canada)
16:20	100827	Biochar production for carbon sequestration J. Thakkar, A. Kumar (Canada)

LIST OF ABSTRACTS BY PARTICIPATING GROUP

- 16:40 101374 **Vacuum pyrolysis of swine manure: Biochar production and characteristics**
M. Verma, S. Godbout, J.P. Larouche et al. (Canada)
- 17:00 101421 **Characteristics of paddy operations with biodiesel fuelled tractor**
Y. Kim, S.H. Park, C. K. Kim et al. (Republic Of Korea)

Wednesday, June 16 – 8:15 to 10:00

- 98 Section IV Renewable Energy and Assessment**
Time Paper # Moderator: Guangnan Chen (Australia)
Room: 2102B
Session Opening
- 8:15 101116 **Investigating design criteria to build a performing microbial fuel cell running on swine liquid manure**
D.Y. Martin, R. Hogue, P. Dubé et al. (Canada)
- 8:40 101564 **Continuous fermentative hydrogen production in different process conditions**
N. Nasirian, M. Almassi, S. Minaee et al. (Iran/Germany)
- 9:00 101636 **Centrifugal potential energy: An astounding renewable energy concept**
I.A. Oduniji (Nigeria)
- 9:20 100776 **Evaluation of an earth heat storage system in a solar energy greenhouse**
Q. Zhang, J. Langrell, R. Boris (Canada)
- 9:40 100435 **Energy usage for cotton ginning in Australia**
S.A. Ismail, G. Chen, C. Baillie et al. (Malaysia/Australia)

Wednesday, June 16 – 10:15 to 12:00

- 114 Section IV Biofuels and Biogas – POSTERS**
Poster # Paper # Moderator: Naveen Patni (Canada)
Room: 2000D
- 43 100404 **Different purification methods and quality of sunflower biodiesel**
A.L.M.T. Pighinelli, R.A. Ferrari, A.M.R.O Miguel et al. (Brazil)
- 44 100982 **Using pre-heated sunflower oil as fuel in a diesel cycle engine**
H. C. Delalibera, P. H. W. Neto, J. Martini (Brazil)
- 45 101467 **Production of microscopic algae for its consequent use as aviation fuel**
T. Maekawa, J. Jia, K. Intabon et al. (Japan)
- 46 100646 **Use of farm waste biomass in the process of gasification for energy production**
J. Piechocki (Poland)
- 47 100839 **Gasification of waste from furniture industries for generation of sustainable energy**
J. L. Oliveira, J. N. Silva, E. G. Pereira et al. (Brazil)
- 48 100492 **Development of a biogas purifier for rural areas in Japan**
Y. Kimura, S. Yasui, T. Hinata et al. (Japan)
- 49 101302 **Design of a 60MW CFB gasification system (CGAS) for Uganda- Utilising rice husks as input fuel**
F. Amanyire, D.B. Bagamuhunda (Uganda)

Wednesday, June 16 – 13:35 to 15:20

- 128 Section IV Biomass, Compost and Energy Assessment - POSTERS**
Poster # Paper # Moderator: Yannick de la Durantaye (Canada)
Room: 2000D
- 66 100447 **Preliminary investigation into the pressing process of sweet pearl millet and sweet sorghum biomass for ethanol production**
M. Crépeau, M. Khelifi, A. Vanasse (Canada)
- 67 100527 **Engineering developments for small-scale harvest, storage and combustion of woody crops in Canada**
P. Savoie, C. Ouellet-Plamondon, R. Morissette et al. (Canada)
- 68 100576 **Food and biomass production in small oil expression facilities**
H. Kato, G. Kanai, K. Yakushido (Japan)
- 69 101133 **Electrical energy use in different heating systems for early weaned piglets**
J. Sarubbi, L.A. Rossi, D.J. Moura et al. (Brazil)

- 70 100778 **Determination of pressure distribution in an aerated bed in a controlled pilot-scale compost reactor**
P. Solowiej (Poland)
- 71 100779 **Controlling the process of composting farm biomass with the use of fuzzy logic**
M. Neugebauer (Poland)
- 72 101186 **Efficiency of the heat pump cooperating with various heat sources in monovalent and bivalent systems**
S. Kurpaska, H. Latala (Poland)
- 73 101661 **Integration of PV modules in existing Romanian buildings from rural areas**
S. Fara, D. Finta, L. Fara et al. (Romania)
- 74 100987 **Experiences on the integration of thin film photovoltaic modules in a Mediterranean greenhouse**
R. Urefia, J. Pérez, M. Pérez et al. (Spain)
- 75 100991 **Energy use in legume cultivation over Turkey**
C. Ertekin, M. Canakci, R. Kulcu et al. (Turkey)

SECTION V

Management, Ergonomics and Systems Engineering

Monday, June 14 – 10:15 to 12:00

- 11 Section V Ergonomics and Agriculture – POSTERS**
Poster # Paper # Moderator: Katja Heitkämper (Switzerland)
Room: 2000D
- 9 100815 **“APR System”, a new design to increase workers safety in greenhouses maintenance operations**
A. Carreño, J. Perez, A. Callejon et al. (Spain)
- 10 101197 **Postural analysis and biomechanics of workers in poultry slaughterhouse**
C. da C.S. Carvalho, C. de F. Souza, I. de F.F. Tinôco et al. (Brazil)
- 11 101243 **The role of the web in the effective detection of serious and fatal tractor overturning accidents**
D. Pessina, D. Facchinetti (Italy)
- 12 100994 **Approach to heat stress management in the construction industry Mediterranean greenhouses**
J. Pérez, A. Carreño, A. J. Callejón et al. (Spain)

Monday, June 14 – 13:35 to 15:20

- 26 Section V Ergonomics and Safety**
Time Paper # Moderator: Ladislav Nozdrovicky (Slovakia)
Room: 2105
Session Opening
- 13:35 100263 **Ergonomic aspects of operation of IT systems in precision agriculture**
T. Juliszewski, M. Walczykova (Poland)
- 14:00 100312 **Work economics and ergonomics in dairy farming**
K. Heitkämper, M. Riegel, M. Schick (Switzerland)
- 14:20 101064 **A predictive model for the vibration risk evaluation in agricultural machinery use**
D. Pessina, V. Bonalume (Italy)
- 14:40 101482 **Definition of unambiguous criteria to evaluate tractor ROPS equivalence**
D. Pessina, D. Facchinetti, M. Belli (Italy)
- 15:00 101510 **Effectiveness of agricultural tractors cabs for protection against hazardous substances in accordance with EN 15695 part 1**
E. Cavallo (Italy)

Monday, June 14 – 15:35 to 17:00

- 41 Section V Technology for Improved Management – POSTERS**
Poster # Paper # Moderator: Remigio Berruto (Italy)
Room: 2000D
- 62 100948 **Power spectral analysis of agricultural field surfaces**
M. Cutini, C. Bisaglia, S. A. Bertinotti (Italy)
- 63 101086 **Radio frequency identification technologies for traceability of potted flowering plants**
C. Tortia, P. Barge, P. Gay et al. (Italy)

64	101038	First approach to correlate the tire contact area to traction force in the field E. Romano, M. Cutini, C. Bisaglia et al. (Italy)
65	100972	A new approach for in situ poultry carcasses disposal: A closed semi-continuous composter A. C. Guimaraes, M. S. Bascones, L. M. Navas Gracia et al. (Spain)
66	100498	Comparison of useful life of tractors by condition monitoring and breakdown maintenance in Iran H. M. Meighani, A. Mohammadi (Iran)
67	101549	Use of electronic devices in combine harvesters: A case study for Antalya Region in Turkey D. Yilmaz, M. Canakci, I. Akinci (Turkey)
68	100740	Power and energy requirements of agricultural machinery driven by tractor used on greenhouse vegetable production in Turkey M. Canakci, I. Akinci (Turkey)
69	100497	Investigating JD3140 tractor breakdowns and their reasons H. M. Meighani, A. Mohammadi, M. Raoufi (Iran)
70	100499	Design and manufacturing a new platform for rapeseed harvesting in Iran H. M. Meighani, A. H. Mohseni, S. Ebrahimi (Iran)

Tuesday, June 15 – 10:15 to 12:00

55	Section V	Human Workload in Agriculture
Time	Paper #	Moderator: Tadeusz Juliszewski (Poland) Room: 204B
10:15		Session Opening
10:20	100950	Using the CUELA system to study workload in agriculture M. Kauke, I. Hermanns, U. Hoehne-Hückstädt et al. (Switzerland/Germany)
10:40	100313	Workload assessment in agriculture – integration in a work budget system K. Heitkämper, M. Schick, R. Stark et al. (Switzerland)
11:00	100956	Analysis and assessment of workload in different types of milking parlours using the CUELA-System M. Kauke, U. Hoehne-Hückstädt, I. Hermanns et al. (Switzerland/Germany)
11:20	100946	Calculation and planning farm management tasks in pig and dairy farming C. Moriz (Switzerland)
11:40	101008	Development of an experimental system for agricultural work process measurement A. Bechar, A. Ronen (Israel)

Tuesday, June 15 – 13:35 to 15:20

71	Section V	Crop and Biomass Logistics (I)
Time	Paper #	Moderator: Elisabeth Quendler (Austria) Room: 204B
13:35		Session Opening
13:40	100962	Calculation of transportation energy for biomass collection G. Kanai, K. Takekura, H. Kato et al. (Japan)
14:00	100905	Agricultural fleet management: An operational research approach D. D. Bochtis, C. G. Sørensen (Denmark)
14:20	101347	Interfacing feedstock logistics with bioenergy conversion S. Sokhansanj (Canada)
14:40	100374	Energy expense by logistics within sugarcane's energy production chain -two case studies T.L. Romanelli, R. Berruto, P. Busato et al. (Brazil/Italy)
15:00	101018	Technological and organizational development potentialities for grain logistic in Germany H. Bernhardt, W. Lixfeld, D. Engelhardt (Germany)

Wednesday, June 16 – 8:15 to 10:00

99	Section V	Logistics and Knowledge Transfer
Time	Paper #	Moderator: Claus Gron Soerensen (Denmark) Room: 204B
8:15		Session Opening

8:20	101097	Online model predictive monitoring for controlling and optimizing the performance of agricultural production processes K. Mertens, B. De Ketelaere, J. De Baerdemaeker (Belgium)
8:40	100700	Tractor based services and related support policies in developing countries J. Kienzle, W. Hancox, J. Ashburner (Italy/UK)
9:00	100526	Dynamic role of reverse logistic cycle with in life cycle analysis for sustainability Z. Ali-Qureshi (Canada)
9:20	100315	Development of criteria and indicators for monitoring progress towards sustainable remediation I. S. Dunmade (Canada)
9:40	100471	Knowledge transfer model for agricultural engineering E. Quendle, J. Boxberger (Austria)

SECTION VI Postharvest Technology and Process Engineering

Monday, June 14 – 10:15 to 12:00

12	Section VI	Food Processing (I)
Time	Paper #	Moderator: Shujun Li (China) Room: 2104AB
10:15		Session Opening
10:20	100069	Development of model equations for selecting optimum parameters for dry process of shea butter extraction A. M. Olaniyan, K. Oje (Nigeria)
10:40	100336	Acrylamide mitigation in fried potato slices by using commercial asparaginase F. Pedreschi, K. Granby, J Risum (Chile/Denmark)
11:00	100630	Microwave-assisted separation of eggshell and membrane A. Hussain, S. Dev, Y. Garipey et al. (Canada)
11:20	101048	Prediction of lactic-bacteria growth in turkey ham processed by high hydrostatic pressure S.P. Mathias, A. Rosenthal, A. Gaspar et al. (Brazil/France)
11:40	100200	Combined effects of freezing and storage conditions on the staling of cooked rice S. F. Yu, Y. Ma, D. Tian et al. (China/Ireland)

Monday, June 14 – 10:15 to 12:00

13	Section VI	Nutraceuticals and Functional Foods (I)
Time	Paper #	Moderator: Valérie Orsat (Canada) Room: 2105
10:15		Session Opening
10:20	100555	Microwave extraction of myrtillin from blueberry W. Routray, V. Orsat (Canada)
10:40	100558	Radio frequency assisted extraction of nutraceutical compounds Y.M. Jusoh, V. Orsat, Y. Gariépy (Canada)
11:00	101304	Continuous and pulsed ultrasound-assisted extractions of antioxidants from pomegranate peel W. Qu, Z. Pan, H. Ma et al. (United States/China)
11:20	101320	Antioxidant enrichment of cranberry juice by electrodialysis with filtration membrane : Impact of process on juice composition L. Bazinet, S. Brianceau, Y. Desjardins (Canada)
11:40	100862	A novel technique for producing zanthoxylum oil particles based on supercritical CO₂ extraction and microencapsulation methods I. Chen (China)

Monday, June 14 – 13:35 to 15:20

27	Section VI	Food Processing (II)
Time	Paper #	Moderator: Alain Le-Bail (France) Room: 2104AB
13:35		Session Opening
13:40	101376	Migration of perfluorinated compounds from antistick coating to food products during cooking processes A. Le-Bail, B. Veyrand, S. Durand et al. (France)

LIST OF ABSTRACTS BY PARTICIPATING GROUP

- 14:00 101078 **Study the effect of two different edible coating on walnut kernel shelf life**
R. Bastani, M. Rahemi, N. Mafoonazad et al. (Iran/Canada)
- 14:20 101290 **Effect of microwave radiation on starch digestibility and physico-chemical properties of three barley types**
S. Emami, A. Perera, V. Meda et al. (Canada)
- 14:40 101344 **Mango (*Mangifera indica*) and ambarella (*Spondias cytherea*) peel extracted pectins improve viscoelastic properties of derived jams**
G. Kansci, B.B. Koubala, C. Garnier et al. (Cameroon/France)
- 15:00 101206 **Development and commercialization of emerging infrared radiation food processing technologies**
Z. Pan, G.G. Atungulu, G. Bingol et al. (United States)

Monday, June 14 – 13:35 to 15:20

28 Section VI Spectroscopy and Image Analysis – POSTERS

- Moderator: Da-Wen Sun (Ireland)
Room: 2000D
- 32 100967 **Testing of a NIR system for the optimization of stored apples management**
R. Beghi, E. Casiraghi, N. Sinelli et al. (Italy)
- 33 100601 **A novel computer vision system for specifically detecting rotten citrus**
J. Blasco-Ivars (Spain)
- 34 100602 **Analysis of the movement of fruits during mechanical harvesting with shakers using computer vision and a slow motion camera**
J. Blasco, A. Torregrosa, N. Aleixos et al. (Spain)
- 35 100631 **Determination of metals in organic pulp and juices by fluorescence X-ray**
G. A. Camargo (Brazil)
- 36 100917 **Investigation on fatty acid composition of Japanese black wagyu beef by ATR-FTIR spectroscopy and chemometric analysis**
X. Hu, K. Toyoda, M. Yamanoue, I. Ihara et al. (Japan)
- 37 100978 **Identification and classification of out of control measurements of a NIR spectrometer under industrial use for onion quality determination**
J. Ortiz-Cañavate, A. Moya-González, P. Barreiro (Spain)
- 38 101092 **Browning kinetics evaluation using image processing techniques**
L. Comba, P. Gay, P. Piccarolo et al. (Italy)
- 39 101134 **Application of hyperspectral imaging technique for determination of pork quality attributes**
D.F. Barbin, G. Elmasry, D.-W. Sun et al. (Ireland)
- 40 101148 **Use of hyperspectral imaging for the quality classification of cooked turkey hams**
A. Iqbal, G. Elmasry, D.-W. Sun et al. (Ireland)
- 41 101173 **Adjusted methodology for determining residence time by image analysis on a vibro-fluidized dryer**
R.A. De Oliveira, K.J. Park, B.S. Oliveira (Brazil)
- 42 101473 **Prediction of melon fruit firmness using Vis/NIR diffuse reflectance spectroscopy**
S.H. Yu, S.R. Suh, K.H. Lee et al. (Republic Of Korea)
- 43 101492 **Discrimination of lamb muscles by NIR hyperspectral imaging**
M. Kamruzzaman, G. Elmasry, D.-W. Sun et al. (Ireland)
- 44 100265 **Non-destructive measurement of SSC, pH, firmness and density of 'Dangshan' pear using FT-NIR spectrometry**
K. J. Chen, L. Yang, X. Sun (China)
- 45 100264 **Classification of pre-sliced ham images with quaternionic singular values using an adaptive multilayer perceptron**
N. A. Valous, D.-W. Sun (Ireland)

Monday, June 14 – 13:35 to 15:20

29 Section VI Food Properties (I) – POSTERS

- Moderator: Satyanarayan R.S. Dev (Canada)
Room: 2000D
- 46 100433 **Dimension characteristics evaluation of coffee berries during drying**
G.H.H. Oliveira, P.C. Corrêa, F.M. Botelho et al. (Brazil)
- 47 100493 **Thermal characteristics of gelatin extracted from emperor (shaari) skin: effects of acid concentration and temperature of extraction**
G. Al-Saidi, M. S. Rahman, A. Al-Alawi et al. (Oman)
- 48 100710 **Rheological characteristics of assai and passion fruit smoothies fortified with unripe banana pulp**
G. A. Camargo, J. Mieli, S. C. S. R. De Moura et al. (Brazil)
- 49 100733 **Water vapor permeability, contact angle and water solubility of zein biofilms**
J.F. Lopes-Filho, C.B. Almeida, L.L. Tavares et al. (Brazil)
- 50 101069 **Orange fruit rheometrical characterization using stress-relaxation tests**
F. Pallottino, M. Moresi, S. Giorgi et al. (Italy)
- 51 101109 **Analysis of thermodynamic properties of coffee berries during drying**
G.H.H. Oliveira, P.C. Corrêa, F.M. Botelho et al. (Brazil)
- 52 101111 **Monitoring of coagulation process of soymilk by an integrated electrical sensing and control system**
K. Toyoda, X. Li (Japan/China)
- 53 100618 **Modeling and statistical characterization of the size and mass distribution of raisin berries**
A. Arabhosseini, N. Karimi, M. H. Kianmehr et al. (Iran)

Monday, June 14 – 15:35 to 17:00

42 Section VI Food Processing (III)

- Moderator: Martin Mondor (Canada)
Room: 2104AB
- 15:35 **Session Opening**
- 15:40 100742 **Solvent recovery by membrane filtration from extract of raspberry marc**
Z. Molnár, K. Özdemir, E. Békássy-Molnár et al. (Hungary)
- 16:00 101303 **Applications of membrane technologies for today and tomorrow**
M. Mondor, F. Lamarche, D. Ippersiel et al. (Canada)
- 16:20 101205 **Fermenters with magnetic fields for agriculture. Technological and practical issues**
S.M.M. Diego, C.M. Manrique, F.S. Ricardo et al. (Cuba/Brazil)
- 16:40 101062 **Enhancement of extraction efficiency of citrus juice and sacs by twin oblique air jet moves in 3D space**
M. R. Mirian, J. Khazaei (Iran)

Monday, June 14 – 15:35 to 17:00

43 Section VI Nutraceuticals and Functional Foods (II)

- Moderator: Vijaya Raghavan (Canada)
Room: 2105
- 15:35 **Session Opening**
- 15:40 100694 **Using plant macromolecules to produce flavor microcapsules by spray-drying multilayered oil/water emulsions**
A. Gharsallaoui, O. Chambin, R. Saurel (France)
- 16:00 100781 **Microwave-assisted methodology for quantitative analysis of lignans in foods**
S. M. Nemes, V. Orsat, G. S. V. Raghavan (Canada)
- 16:20 101279 **Diversity of fruit origin by using 26S rDNA fingerprinting of yeast communities by PCR-DGGE: An application to shea tree fruits**
A.F. El Sheikha, J.-M. Bouvet, D. Montet (Egypt/France)
- 16:40 100612 **Aroma properties of selected local spices in Akwa Ibom State of Nigeria**
A. F. Alonge, E. U.U. Ituen et al. (Nigeria)

Monday, June 14 – 15:35 to 17:00

44	Section VI	Drying, Dehydration and Deactivation – POSTERS
Poster #	Paper #	Moderator: Sébastien Villeneuve (Canada) Room: 2000D
71	100267	Effect of different variables on microwave osmotic dehydration under spray mode (MWODS) of apple cylinder using response surface methodology E. Azarpazhooh, H. S. Ramaswamy (Canada)
72	101272	Effect of packaging and preservation methods on the qualitative and sensory characteristics of dehydrated Jujuba fruit E. Azarpazhooh, S. Nikkhal (Iran)
73	100965	Quality of the pulped cherry coffee subjected to continuous and intermittent drying J. N. Da Silva, S. Martin, S.M. Lopes Donzeles et al. (Brazil)
74	101103	Thin-layer drying behaviour of coffee berries A.L.D. Goneli, P.C. Corrêa, G.H.H. Oliveira et al. (Brazil)
75	101317	Effect of drying temperature on structure of pasta enriched with pea protein isolate S. Mercier, S. Villeneuve, L.-P. Des Marchais et al. (Canada)
76	101329	Experimental study of banana drying energy costs in a prototype electric drier A. Talla, Y. Jannot, G.E. Nkeng (Cameroon/France)
77	100463	Pulsed electric fields and microfiltration hurdle treatment for the implementation of microbial safety in milk M. Walkling-Ribeiro, O. Rodríguez-González et al. (Canada)
78	101209	Use of a novel in-package ozonation process for reducing Salmonella enteritidis on chicken meat J. Jensen, A. Donner, K.M. Keener (United States)
79	101316	Modelling and simulation of processes by smart sensing: A solar dryer for plant material E.C. Correa, B. Diezma, M. Ruiz-Altisent (Spain)
80	101029	Thin layer drying of sliced squash by forced convection C. Ertekin, O. Yaldiz (Turkey)
81	101658	Drying of dates in Oman using a solar tunnel dryer M.A. Basunia, H.H. Handali, M.I. Al-Balushi et al. (Oman)

Tuesday, June 15 – 10:15 to 12:00

56	Section VI	Food Processing (IV)
Time	Paper #	Moderator: Michael Ngadi (Canada) Room: 2104AB
10:15		Session Opening
10:20	101218	Effect of thermal pretreatment and batter composition on fat absorption in deep-fat fried batter N. Abdel-Nour, M. Ngadi, A.A. Adedeji (Canada)
10:40	101217	Modelisation of pulsed electric fields for tropical liquid food industrial processing A. Youmssi, G.J. Kayem, F. Sirois et al. (Canada)
11:00	101377	Impact of bread making process on quality parameters, nutrition, parameters and energy demand; key results from the EU-FRESHBAKE project A. Le-Bail (France)
11:20	101183	Shelf-life determination of “queso doble crema” by means of electronic nose D.P. Osorio, C.F. Novoa, L.-F. Gutiérrez (Colombia/Canada)
11:40	101343	Nutritional quality and lipid oxidation of plantain chips from small scale producers in Cameroon: Correlation with frying procedures G. Kansci, E. Fokou, J. Mekoue et al. (Cameroon/France)

Tuesday, June 15 – 10:15 to 12:00

57	Section VI	Food Properties (I)
Time	Paper #	Moderator: Cristina Ratti (Canada) Room: 2105
10:15		Session Opening
10:20	100242	Thermo-physical and textural properties of meat and carrot alginate particles fabricated for biological validation studies H. F. Hassan, H. S. Ramaswamy (Canada)

10:40	100482	Physico-chemical characteristics of wheat distiller's grains with solubles M. R. Mosqueda, L. G. Tabil (Canada)
11:00	100491	Quality assessment of microwave pasteurized in-shell eggs S.R.S. Dev, Y. Garipey, V. Orsat (Canada)
11:20	100522	Establishing moisture sorption isotherms of wild mushroom varieties using a dynamic vapor sorption method D. Argyropoulos, A. Rainer, J. Mueller (Germany)
11:40	100581	Prediction of total soluble solids and firmness of carrot based on carrot water content M. Rashidi, B.G. Khabbaz (Iran/Australia)

Tuesday, June 15 – 10:15 to 12:00

58	Section VI	Nutraceutical and Functional Foods – POSTERS
Poster #	Paper #	Moderator: Laurent Bazinet (Canada) Room: 2000D
8	100553	Enhancing the polyphenolic content of elderberries by pulsed ultraviolet treatments R. Murugesan, V. Orsat (Canada)
9	100557	Bioactive gouda cheese powders obtained by spray and freeze-drying H. Ben Abdelkader, C. Ratti (Canada)
10	100614	Microwave assisted drying of flax straw and fibre at controlled temperatures G. R. Nair, K. Eggie, Y. Gariépy et al. (Canada)
11	100819	Optimization of microwave assisted extraction of antioxidants from potato peel A. Singh, K. Sabally, S. Kubow et al. (Canada)
12	100828	Agave juice as an agent for probiotic encapsulation by spray drying C. Cortés-Arminio, A. López-Malo, E. Palou et al. (Mexico)
13	101120	Influence of conjugated linoleic acid (CLA) supplementation on probiotic bacteria viability and sensory properties of stirred yogurt M.R. Barón, R.D. Godoy-Silva, L.-F. Gutiérrez (Colombia)
14	101321	Effect of process unit operation and long term storage on ECG-enriched tea drink catechin stability L. Bazinet, M. Araya-Farias, A. Doyen et al. (Canada)
15	101108	Microencapsulation of fish oil into cross-linked whey protein matrix R. Safari, R. Kadkhodae, R. Valizadeh et al. (Iran)

Tuesday, June 15 – 13:35 to 15:20

72	Section VI	Drying and Dehydration (I)
Time	Paper #	Moderator: Paolo Menesatti (Italy) Room: 2104AB
13:35		Session Opening
13:40	100446	Dryer evaluation to optimize small-scale litchi processing in northern Thailand M. Precoppe, M. Nagle, S. Janjai et al. (Germany/Thailand)
14:00	100464	Drying characteristics and lysine content of wheat distillers grains with solubles under three drying methods M. R. P. Mosqueda, L. G. Tabil, jr (Canada)
14:20	100540	Reducing fossil energy consumption of a belt dryer by using biogas waste heat M. Böhner, P. Senckenberg, A. Heindl et al. (Germany)
14:40	100664	Shrinkage effect on moisture diffusivity calculation during superheated steam drying of distiller's spent grain M. Zielinska, S. Cenkowski (Canada)
15:00	100935	Evaluation of operative aspects of a heat pump to dry chestnuts R. Guidetti, M. Fiala, R. Beghi et al. (Italy)

Tuesday, June 15 – 13:35 to 15:20

73	Section VI	Food Properties (II)
Time	Paper #	Moderator: Damien de Halleux (Canada) Room: 2105
13:35		Session Opening

LIST OF ABSTRACTS BY PARTICIPATING GROUP

- 13:40 100665 **Shrinkage, density and porosity changes during superheated steam drying of distiller's spent grain**
M. Zielinska, S. Cenkowski (Canada)
- 14:00 100843 **Moisture-dependent color characteristics of walnuts**
R. Khir, Z. Pan, G. G. Atungulu et al. (USA/Egypt/China)
- 14:20 101536 **Sensory evaluation of standard hard cheese minas added with Brazil nut – a high antioxidant delicacy**
C. Pereira, C.A.P. Schmidt, R.Y. Ishihara et al. (Brazil)
- 14:40 100534 **Preliminary study on the preparation of a new flocculant and the application on treatment of potato starch wastewater**
X. An, L. Shujun, L. Yaling et al. (China)
- 15:00 100609 **Properties of coconut (*Cocos nucifera* L.) relevant to its dehusking**
A.F. Alonge, W.B. Adetunji (Nigeria)

Tuesday, June 15 – 15:35 to 17:20

- 86 Section VI Drying and Dehydration (II)**
Time Paper # Moderator: Michèle Marcotte (Canada) Room: 2104AB
- 15:35 **Session Opening**
- 15:40 100966 **Evaluation of coffee drying costs: Pre-drying on a concrete terrace and complementary drying in a concurrent and countercurrent flow dryer**
S. Martin, J. N. Da Silva, S. F. Soria Galvarro et al. (Brazil)
- 16:00 101172 **Reconditioning by filtration with earth diatomaceous and reusing the sucrose syrup for osmotic dehydration of peaches**
S.P.M. Germer, M.R. Queiroz, J.M. Aguirre et al. (Brazil)
- 16:20 101231 **Effects of microwave drying and cooking on the hardness and stickiness of red lentils**
A. Opoku, L. Tabil, V. Meda (Canada)
- 16:40 101498 **Skim milk cryoconcentration and assessment of its physico-chemical, thermal and functional properties**
M. Aider (Canada)
- 17:00 101030 **Study on the parameters of high pulsed electrical field on fruit and vegetable as pre-processing for the vacuum freeze-drying**
Y. Wu, Y. Guo (China)

Tuesday, June 15 – 15:35 to 17:20

- 87 Section VI Spectroscopy and Image Analysis (I)**
Time Paper # Moderator: Muhammad Shahin (Canada) Room: 2105
- 15:35 **Session Opening**
- 15:40 100280 **Laser light backscattering for monitoring changes in moisture content during drying of apples**
G. Romano, D. Argyropoulos, J. Müller (Germany)
- 16:00 100448 **Estimation of tomato nutritional status by Vis-NIR portable spectrophotometric system**
V. Ulissi, P. Benincasa, M. Guiducci et al. (Italy)
- 16:20 100437 **Estimation of egg weight by machine vision and neural networks techniques**
M. H. Raoufat, V. Asadi (Iran)

Tuesday, June 15 – 15:35 to 17:20

- 88 Section VI Post Harvest and Fresh Produce – POSTERS**
Poster # Paper # Moderator: Clément Vigneault (Canada) Room: 2000D
- 70 101232 **Effects of roasting temperatures and storage on the quality of red lentil**
A. Opoku, L. Tabil (Canada)
- 71 101233 **Storage and quality features of carrots and corn grown under organic and conventional agricultural practices**
A. Opoku, V. Meda, J. Wahab (Canada)
- 72 100580 **A simple method for measurement of Poisson's ratio for tissue of agricultural products**
Y. Ogawa, M. Matsuura, N. Yamamoto et al. (Japan)
- 73 100786 **Modeling of rough rice drying kinetics using artificial neural network**
M. Tohidi, M. Sadeghi, S. R. Mousavi (Iran)
- 74 100795 **Conceptualization design and evaluation of a hyperbaric respirometer**
B. Goyette, C. Vigneault, N. Wang et al. (Canada)

- 75 101115 **Texture evaluation affected by physical characteristics of carrots during storage**
P.C. Corrêa, L.R.L. Farinha, G.H.H. Oliveira et al. (Brazil)
- 76 101628 **Investigation of shelled corn drying in a microwave assisted fluidized bed dryer using artificial neural network**
A. Zomorodian, L. Momenzadeh, D. Mowla (Iran)
- 77 100826 **Intelligent control based on expert system for grain drying**
H. Zhu, W. Wu, Y. Lan et al. (China)

Wednesday, June 16 – 8:15 to 10:00

- 100 Section VI Post Harvest and Fresh Produce (I)**
Time Paper # Moderator: Lope Tabil (Canada) Room: 2104AB
- 8:15 **Session Opening**
- 8:20 100410 **Detection of salmonella on spinach leaf using phage-based magnetoelastic biosensors**
S. Li, S. Huang, H. Chen et al. (United States/China)
- 8:40 100451 **Transmission of *E. coli* O157:H7 biofilm from contact surfaces to fresh produce**
Y. M. Lo (United States)
- 9:00 100523 **Enhancing compaction characteristics of barley straw by microwave/chemical pretreatment**
M. Kashaninejad, B. Kashaninejad, L.G. Tabil (Iran/Canada)
- 9:20 100603 **Comparison of mechanical properties of two apple varieties under compression loading**
A.G. Chakespari, A. Rajabipour, H. Mobli (Iran)
- 9:40 100579 **Design, fabrication and evaluation of a moisture-based fig sorter**
D. Zare, S. Souri, M. Loghavi et al. (Iran)

Wednesday, June 16 – 8:15 to 10:00

- 101 Section VI Spectroscopy and Image Analysis (II)**
Time Paper # Moderator: Scott Noble (Canada) Room: 2105
- 8:15 **Session Opening**
- 8:20 101447 **Fast detection of crude protein content in fish feeds based on infrared transmission spectroscopy and chemometrics**
F. Zhu, P. Nie, Y. He (China)
- 8:40 101174 **Use of hyperspectral imaging to improve the safety of food**
A. Lefcourt (United States)
- 9:00 101481 **Grade classification and protein content determination in matcha based on Vis/NIR**
X. Zhang, R. He, Y. He (China)
- 9:20 100808 **Quantitative assessment of maple syrup properties by means of fluorescence spectroscopy**
A. Clément, B. Panneton, L. Lagacé (Canada)
- 9:40 100836 **Fast adulterant quantification in Chinese yam powder using visible, near and mid-infrared spectroscopy**
D. Wu, P. Nie, Y. Shao et al. (China)

Wednesday, June 16 – 8:15 to 10:00

- 102 Section VI Processing of Food and Beverages – POSTERS**
Poster # Paper # Moderator: Michael Ngadi (Canada) Room: 2000D
- 19 101382 **Ohmic heating behavior and electrical conductivity of solid foods using low and high frequency power supply**
R. Zareifard, S. Zhu, M. Marcotte et al. (Canada/China)
- 20 100513 **Application of response surface methodology for optimisation of in vitro enzymatic digestion of soy protein isolate using high hydrostatic pressure processing**
Z. Lanfang, S. Dan, L. Shujun et al. (China)
- 21 100992 **A new approach of rice processing for control of compound contents and eating quality of cooked rice**
M. Tamura, Y. Ogawa (Japan)

22	101323	Effect of low anode/cathode voltage difference application on redox potential modulation during milk electroreduction and storage L. Bazinet, A. Schreyer, J. Lessard (Canada)
23	101216	Sustainability of rice processing in rural sub-Saharan Africa M. Bakari, M. Ngadi, R. Kok et al. (Canada)
24	101324	Large scale bioseparation of an antihypertensive peptide from alfalfa white protein hydrolysate by electro dialysis with ultrafiltration membrane L. Firdaous, P. Dhulster, J. Amiot et al. (Canada/France)
25	100706	Winery design criteria for the production of valuable wine (DOC) A. Gusman, A. Marucci, B. Pagnello (Italy)
26	100852	Influence of polyglycerol esters of fatty acid on in vitro digestibility of soybean oil-in-water by pancreatic lipase L. Yin (China)
27	101313	Application of response surface methodology to the optimisation of in vitro enzymatic digestion of soy protein isolate of high hydrostatic pressure processing S. Dan, L. Shu-Jun, H.M. Chan et al. (China/Canada)
28	101072	Process optimization of water jet extraction of pomegranate arils using response surface methodology M.R. Mirian, J. Khazaei (Iran)
29	101125	Factors influencing formation and stability of orange-flavoured beverage emulsion S.V. Baygi, R. Kadkhodaei (Iran)

Wednesday, June 16 – 10:15 to 12:00

115	Section VI	Post Harvest and Fresh Produce (II)
Time	Paper #	Moderator: Clément Vigneault (Canada) Room: 2104AB
10:15		Session Opening
10:20	100636	Design and performance of a lab scale controlled environment chamber (CEC) used for determination of horticultural produce quality deterioration J. Boutin, D. I. Leblanc, C. Vigneault et al. (Canada)
10:40	100940	In-field measurement of fruit respiration for determining climacteric activity and harvest maturity of mango M. Nagle, W. Spreer, B. Mahayothee et al. (Germany/Thailand)
11:00	101123	Effect of drying and tempering conditions on milling quality in multi-pass drying of rough rice E. Nasrnia, M. Sadeghi, A.A. Masoumi (Iran)
11:20	101219	Impact of the age of laying chicken on mechanical strength of eggs N Abdel-Nour, M. Ngadi, V. Raghavan (Canada)
11:40	101275	Energy saving during bulb storage applying modeling with computational fluid dynamics (CFD) A.A. Sapounas, J.B. Campen, J. Wildschut et al. (Netherlands)

Wednesday, June 16 – 10:15 to 12:00

116	Section VI	Spectroscopy and Image Analysis (III)
Time	Paper #	Moderator: Da-Wen Sun (Ireland) Room: 2105
10:15		Session Opening
10:20	101385	Combination of near infrared spectroscopy and multivariate analysis to detect valine (C5H11NO2) in oilseed rape leaves W. Kong, F. Liu, H. Fang et al. (China)
10:40	101207	Confocal laser scanning microscopy imaging of deep-fat fried batter coating A.A. Adedeji, L. Liu, M.O. Ngadi (Canada)
11:00	101287	Application of near infrared spectroscopy and least squares-support vector machine to determine soluble protein in oilseed rape leaves F. Liu, Y. Zhao, G. Sun et al. (China)
11:20	101107	Near infrared hyperspectral imaging for classification of beef muscles G. Elmasry, D.-W. Sun, P. Allen (Ireland)

11:40	100751	Evaluation of novel high intensity pulsed UV sources for processing food beverages T. Koutchma, M. Orłowska (Canada)
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Wednesday, June 16 – 13:35 to 15:20

129	Section VI	Microbiological Inactivation
Time	Paper #	Moderator: Tatiana Koutchma (Canada) Room: 2104AB
13:35		Session Opening
13:40	100909	Effect of aluminium cookware on microbial inactivation during pasteurization of milk N. Ruangthip, S. Kawamura, Y. Uchida et al. (Japan)
14:00	100748	Characterization of low UVT liquid foods and ingredients for ultraviolet preservation T. Koutchma, C. Defelice (Canada)
14:20	100914	Antimicrobial activity of novel packaging material made from biomass plastics and shell (scallop) powder Y. Hasegawa, T. Kimura (Japan)
14:40	101045	Thermal inactivation of <i>Byssoschlamys nivea</i> in pineapple nectar combined with preliminary high pressure treatments E.H.R. Ferreira, A. Rosenthal, V. Calado et al. (Brazil)
15:00	101215	Ultraviolet depuration of <i>Escherichia coli</i> from the juvenile clam, <i>Cyclina sinensis</i> in China M. Yu-Ping, Q. Qing-Lin (China)

Wednesday, June 16 – 13:35 to 15:20

130	Section VI	Spectroscopy and Image Analysis (IV)
Time	Paper #	Moderator: Jochen Hemming (Netherlands) Room: 2105
13:35		Session Opening
13:40	100411	Role of infrared thermal imaging in stored products protection V. Rajagopal, D. S. Jayas, N. D.G. White (Canada)
14:00	101446	The successive projections algorithm for variable selection in alien invasive weeds classification based on Vis/WNIR P. Nie, J. Yu, Y. Zhao et al. (China)
14:20	100647	Application of infrared spectromicroscopy to characterize and determine the spatial distribution of lignocellulosic components in agricultural straw pellets P. K. Adapa, C. Karunakaran, L. G. Tabil et al. (Canada)
14:40	100653	Detection of internal defect in pickling cucumbers using laser scattering image analysis D. P. Ariana, R. Lu (United States)
15:00	101474	Melon soluble solids content measurement using Vis/NIR diffuse reflectance spectroscopy H. S. Shin, S. R. Suh, K. H. Lee et al. (Republic Of Korea)

Wednesday, June 16 – 13:35 to 15:20

131	Section VI	Food Properties (II) - POSTERS
Poster #	Paper #	Moderator: Valérie Orsat (Canada) Room: 2000D
76	101149	Fluid-dynamic properties and pressure loss of black beans in a packed bed R.A. De Oliveira, K.J. Park, A.M. Vivas et al. (Brazil)
77	101167	Methods for the assessment of candy gum elasticity G. Csima, V. Biczó, T. Kaszab et al. (Hungary)
78	101475	Color texture feature analysis for estimation of melon internal quality S.R. Suh, K.H. Lee, S.H. Yu et al. (Republic Of Korea)
79	101553	Moisture adsorption isotherms of castor beans A.L.D. Goneli, P.C. Corrêa, G.H.H. Oliveira et al. (Brazil)
80	101642	Rheological properties of processed liquid egg white products C. Németh, R. Juhász, L. Friedrich et al. (Hungary)
81	101190	Mass modeling of pomegranate fruits: Artificial neural networks method J. Khazaei, S.A. Hosseini, Z.M. Jafari (Iran)
82	100506	Physical properties of cumin (<i>Cuminum cyminum</i>) and caraway (<i>Carum carvi</i>) seeds D. Zare, A. Bakhshipour, A. Zomorodian (Iran)

LIST OF ABSTRACTS BY PARTICIPATING GROUP

83 100983 **The effect of paddy moisture content on milling losses and post-milling crack development in rice kernel, under different storage conditions**
N. Sadeghi, S. M. Nassiri (Iran)

Abstract only 100753 **Effect of high hydrostatic pressures on drying kinetics of blueberries variety o'neil**
Antonio Vega-Gálvez, Margarita Miranda, Gipsy Tabilo-Munizaga, Mario Pérez-Won (Chili)

SECTION VII Information Systems and 8th World Congress on Computers in Agriculture

Monday, June 14 – 10:15 to 12:00

14 Section VII Image Analysis and WCCA

Time	Paper #	Moderator: Renfu Lu (USA) Room: 2101
		Session Opening
10:15		
10:20	100364	Image analysis, 3D geometry modeling and inverse FEA in investigating properties of agri-food and forest products J. Weres, S. Kujawa, K. Nowakowski et al. (Poland)
10:40	100777	Detection of fusarium damaged kernels in wheat using hyperspectral imaging M. A. Shahin, S. J. Symons (Canada)
11:00	101337	Hyperspectral character analysis of rice leaves infested by brown plant-hopper (Nilaparvata lugens) Z. Zhou, Z. Zhao, X. Luo et al. (China)
11:20	100934	Automatic grading of anthurium cut flowers using 3D computer vision J. Hemming, E. J. Pekkeriet, R. Van Der Schoor (Netherlands)
11:40	100250	A hybrid wavelet transform-based agricultural image de-noising algorithm Y. F. Zeng (China)

Monday, June 14 – 10:15 to 12:00

15 Section VII Modelling and Simulation – POSTERS and WCCA

Poster #	Paper #	Moderator: Antonio M Saraiva (Brazil) Room: 2000D
17	101485	Production process evaluation of wastewater-irrigated plant biomass through life cycle assessment C. Arcidiacono, S.M.C. Porto (Italy)
18	100399	Simulation of creep process of processed alfalfa based on virtual prototype technology C. G. Wang, G. Z. Zhao, Z. Wang (China)
19	101110	Prediction of process and product parameters in deep bed drying of rough rice using artificial neural network M. Tohidi, M. Sadeghi, S.R. Mousavi (Iran)
20	101471	Conceptual modeling for the design of a computer-based traceability system G. Cascone, C. Arcidiacono, S.M.C. Porto et al. (Italy)
21	101488	From the construction of an ecological network to the definition of an environmentally sustainable planning model for periurban space C.R. Fichera, L. Laudari, G. Modica (Italy)
22	101359	Comparison of fuzzy logic and classic controllers' performance in guiding of a greenhouse applications robot H. Masoudi, M. Omid, R. Alimardani et al. (Iran)

Monday, June 14 – 13:35 to 15:20

30 Section VII Robotics and Automation (I) and WCCA

Time	Paper #	Moderator: Fedro Zazueta (USA) Room: 2101
		Session Opening
13:35		

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13:40	100984	Development of a remote control system for autonomous agricultural vehicles X. Zhang, Dr. P. O. Noack, L. Grandl et al. (Germany)
14:00	101157	Rice plant detection in heading term for autonomous robot navigation R. Masuda, K. Nakayama, K. Nomura (Japan)
14:20	101358	Design, fabrication and evaluation of a mobile robot for greenhouse spraying H. Masoudi, R. Alimardani, M. Omid et al. (Iran)
14:40	101278	Test and evaluation of two process control strategies for adapting direct injection pesticide application to small scale farms A. El Aissaoui, F. Lebeau, M.-F. Destain (Morocco/Belgium)

Monday, June 14 – 15:35 to 17:00

45 Section VII Robotics and Automation (II) and WCCA

Time	Paper #	Moderator: Omar Ulloa (Costa Rica) Room: 2101
		Session Opening
15:35		
15:40	101182	Developing a framework based database (or as a central tool for) mapping and analysing research and development on ICT and robotics in agriculture and environmental related businesses J. Vangeyte, S. Ms Van Weyenbergh, J. Baert et al. (Belgium/Denmark)
16:00	100761	Vision-based weed identification with farm robots Kishore C. Swain, Michael Nørremark, D. Bochtis et al. (Denmark)
16:20	101012	Design of an autonomous spraying robot for greenhouse L. Livne, Y. Edan, A. Bechar (Israel)

Tuesday, June 15 – 10:15 to 12:00

59 Section VII Information and Communication Technologies (I) and WCCA

Time	Paper #	Moderator: Miguel Castro Neto (Portugal) Room: 2101
		Session Opening
10:15		
10:20	100633	A unified pest scouting for area-wide IPM A. Hetzroni, L. Shealtiel-Harpaz, Y. Cohen (Israel)
10:40	101166	The development of tools for managing, monitoring and assessing water stressed conditions in Jamaica J. Richards, C. Madramootoo, A. Trotman (Canada)
11:00	100479	Advanced web outreach techniques: capitalizing on social media, live blogging, and mobile technology to connect with agricultural clientele A. Kleinschmidt (United States)
11:20	101199	Assessing biomass chains feasibility at local level N. Colonna, F. Lupia, V. Pignatelli et al. (Italy)

Tuesday, June 15 – 10:15 to 12:00

60 Section VII Wireless Technology, Sensors and Image Analysis – POSTERS and WCCA

Poster #	Paper #	Moderator: Fedro Zazueta (USA) Room: 2000D
16	100519	Automatic on-line depth control of seeding units using a non-contacting ultrasonic sensor S. Kiani, S. Kamgar, M. Raoufat (Iran)
17	100929	Wireless sensor system for process monitoring of tree seed storage O. Green, J. J. Larsen, O. J. Jørgensen et al. (Denmark)
18	101075	Utilizing a vast and complex wireless communication network in a sustainable "biosystem" for the production of fiber for use in bioenergy, paper and solid wood production N. Mohamed (United States)

19	101222	Development of a SCADA system for access, processing and supervision of data coming from a wireless sensors network in agro-environmental applications L.M.N.Gracia,E.M.Bravo, G.R. Ruiz et al. (Spain/Portugal)
20	100699	Crop rows tracking by detecting individual plants using computer vision to guide farming vehicles G. Ruiz-Ruiz, J. Gómez-Gil, L. M. Navas-Gracia et al. (Spain/Brazil)
21	100916	Automated monitoring of variations of drying conditions in a seed drying facility O. Green, J. J. Larsen, E. F. Kristensen et al. (Denmark)

Tuesday, June 15 – 13:35 to 15:20

74 Section VII Information and Communication and WCCA Technologies (II)

Time	Paper #	Moderator: Elsa S. Sepulveda Bustos (USA) Room: 2101
13:35		Session Opening
13:40	100741	Utilization of plug-in and content management system (CMS) as tools for developing National Biosafety Clearing House (BCH) applications: Cases in Asia-Pacific and Latin American countries R. V. Maningas (Philippines)
14:00	100970	Formal representation of agricultural production standards E. Nash, J. Wiebensohn, R. Nikkilä et al. (Germany/Finland/Greece)
14:20	101196	Towards a framework for planning and designing of rural knowledge centres G. Dileepkumar, S. Chaudhary, K.A. Sai et al. (India/USA)
14:40	101200	Reusing content with reusable learning objects (RLOs): An approach for addressing content issues of agricultural education and extension G. Dileepkumar, S. Chaudhary, K.A. Sai et al. (India/USA)
15:00	101638	A multi-lingual translation engine for translating ration formulation programs from English to Spanish, Portuguese, Italian, German, and French languages A. Ahmadi, P.H. Robinson, P. Chilbroste (United States)

Tuesday, June 15 – 15:35 to 17:20

89 Section VII Wireless Technology (I) and WCCA

Time	Paper #	Moderator: Margarita Ruiz Altisent (Spain) Room: 2101
15:35		Session Opening
15:40	100502	Remote access of ISOBUS workbench for the IsoAgLib study and implementation R. R. D. Pereira, A. J. V. Porto, R. Y. Inamasu (Brazil)
16:00	100712	Exploitation of wireless telemetry for livestock condition monitoring C. Di, T.-T. Wu, H. G. Goh et al. (United Kingdom)
16:20	100698	Wireless sensor networks for environmental monitoring in precision viticulture A. B. Ramos, F. M. Riquelme, F. M. Garcia et al. (Spain)
16:40	100922	A model to predict calves' lying time with wireless 3-dimensional accelerometer collar P.Tamminen,L. Hänninen, A.-H. Hokkanen et al. (Finland)

Wednesday, June 16 – 8:15 to 10:00

103 Section VII Geographical Information Systems (GIS) and Web Based Services and WCCA

Time	Paper #	Moderator: Silvia M. F. S. Massruha (Brazil) Room: 2101
8:15		Session Opening
8:20	100584	Rest-based web services for the discovery and distribution of agricultural production standards R. Nikkilä, E. Nash, I. Seilonen et al. (Finland/Germany)
8:40	100887	Developing web-based irrigation models and services J. M. Gonçalves, A. Muga, P. Teodoro et al. (Portugal)
9:00	101154	RU-SLIMS development of Rutgers University's web-based soils laboratory information management system R.S. Muldowney, S. Murphy (Canada)

9:20	101398	Development and use of a Web-GIS-Based Information System for the management and supply of hickory environment condition data J. Yu, P. Nie, Y. He (China)
9:40	101618	Decision support systems for environmental management and conservation: A GIS-based model E. Ferrer (United States)

Wednesday, June 16 – 10:15 to 12:00

117 Section VII Modeling, Simulation and Data Mining (I) and WCCA

Time	Paper #	Moderator: Antonio M Saraiva (Brazil) Room: 2101
10:15		Session Opening
10:20	101162	Quantitative analyses aspect of vibrational spectroscopy and its applications in agriculture W. Wang, J. Paliwal (Canada)
10:40	100677	Aerodynamic modeling of windbreaks in Saemangum reclaimed land J. P. Bitog, I-B. Lee, S-W. Hong et al. (Korea)
11:00	100823	Comparison of different methods for sensitivity analysis of composting modelling P. Courvoisier, G. Clark (Canada)
11:20	101090	Fourier filtering for wheat detection in a context of yield prediction L. Jourmaux, A. Marin, F. Cointault et al. (France)
11:40	101191	Machine learning models for prediction of added water in milk as a function of milk temperature and some other physical characteristics J. Khazaei, M. Nikousiar, N. Mohammadi (Iran)

Wednesday, June 16 – 10:15 to 12:00

118 Section VII ICT, GIS and Web Services – POSTERS and WCCA

Poster #	Paper #	Moderator: Jiannong Xin (USA) Room: 2000D
50	101034	Radio frequency interactions with air cargo container materials for real time cold chain monitoring M. Laniel, I. Uysal, J.-P. Émond (United States)
51	101080	Spatio-temporal variability of soil moisture at the field scale using remote and proximal sensing K. Labrecque, M. Bernier, M.C. Nolin et al. (Canada)
52	101495	Claw and foot health: Early diagnostics and prevention of foot lesions in dairy cattle P. Tamminen, M. Pastell, J. Häggman et al. (Finland)
53	101486	Remote sensing and GIS for rural/urban gradient detection C.R. Fichera, G. Modica, M. Pollino (Italy)
54	100365	Advanced technologies in developing web-based decision support systems for agriculture J. Weres, W. Mueller, R. Kozłowski et al. (Poland)
55	101464	The development of whole process mechanization production and technical specification of the whole process mechanization of rape in eastern China K. Zhou (China)
56	100837	Quantitative analysis supported in SNA of the production milk chain in Brazil M.N. Mollo, I.A. Nääs, O. Vendrametto et al. (Brazil)

Wednesday, June 16 – 13:35 to 15:20

132 Section VII Modeling, Simulation and Data Mining (II) and WCCA

Time	Paper #	Moderator: Stanley Best (Chile) Room: 2101
13:35		Session Opening
13:40	101224	DiagData: A tool for generation of fuzzy inference system S.M.F.S. Massruhá, R.F. Riccioti, H.P. Lima et al. (Brazil)
14:00	100657	Using data mining to evaluate different minimum ventilation systems in broiler houses D.J. Moura, T.M.R. Carvalho, I.A. Nääs (Brazil)
14:20	101644	Challenges in ecological niche modelling F.S. Santana, A.M. Saraiva (Brazil)

LIST OF ABSTRACTS BY PARTICIPATING GROUP

14:40	101457	Structural plant modelling based on real 3D structural parameters, resulting simulation system and rule-based language XL R. He, J. Hu, Y. He et al. (China)
15:00	100824	A numerical integrated model of composting processes using finite elements methods P. Courvoisier, G. Clark (Canada)

Wednesday, June 16 – 13:35 to 15:20

133 Section VII Wireless Technology (II) and WCCA

Time	Paper #	Moderator: Seishi Ninomiya (Japan) Room: 2102B
13:35		Session Opening
13:40	101159	Refrigerated fruit storage monitoring using RFID and WSN L. Ruiz-Garcia, J. Garcia-Hierro, P. Barreiro et al. (Spain)
14:00	101270	Three-tier wireless sensor network for environmental monitoring N. Zhang, W. Han (United States)
14:20	100477	Development of RFID temperature tracking systems for combat feeding logistics C. Amador, J.-P. Emond (United States)
14:40	100679	Research on WSN design and formation for drought monitoring in a tea plantation W. Wang, D. Sun (China)

Abstract only	100563	Development of an automatic control management system for a greenhouse Yutaka Sasaki, Noe Velazquez Lopez, Kazuhiro Nakano (Japan)
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